



**FOODCORPS**  
**LESSONS**



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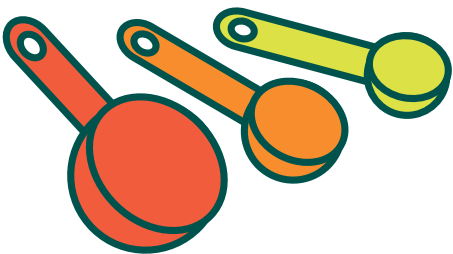
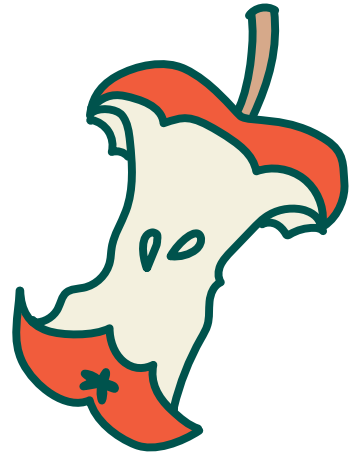
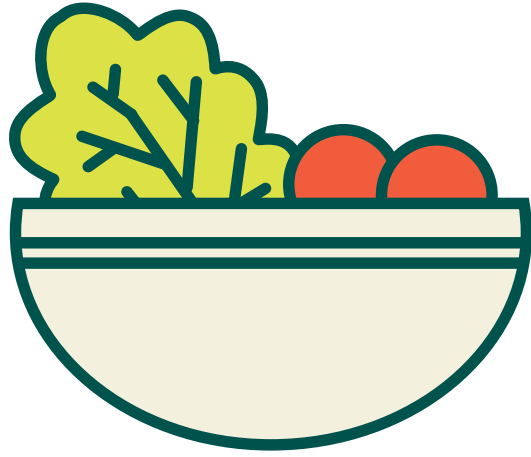
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## FoodCorps Lessons Evaluation and Revision

This full suite of lessons was first launched during the 2018-2019 Program Year. During that year we undertook a comprehensive evaluation process to learn about use and experience of the FoodCorps Lessons. Full results from this evaluation led by Action for Insight can be found in the FoodCorps Lessons Evaluation report (August 2019). This evaluation intended to bring insight into: use and adaptation of the lessons by service members, the value the lessons bring to service members and the sites in which they teach, the conditions that enable or challenge service members to use and adapt the lessons, and the conditions that support the staying power of the lesson being adopted to sites after service members depart. The evaluation was designed around qualitative data from service members including 355 reports, 188 surveys, 16 focus groups and 800 feedback forms on individual lessons.





# Teaching Hands-On Lessons

As outlined in the *Service Member Handbook*, every FoodCorps service member is required to teach or co-teach ten or more hours of ongoing, high-quality, hands-on lessons to a minimum of eighty students. Each service member will develop a Service Member Plan that outlines how he or she will reach this goal. We have developed FoodCorps lessons for service members to use with their ongoing classes to meet the hands-on lessons requirement. Lessons are organized by grade level, theme, and season (fall, winter, spring). Although service members are not required to use FoodCorps lessons (some of our sites and schools already have curriculum they prefer to use), we encourage you to reference these lessons often, and use them when possible.

You will find all the FoodCorps lessons in this book and online on the FoodCorps Toolshed. The following pages also include an overview of the FoodCorps lessons learning progression and themes, along with charts to help you identify lessons based on grade, theme, season, and topic. Please also reference the *Sprout Scouts Handbook* on the Toolshed for garden-based activities and ideas for running a comprehensive after-school club with students.



# FoodCorps Lesson Structure

After you review the FoodCorps Lessons Book, you'll notice that each FoodCorps lesson is structured the same way. Please review the framework below that shows what to keep in mind as you choose, adapt, or develop the lessons you lead with students.

**Grade and Season:** Lessons are designed for grades K–5 to be taught during fall, winter, or spring; however, many lessons can be adapted for any season.

**FoodCorps Theme:** Lessons are tied to one of FoodCorps' six themes. Themes are either knowledge- and concept-focused or skill-building focused. (See the FoodCorps Lesson Themes on p. 19 of this book)

**Essential Question:** A thought provoking open-ended question. This “big idea” provides the grounding framework for the lesson (see more below).

**Learning Objective:** These are statements that describe what concrete skills students should be able to do as a result of the lesson.

**Concepts:** This is a list of concepts and terms integral to the lesson, for help in preparing and activating students' prior knowledge.

**Engaging the Classroom Teacher:** This a list of what to check in with the students' classroom teacher about prior to the lesson and suggestions for how the teacher can support instruction during the lesson.

**Lesson Description:** This gives an overview of the lesson, including concepts and skills the students will learn.

**Lesson Time:** Each step in the lesson has an estimated time. The total time is listed at the top.

**Materials:** This is a list of materials needed to lead the lesson, including any cooking ingredients.

**Preparation:** This includes all steps required to prepare for the lesson. It is important to review early because some preparation may need to happen several days prior to leading the lesson.

**Action Steps:** This section follows the “5 Es” structure: Engage, Explore, Explain, Elaborate, and Evaluate. It includes a breakdown of time needed for each step.

**Reflection:** These are questions to discuss with your students to promote reflection. They include process questions under the heading Social and Emotional Learning and content questions under the heading Check For Understanding. Reflection is included in the total time for the lesson.

**Adaptations:** These are ideas for extending and adapting the lesson to take place outdoors or during a longer class period. Note that adaptations may require additional materials not previously listed in the lesson.

**Academic Connections:** If there is a connection to a Common Core State Standard or Next Generation Science Standard, it will be listed here.

You will also notice that many lessons have some portion written in italics. The words in italics are ideas for what you might say to your students when you lead the activity. This is not a script to which you must adhere; instead, it's a means of letting you know how a lesson could play out. Say things in your own words, and make these lessons your own!

## Essential Questions

All FoodCorps lessons are linked to an “essential question.” Essential questions are a central part of the Understanding by Design curriculum planning process that authors Jay McTighe and Grant Wiggins championed. This approach to education focuses on identifying big ideas we want students to understand, then building lessons that help students move toward greater understanding over time. Essential questions are open-ended; that is, they typically will not have a single, final, correct answer, and students can examine them at increasing depth over multiple years of schooling. According to McTighe and Wiggins, an effective essential question does the following:

- Is thought-provoking and intellectually engaging, often sparking discussion and debate
- Calls for higher-order thinking, such as analysis, inference, evaluation, or prediction; cannot be effectively answered by recall alone
- Points toward important, transferable ideas within (and sometimes across) disciplines
- Raises additional questions and sparks further inquiry
- Requires support and justification, not just an answer
- Recurs over time; that is, the question can and should be revisited again and again

With the FoodCorps lessons, you can use the essential questions to provide a grounding framework to guide student learning toward an understanding of key concepts about food and nutrition. Each lesson is designed to support students in exploring and discovering answers to the guiding essential question. Please consider how the essential question tied to each lesson provides a springboard for the rest of the lesson and how you might leverage this approach to your teaching; for example, by reinforcing key concepts and considering how other lessons you teach tie to these essential questions.

## Recommended Resource

- *Understanding by Design Framework* of Jay McTighe and Grant Wiggins and the Association for Supervision and Curriculum Development (ASCD)

# School Curriculum & Academic Connections

It is important to learn about the activities and content that teachers and school staff cover in the classroom and in before- and after-school programming. This will help inform how you can best integrate your FoodCorps goals of teaching food-, nutrition-, and garden-focused topics. Although there are national and state standards that drive curriculum (see more below), specific academic priorities and strategies are typically set at the state level and district level.

When working with classroom teachers, ask them to share their scope and sequence for the curricula they're using, and seek their input on how you might reinforce learning through the FoodCorps lessons. Many schools have curricula specialists. These are great people to have a meeting with to share more about your service and express your desire to help support student learning. Ask them for their advice on what areas you should consider exploring for lesson integration.

Learn about the instructional priorities of the schools you serve by asking questions:

- What academic standards does the school follow?
- What curricula are teachers required to use?
- How are students evaluated on their academic progress?
- Are there special programs that teachers are implementing?
- Are there any before- or after-school programs? What kinds of activities are involved?
- Are there any schoolwide initiatives to promote student learning, attendance, or positive behavior?

Your ability to gain access to class time, earn the trust of teachers and administrators, and deliver value to the school community will depend heavily on your ability to help schools and school leaders deliver on their own goals, while delivering on your own.

## Common Core and Next Generation Science Standards

*What are Academic Standards?*

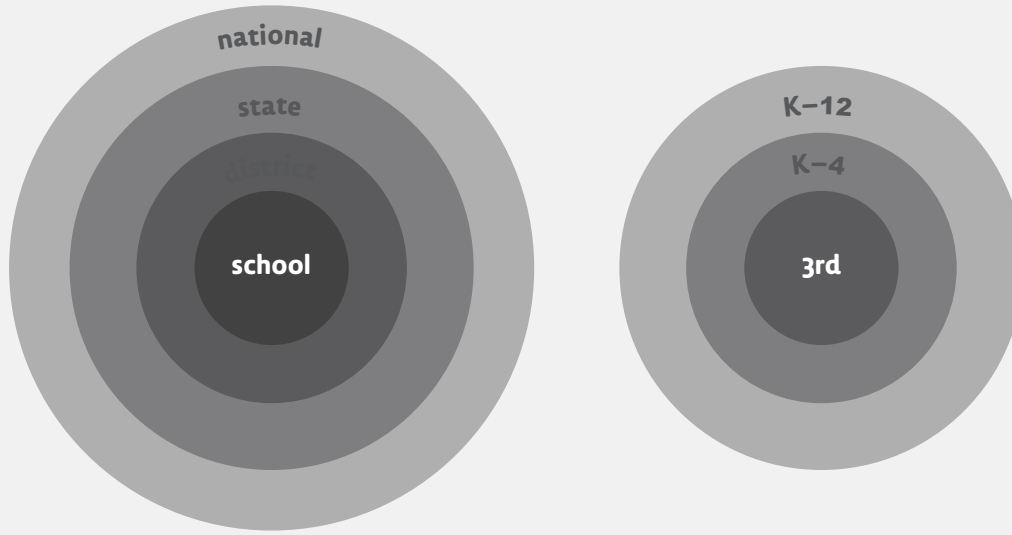
Every public school is guided by a curriculum framework or set of learning standards. Standards provide guidance about what students should know and be able to do by certain grades and are used to guide the work of teachers and administrators. Reviewing these standards is a good starting point for understanding how any hands-on learning you are leading through your FoodCorps service links to school curricula, which will help make the case for integrating lessons into broader classroom learning.

There are a few useful things to know about standards that will make it easier for you to navigate them. First, they come in layers. There are federal education laws that apply nationally, and there are state standards that guide the public schools in a particular state. Additionally, some school districts or charter networks, and even some individual schools, have their own curriculum frameworks. These are based on the state standards but often include a greater level of detail regarding grade-by-grade curriculum.

*What are Common Core and Next Generation Science Standards?*

You'll notice that each FoodCorps lesson includes "Academic Connections" to Common Core State Standards (CCSS) and Next Generation Science Standards (NGSS). The CCSS are English language arts and math standards that most, but not all, states have adopted. As of this printing, these standards, or some version of them, were adopted and being used in all FoodCorps states. Although some have criticized the CCSS for its focus on testing, the framework has been praised for bringing consistency and improved adoption of effective practices to our nation's fragmented

**BE AWARE OF THE STANDARD THAT IS MOST RELEVANT TO YOUR TEACHING SITUATION.**



Source: FoodCorps has adapted some of this section from the Shelburne Farms “Connecting Food, Farm and Nutrition Education to School Curricula” handout.

education system. The NGSS are K–12 science content standards that eighteen states have adopted. They emphasize ecological literacy and hands-on learning goals that closely align with FoodCorps’ approach. Still more states have adopted state science standards that are similar to the NGSS. Of the FoodCorps states, the following have adopted NGSS: Arkansas, California, Connecticut, Hawaii, Iowa, Michigan, New Jersey, and Oregon. All other FoodCorps states are using state-specific standards that you can learn about from your partner schools or find online.

*FoodCorps Lessons and District or School Curriculum Framework*

FoodCorps lessons highlight connections to the NGSS and CCSS, showing how each lesson addresses academic standards that are commonly in use in FoodCorps schools and giving you a helpful tool to explain to teachers and administrators how your service can support their objectives. However, as a service member, because you will be working solely within a given district or school, you should ask if these are the most relevant curriculum frameworks for your community.

Just as there are multiple layers of standards, those standards typically contain multiple layers that pertain

to different grade levels. There are often overarching Pre-K through grade 12 standards that apply to all students at all levels of schooling. These are then broken down into grade clusters, such as Pre K–4, 5–8, and 9–12, that identify how expectations change across elementary, middle, and high school levels. Within those grade clusters, some standards specify even more detailed expectations. For instance, if you’re working with a third grade class, check if there are standards specific to that grade. If you’re working with a broader range of grades, you might refer to the broader grade cluster standards.

Recommended Resources

- Common Core State Standards Initiative website
- EdWeb webinar: “Common Core in the Garden”
- Life Lab Connecting Garden-Based Learning with Academic Content Standards webpage
- National Farm to School Network webinar: “Food, Farm and Nutrition Curriculum Connections: Developing Educational Experiences That Meet Teacher Needs”
- Next Generation Science Standards website

# The 5 Es: Engage, Explore, Explain, Elaborate, and Evaluate

When you look at a FoodCorps lesson, you will notice there are “Action Steps” that outline how you should lead the session. We developed each action step using the “5 Es” framework that Biological Science Curriculum Study developed. The 5 Es are a proven strategy for engaging students in fun, hands-on skill building. The 5 Es stand for Engage, Explore, Explain, Elaborate, and Evaluate. You can use the 5 Es to create your own lessons or strengthen other lessons you are delivering.

The purpose of each part is described below, along with tips for leading each part effectively.

## Engage

Purpose—To help students connect with what they are learning about and stay focused

Methods for Engaging Students

- Establish the purpose of the day’s lesson.
- Activate students’ prior knowledge of the focus skill for the day.
- Get students excited to learn more about the lesson.
- Transition students from their typical school day into their FoodCorps lesson, which should feel different and special.

Tips for Engaging Students

- **Introduce the practice of gathering your students in the same routine at the beginning of every**

**session, including an opening activity to activate brains and help calm bodies.** Wait until everyone is quiet before you start talking. If students start talking while you are still talking, stop and wait until it’s quiet again.

- **Ask broad and open-ended questions to allow for critical thinking and equalize participation among your students.** Suggested questions are included in the action steps, or you can come up with your own. A broad question has many possible correct answers (similar to an essential question), such as the following: What are some things you think healthy food does for our bodies? In contrast, a narrow question has only one specific correct answer, such as the following: Which vitamins boost the immune system?
- **When facilitating group discussions, you may reference the tips in the Student Participation Structures section in the Program Guide.**

## Explore

Purpose—To provide students with opportunities to explore physical materials or interesting ideas before they are fully explained; this practice inspires curiosity, engages critical thinking, and activates prior knowledge

Tips for Helping Students Explore

- **If you’ve sent students out to explore materials in the classroom or garden, you can use a callback to help grab their attention quickly when it’s time to**

**move on to the next part of an activity.** You can make an animal sound (such as crowing like a rooster or howling like a coyote) or use a chime or whistle. Introduce a callback when you meet students for the first time (see the “Developing Group Agreements” section in the Program Guide for more tips). Before you disperse in the classroom or send students out to the garden, establish a callback such as the following: *“When you hear me crow like a rooster, come on back! I’ll count down from ten, and we’ll see if everyone can get into a quiet circle before I get to zero.”* Right after you introduce the idea of a callback, have students practice. Ask them to wander around the classroom or garden and then gather quickly into a quiet circle when called back together.

### Explain

Purpose—To teach students a new skill or explain a new concept

Tips for Explaining a New Skill

- **Whether they’re going to be preparing a bed, planting seeds, watering, or cooking, don’t just talk through the steps for a new skill—demonstrate the skill, with an emphasis on safety whenever relevant.** This will help all students, particularly English language learners, understand the instructions.
- **Wait until after you’ve demonstrated to distribute resources or tools and have students join in the work.**
- **Whenever possible, provide enough resources or tools for everyone to have their own.** This gives everyone a meaningful way to stay engaged. In cases where you do not have enough materials, think about student roles to help engage all learners.
- **Once they’re working, especially with new tools, broaden your focus to make sure that you’re watching everyone and ensuring their safety.**

Tips for Explaining a New Concept

- **Start by listening to students’ ideas about the new concept based on their recent explorations.** Build on their ideas, adding any new vocabulary or

concepts that they don’t mention.

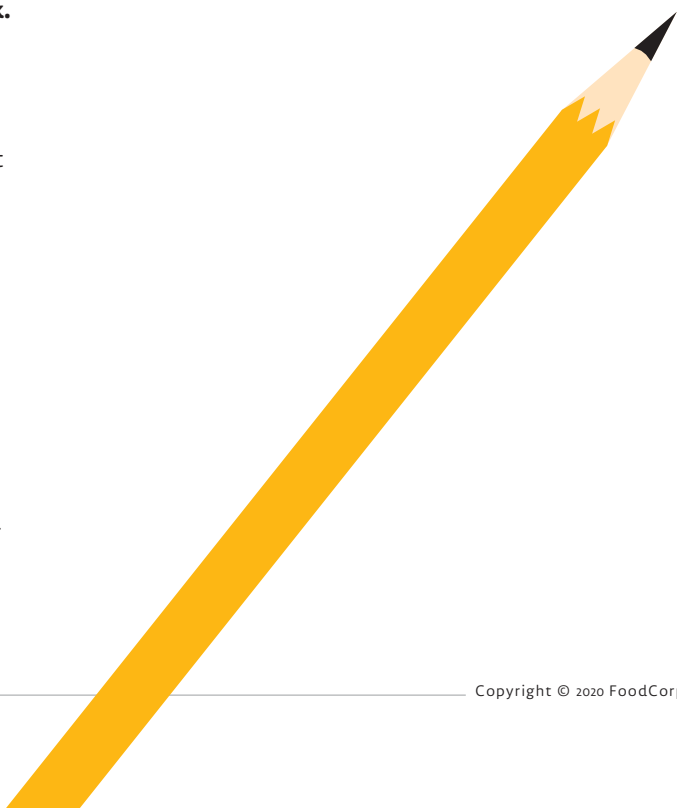
- **Use multiple modalities (see the Program Guide) to introduce new vocabulary or concepts.**

### Elaborate and Evaluate

Purpose—To provide students with a chance to demonstrate their new skill and/or summarize what they’ve learned, which helps them synthesize and remember their learning and gives you a chance to evaluate how well they grasped the new idea or skill; reflection is essential to learning

Tips for Elaborating and Evaluating

- **It can be tempting to run an activity right up to the end of your time together and say, “No time to reflect,” but it’s crucial to cut your activity a few minutes short to ensure a few minutes for closure.**
- **Gather as a group, revisit the purpose of the lesson, and invite students to demonstrate what they learned.**
- **Invite students to take their learning with them in a meaningful way, like replicating a recipe at home or repeating a skill they’ve practiced in a future class.**





# 5 Es Cheat Sheet

Remember to keep the 5 Es in mind whenever you lead a lesson—no matter how long. If you find yourself in a situation where you have a short amount of time with students, here's a “cheat sheet” of what to remember to do:

## Engage

- Gather your students in a circle. Transition to “FoodCorps Time,” promote excitement, and ask questions. Review the group agreements.
- Lead an opening activity. Consider using a “do now”—a short activity awaiting students when they enter the classroom. Students should be able to complete the do-now activity without your direction. It can preview the FoodCorps lesson or review a previous lesson. An example would be as follows: Write the following for students to see: “Work with a partner to design a dinner menu that captures your cultures, traditions, and favorite foods. If time allows, draw this meal to share visually.”

## Explore

- Have students disperse in the learning space to explore materials or ideas *before* they are fully explained. Call students back in an engaging way.

## Explain

- Lead your lesson. Demonstrate a new skill or concept, then engage students in the lesson using multiple modalities and hands-on teaching methods. Adapt your lesson to build on students' prior knowledge.

## Elaborate/Evaluate

- Always leave time for a closing activity or conversation to promote reflection. Prioritize asking questions that are process-oriented, such as, *When we were learning about each other's culture and traditions, what were some ways we showed respect and appreciation for one another?* And ask questions that are content-oriented: *What were some things you learned about food?* With students in upper grades, you can use a “ticket out the door” strategy by asking students to write “Something I Learned,” “Questions I Have,” and “Something Important to Remember.” They can then submit this as they leave.

## Recommended Resources

- Biological Science Curriculum Study (BSCS) Overview of the 5 E Instructional Model website



# Overview of FoodCorps Lesson Themes

The six FoodCorps themes listed below provide a framework for service members to identify the central topic for each lesson. Living up to Our Full Potential; Making Healthy Food Choices; Exploring the Ecology of Food; and Connecting to Food, Culture, and Community are all conceptual themes. In the lessons under these themes, students are primarily working on building their knowledge of these central ideas. Growing and Accessing Healthy Food and Preparing Healthy Food are skills-focused themes, and in the lessons under these two themes, students are developing their skills in gardening, cooking, and accessing healthy foods.

## **Theme: Living Up to Our Full Potential**

This is the first “bookend” of the FoodCorps lesson themes. Lessons under this theme focus on growing positive connections with one another, healthy food, and the environment. Students reflect on how these relationships help us live up to our full potential and emphasize practices that support social and emotional learning. Sample lessons: If Our Class Were a Soup . . . , All in for Applesauce, Getting to Know the Garden

## **Theme: Making Healthy Food Choices**

Lessons under this theme focus on exploring big-picture concepts that guide healthy eating such as balancing the food groups, discovering our individual food preferences, and examining external factors that influence our food decisions.

Sample lessons: Eat a Rainbow, Mindful Tasting, Tortilla Time, Cafeteria Mentors, The Secret Strategies of Food Advertising

## **Theme: Exploring the Ecology Of Food**

Lessons under this theme focus on the scientific concepts that relate to food and food systems. Such key

ideas include how plants grow, food webs, cycles, and the ecological impacts of the food system.

Sample lessons: Get to Know a Crop, What Do Plants Eat? How Seeds Travel, World Travels of Food, Insect Homes, Look Closely at Leaves

## **Theme: Growing and Accessing Healthy Food**

Lessons under this theme focus on garden-based skills to grow healthy food and community advocacy skills to help improve access to healthy food.

Sample lessons: Plant a Rainbow, Worm Bin Wonders, Garden Grids, Changemakers, Saving Seeds

## **Theme: Preparing Healthy Food**

Lessons under this theme focus on the skills required to prepare and enjoy a variety of healthy foods together. As students get older, the cooking activities become more complex and independent and involve meal planning and goal-setting in addition to food preparation.

Sample lessons: Sauté, Salad Dressing Challenge, Rolling into Spring

## **Theme: Connecting to Food, Culture, and Community**

This is the last “bookend” of our themes. Lessons under this theme are all intended as year-end culminating activities in which students give thanks for their food, and make connections between healthy foods and their personal culture, school culture, or world cultures.

Sample lessons: Our Food Traditions, Mealtime Traditions around the World, Gratitude Feast



# FoodCorps K-5 Grade Lessons Learning Progression

The Learning Progression below illuminates the theory behind the sequencing of the ninety-six FoodCorps lessons. It articulates how these lessons relate to and build upon one another to support students in developing increasingly sophisticated knowledge of and skills in the six themes listed above. In other words, this Learning Progression is a road map intended to highlight where we're headed with our lessons and how each activity helps us get there.

## **Kindergarten**

In the fourteen FoodCorps kindergarten lessons, students engage in a range of gardening, food preparation, and tasting activities through which they discover that the foods we eat come from plants and animals; that plants all require sun, soil, water, and air to thrive; that there is a wide variety of healthy foods to enjoy; and that our preferences for these foods can change over time. They connect these concepts by sprouting beans and making a bean dip, planting sunflower seeds, making a sunflower seed snack, and exploring their own food preferences. They wrap up the year with a focus on gratitude for the people who feed us. Please refer to the Lesson-at-a-Glance Chart for lesson titles and descriptions.

## **First Grade**

Building on what they learned in kindergarten, in the fourteen FoodCorps first grade lessons, students discover that plants have distinct structures (i.e., roots, stems, leaves, flowers, fruits and seeds), and foods can be categorized into distinct groups (i.e., “go foods,” like grains, can give us energy; “grow foods,” like meat and beans, can help us build muscle; and “glow foods,” like fruits and vegetables, can support our immunity and overall health). Through classifying foods into these groups, planning and preparing snacks and

meals that balance these groups, and planting crops from each group, students discover the essential role each food group plays in supporting their health and allowing them to live up to their full potential. Similarly, through hands-on activities such as looking for the six plant parts in the garden, categorizing plant parts, building imaginary plants, planting a “tops and bottoms” bed with root and leaf crops, and making “plant part wraps” and “tops and bottoms popsicles,” students begin to understand that each structure of the plant serves a distinct function that helps the plants survive and reproduce, and these plant parts also play an integral role in our diet. Please refer to the Lesson-at-a-Glance Chart for lesson titles and descriptions.

## **Second Grade**

Building on what they learned in first grade, in the fourteen FoodCorps second grade lessons, students explore the value of diversity in their community, in the natural world, and in their diets. They start the year reflecting on what each student contributes to the class community. Then they learn about the value of “eating a rainbow” of fruits and vegetables to support overall health by learning about what fruits and vegetables of different colors can do to support our bodies, preparing rainbow salads, and planting a rainbow. Meanwhile, in the garden they explore biodiversity and interdependence with a focus on how animals help transport pollen and seeds. In the classroom, they research foods eaten around the world and wrap up the year by swapping food stories with one another. Please refer to the Lesson-at-a-Glance Chart for lesson titles and descriptions.

## **Third Grade**

Building on what they learned in second grade, in the fourteen FoodCorps third grade lessons, students

dive into a journey of food from farm to fork. They explore a variety of foods on the spectrum from whole to processed and trace the sources of common processed foods back to the farm, and, ultimately, to sun, soil, water, and air. They also process their own foods, including applesauce, pickles, tortillas, crackers, and more. In the garden, they compost with worms and discover how the process of decomposition allows food to go from fork back again to the farm. Finally, they explore their own community to discover places where whole and minimally processed foods are available and accessible. Please refer to the Lesson-at-a-Glance Chart for lesson titles and descriptions.

#### **Fourth Grade**

Building on what they learned in third grade, in the fourteen FoodCorps fourth grade lessons, students examine their personal preferences for foods and explore the individual and societal factors that influence these preferences. They become more independent in food preparation by developing simple recipes for seasoning popcorn, making salad dressing, and planning healthy snacks to reflect their preferences and also what they've learned about healthy eating. Simultaneously, students examine the environmental impact of food choices as well as issues in equity of access to healthy foods, with a specific focus on how they can be agents of change within their school food system. Please refer to the Lesson-at-a-Glance Chart for lesson titles and descriptions.

#### **Fifth Grade**

Building on what they learned in fourth grade, in the fourteen FoodCorps fifth grade lessons, students start the year by creating a Full Potential Manifesto to identify achievable steps that will help them work toward living up to their full potential. Then they turn their attention to evaluating claims about food through interpreting nutrition labels and analyzing food advertisements. Meanwhile, they explore natural cycles and systems in the food system by mapping how matter cycles through the garden, moving from air and water into plants through photosynthesis; from plants to humans through harvesting and eating; and from humans to soil through building compost. They also explore how the seasonal cycle influenc-

es the food system and apply this knowledge by preparing recipes that can be modified to incorporate seasonal ingredients. These include a variety of pestos, a soup, and spring rolls. Finally, in fifth grade, students continue their efforts to become agents of change, broadening their focus from schoolwide to community-wide change. Please refer to the Lesson-at-a-Glance Chart for lesson titles and descriptions.

# FoodCorps Lesson Topic Clusters

The FoodCorps lessons below are grouped in mini-topic clusters. The lessons within a given cluster use multiple strategies to address a particular concept. For example, students learn the concept of “go, grow, glow” foods in the first lesson, make a snack with those foods in the second lesson, and plant go, grow, glow foods to reinforce the concept in the third

lesson. Please use this list as a reference for lessons that might be interesting to teach as a grouping. Note that there are lessons in some groupings that span multiple grades. Don't let this deter you from adapting each lesson to meet the specific needs of your group of students.

<b>Basic Plant Needs (kindergarten)</b>	<b>Page</b>
Up, Up, Up We Grow!	57
Let Us Grow Lettuce!	66
Fabulous Five	72
Bean Buddies	96
<b>Foundations of Where Food Comes from (kindergarten)</b>	
Who Eats What?	91
Perfect Parfaits	110
<b>Plant Parts (1st grade)</b>	
Plant Part Scavenger Hunt	144
Planting a Tops and Bottoms Bed	151
Plant Part Wraps	155
Plant Part Mystery	176
Imaginary Plants	198
Tops and Bottoms Popsicles	208
<b>Go, Grow, Glow (1st grade)</b>	
Go, Grow, Glow	139
The Great Balancing Act	169
Go, Grow, Glow Quesadillas	189

Planting a Go, Grow, Glow Bed	204
<b>Eat a Rainbow (2nd grade)</b>	
Eat a Rainbow	224
Plant a Rainbow	237
A Rainbow at the Salad Bar	271
Rainbow Grain Salad	290
Rainbow Smoothie (kindergarten)	87
<b>Sunflower Seeds (kindergarten)</b>	
Sunflower House	115
Sunny Honey Seed Snacks	120
<b>Seeds (2nd grade)</b>	
Bean Buddies (kindergarten)	96
Saving Seeds	245
How Seeds Travel	255
Seed Tape	261
<b>Insects (2nd grade)</b>	
Be a Bee!	276
Planting for Beneficial Insects	283
Insect Homes	305

<b>Stone Soup (2nd grade)</b>	
If Our Class Were a Soup . . .	221
Stone Soup (5th grade)	565
<b>Worms (3rd grade)</b>	
Worm Bin Wonders	331
Exploring Our Worm Bin	365
<b>Staple Grains (3rd grade)</b>	
Tortilla Time!	354
Breaking Down Rocks, Building Up Bread	376
Whole Grain Crackers	397
<b>Processed vs. Whole Foods (3rd grade)</b>	
Get to the Source	315
Let's Jam!	358
<b>Food System (4th grade)</b>	
Let's Jam!	358
Neighborhood Food Maps (3rd grade)	373
World Travels of Food	460
Food Packaging	482
<b>Flavor Profiles (4th grade)</b>	
Choose-Your-Own-Flavor Popcorn	435
Salad Dressing Challenge	468
<b>Planning and Designing Garden Space (4th grade)</b>	
Garden Grids	486
Seed Tape (2nd grade)	261
A Patchwork Garden Quilt	365
Seasonal Food Wheels (5th grade)	527
<b>Salsa (4th grade)</b>	
Plant a Salsa Bed	506
What's in My Salsa? (5th grade)	516

<b>Decomposition (5th grade)</b>	
Cycle of a Nutrient	578
Break it Down	583
Rotting Away, Day by Day	596
<b>Energy Transfer (5th grade)</b>	
What Do Plants Eat?	520
Web of Life	550
Cycle of a Nutrient	578
<b>Setting Goals (5th grade)</b>	
Full Potential Manifesto	512
Gratitude Feast	592
<b>Celebratory Lessons</b>	
Tea Time (1st grade)	165
Stone Soup (5th grade)	565
Celebrating the Autumn Harvest (3rd grade)	348
Gratitude Feast (5th grade)	592



# FoodCorps Lesson Short Lists

The lists below have been designed for easy reference when trying to identify which lesson to choose in a specific teaching scenario. For instance, if you want to get crafty, you might search for a lesson under the “Lessons that Feature Arts and Crafts” list. If you are trying to focus on literacy with students, reference the “Lessons with a Literature Connection” list. Do you want to do some cooking with students but don’t have a stove? Check out the “Cooking-Related: Don’t Require Heat or Electrical Source During Lesson” list.

## Garden Lessons

LESSON	PAGE
Biodiversity in the Garden	233
Break It Down	583
Celebrating the Autumn Harvest	348
Fabulous Five: What a Plant Needs to Thrive	72
Garden Grids	486
Getting to Know the Garden	439
Insect Homes	305
Let Us Grow Lettuce!	66
Looking Closely at Leaves	215
Plant a Go, Grow, Glow Bed	204
Plant a Pizza	128
Plant a Rainbow	237
Plant a Salsa Bed	506
Plant Families	407
Planting a Tops and Bottoms Bed	151
Planting for Beneficial Insects	283
Planting the Three Sisters	394
Putting the Garden to Bed	540
Rotting Away, Day by Day	596
Saving Seeds	245
Sensory Explorations	135
Tea Time	165
That’s Life!	329

## Lessons with a Literature Connection

LESSON	BOOK	PAGE
Agents of Change	<i>Harvesting Hope: The Story of Cesar Chavez</i> by Kathleen Krull	429
Bean Buddies	<i>One Bean</i> by Anne Rockwell	96
Bee a Bee!	<i>The Thing About Bees: A Love Letter</i> by Shabazz Larkin	276
Biodiversity in the Garden	<i>Just Ask! Be Different, Be Brave, Be You</i> by Sonia Sotomayor	233
Breaking Down Rocks, Building Up Bread	<i>Bread, Bread, Bread</i> by Anna Morris or <i>Bread is for Eating</i> by David and Phyllis Gershator	376
Budding Tastes	<i>Sylvia's Spinach</i> by Katherine Pryor, or <i>I Will Never Not Ever Eat a Tomato</i> by Lauren Child	105
Exploring Our Worm Bin	<i>Wiggling Worms at Work</i> by Wendy Pfeffer	365
Go, Grow, Glow Quesadillas	<i>Round is a Tortilla</i> by Roseanne Greenfield Thong	189
How Seeds Travel	<i>A Fruit is a Suitcase for Seeds</i> by Jean Richards	255
If Our Class Were a Soup . . .	<i>Stone Soup</i> by Jon J. Muth	221
Life on the Farm	<i>Summer Sun Risin'</i> by W. Nikola-Lisa	403
Mindful Tasting	<i>My Five Senses</i> by Alike	53
Our Food Traditions	<i>The Sandwich Swap</i> by Rania Al-Abdullah and Kelly DiPucchio	212
People Who Feed Us	<i>Before We Eat: From Farm to Table</i> by Pat Brisson or <i>Zora's Zucchini</i> by Katherine Pryor	125
Plant a Pizza	<i>All the Way to America: The Story of a Big Italian Family and a Little Shovel</i> by Dan Yaccarino <i>Fidget Grows a Pizza Garden</i> by Jodie Fitz <i>How a Seed Grows</i> by Helene J. Jordan	128
Plant Part Mystery	<i>Tops &amp; Bottoms</i> by Janet Stevens	176
Planting a Tops and Bottoms Bed	<i>Tops &amp; Bottoms</i> by Janet Stevens	151
Stone Soup	<i>Stone Soup</i> by Jon J. Muth	565
Sunflower House	<i>Sunflower House</i> by Eve Bunting	115
That's Life!	<i>Pumpkin Circle</i> by George Levenson or <i>The Tiny Seed</i> by Eric Carle	329
The World Travels of Food	<i>How to Make an Apple Pie and See the World</i> by Marjorie Priceman	460
Tortilla Time!	<i>The First Tortilla</i> by Rudolfo Anaya	354
Up, Up, Up We Grow!	<i>Lola Plants a Garden</i> by Anna McQuinn or <i>From Seed to Plant</i> by Gail Gibbons	557
Veggie Wraps	<i>Rah, Rah, Radishes!</i> by April Pulley Sayre	69
Who Eats What?	<i>My Very First Book of Food</i> by Eric Carle	91

## Lessons with a Science Connection

LESSON	NEXT GENERATION SCIENCE STANDARD CONNECTION	PAGE
Be a Bee!	NGSS 2–LS2.A Interdependent Relationships in Ecosystems Plants depend on animals for pollination or to move their seeds around.	276
Bean Buddies	NGSS K–LS1.C: Organization for Matter and Energy Flow in Organisms All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.  NGSS 1–LS1.A: Structure and Function All organisms have external parts . . . Plants also have different parts (roots, stems, leaves, flowers, fruits, and seeds) that help them survive and grow.	96
Biodiversity in the Garden	NGSS 2–LS4.D: Biodiversity and Humans There are many different kinds of living things in any area, and they exist in different places on land and in water.	233
Break It Down	NGSS 5–LS.2.A: Interdependent Relationships in Ecosystems The food of almost any animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants, while decomposers restore some materials back to the soil.	583
Cycle of a Nutrient	NGSS 5–LS.2.A: Interdependent Relationships in Ecosystems The food of almost any animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants, while decomposers restore some materials back to the soil.	578
Exploring Our Worm Bin	NGSS 3–LS4.D: Biodiversity and Humans Populations live in a variety of habitats, and change in those habitats affects the organisms living there.  NGSS 3–LS2.C: Ecosystem Dynamics, Functioning, and Resilience When the environment changes in ways that affect a place’s physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die.	365
Fabulous Five: What a Plant Needs to Thrive	NGSS–LS1.C: Organization for Matter and Energy Flow in Organisms. LS1.C: Organization for Matter and Energy Flow in Organisms. All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1)	72
Getting to Know the Garden	NGSS 4-LS1-2 Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.	439

How Seeds Travel	NGSS 2–LS2.A: Interdependent Relationships in Ecosystems •Plants depend on water and light to grow. •Plants depend on animals for pollination or to move their seeds around.	255
Imaginary Plants	NGSS 1–LS1.A: Structure and Function All organisms have external parts . . . Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.	198
Insect Homes	NGSS 2–LS4.D: Biodiversity and Humans There are many different kinds of living things in any area, and they exist in different places on land and in water.  NGSS K-2.ETS1.B: Developing Possible Solutions Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people	305
Let Us Grow Lettuce!	NGSS K–LS1.C: Organization for Matter and Energy Flow in Organisms All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.	66
Looking Closely at Leaves	NGSS 1–LS3.B: Variation of Traits Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways.	215
Perfect Parfaits	NGSS K–LS1.C: Organization for Matter and Energy Flow in Organisms All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.	110
Plant a Rainbow	NGSS 2–LS4.D: Biodiversity and Humans There are many different kinds of living things in any area, and they exist in different places on land and in water.	237
Plant Families	NGSS 3–LS3.A: Inheritance of Traits Many characteristics of organisms are inherited from their parents. Other characteristics result from individuals’ interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.  NGSS 3–LS3.B: Variation of Traits Different organisms vary in how they look and function because they have different inherited information. The environment also affects the traits that an organism develops.	407
Plant Part Mystery	NGSS 1–LS1.A: Structure and Function All organisms have external parts . . . Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.	176

Plant Part Scavenger Hunt	<p>NGSS 1–LS1.A: Structure and Function</p> <p>All organisms have external parts . . . Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.</p>	144
Plant Part Wraps	<p>NGSS 1–LS1.A: Structure and Function</p> <p>All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.</p>	155
Planting a Tops and Bottoms Bed	<p>NGSS 1–LS1.A: Structure and Function</p> <p>All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.</p>	151
Planting for Beneficial Insects	<p>NGSS 1–LS2.A: Interdependent Relationships in Ecosystems</p> <ul style="list-style-type: none"> <li>• Plants depend on water and light to grow.</li> <li>• Plants depend on animals for pollination or to move their seeds around.</li> </ul>	283
Putting the Garden to Bed	<p>NGSS 5–LS2.A: Interdependent Relationships in Ecosystems</p> <p>The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem.</p>	540
Root-View Cups	<p>NGSS 1–LS1.A Structure and Function</p> <p>All organisms have external parts . . . Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.</p>	183
Rotting Away, Day by Day	<p>NGSS 5–LS2.A: Interdependent Relationships in Ecosystems</p> <p>The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem.</p>	596

Saving Seeds	<p>NGSS 2-LS2.A: Interdependent Relationships in Ecosystems Plants depend on water and light to grow. Plants depend on animals for pollination or to move their seeds around.</p> <p>3rd Grade NGSS NGSS 3-LS3.A: Inheritance of Traits – Many characteristics of organisms are inherited from their parents. Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.</p> <p>NGSS 3-LS3.B: Variation of Traits Different organisms vary in how they look and function because they have different inherited information. The environment also affects the traits that an organism develops.</p>	245
Sunflower House	<p>NGSS K-LS1.C: Organization for Matter and Energy Flow in Organisms All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.</p>	115
That's Life!	<p>NGSS 3-LS1.B: Growth and Development of Organisms Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.</p>	329
Web of Life	<p>NGSS 5-PS3-1 Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.</p> <p>NGSS 5-LS2-1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p>	550
What Do Plants Eat?	<p>NGSS 5-LS1.C Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. Plants acquire their material for growth chiefly from air and water.</p>	520
Who Eats What?	<p>NGSS K-LS-1.C: Organization for Matter and Energy Flow in Organisms All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.</p>	91
World Travels of Food	<p>NGSS 5-ESS3.C: Human Impacts on Earth Systems Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.</p>	460
Worm Bin Wonders	<p>NGSS 3-LS.4.D Populations live in a variety of habitats, and change in those habitats affects the organisms living there.</p>	331

## Lessons with a Math Connection

LESSON	COMMON CORE MATH STANDARD CONNECTION	PAGE
A Patchwork Garden Quilt	CCSS.MATH.CONTENT.4.MD.A.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...	465
From Beautiful Beans to Delicious Dip!	CCSS.MATH.CONTENT.K.MD.B.3. Classify objects into given categories; count the number of objects in each category and sort the categories by count.  CCSS.MATH.CONTENT.K.CC.C.6. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.	100
Fun with Fruit Salad	CCSS.MATH.CONTENT.2.OA.C.3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.	241
Garden Grids	CCSS.MATH.CONTENT.4.MD.A.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.	486
How Seeds Travel	Work with equal groups of objects to gain foundations for multiplication. CCSS.MATH.CONTENT.2.OA.C.3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.	255
Perfect Parfaits	CCSS.MATH.CONTENT.K.CC.B.5 Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.	110
Seed Tape	CCSS.MATH.CONTENT.2.OA.C.3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.	261

Sugar Showdown	<p>Convert like measurement units within a given measurement system.</p> <p>CCSS.MATH.CONTENT.5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.</p> <p>CCSS.MATH.CONTENT.5.MD.C.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.</p>	570
World Travels of Food	<p>CCSS.MATH.CONTENT.5.NBT.A.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.</p> <p>CCSS.MATH.CONTENT.5.NBT.A.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.</p>	460

### Cooking-Related: Lessons That Require Heat or Electrical Source

LESSON	PAGE
All in for Applesauce	311
From Beautiful Beans to Delicious Dip!	100
Go, Grow, Glow Quesadillas	189
Rainbow Smoothie	87
Reimagined Snacks	491
Sauté	266
Stone Soup	565
Tea Time	165
Tortilla Time!	354
Whole Grain Crackers	397

### Cooking-Related: Lessons That Don't Require Heat or Electrical Source

LESSON	PAGE
Choose-Your-Own-Flavor Popcorn*	435
Fun with Fruit Salad	241



Gratitude Feast**	592
Green Sauce Around the World	532
Let's Jam	358
Perfect Parfaits	110
Plant Part Wraps	155
Quick, Pickle That!*	342
Rainbow Grain Salad*	290
Rolling into Spring*	588
Root Fruit Slaw	370
Salad Dressing Challenge	468
Sunny Honey Seed Snacks	120
The Great Balancing Act	169
Tops and Bottoms Popsicles*	208
Veggie Wraps	69
What's In My Salsa?	516

\* These lessons don't require heat or electricity during the lesson itself but do require it during lesson preparation or follow-up.

\*\* This lesson lets students and teachers choose what to prepare, so the equipment requirements will depend on what you choose to make.

## Songs That Are Included in FoodCorps Lessons

LESSON	SONG	PAGE
Imaginary Plants	"Roots, Stems, Leaves" by the Banana Slug String Band	198
Let Us Grow Lettuce!	"Sun, Soil, Water, Air" by the Banana Slug String Band	66
Plant Part Scavenger Hunt	"Roots, Stems, Leaves" by the Banana Slug String Band	144
Root-View Cups	"My Roots Go Down" by Sarah Pirtle	183
Up, Up, Up We Grow!	"Sun, Soil, Water, Air" by the Banana Slug String Band	57
Worm Bin Wonders	"Gusano (I am a Worm)" by the Bungee Jumpin' Cows	331

## Lessons That Feature Arts and Crafts

LESSON	PAGE
Be a Bee!	276
Budding Tastes	105
Cycle of a Nutrient	578
Eat a Rainbow	224

Full Potential Manifesto	512
Go, Grow, Glow	139
Gratitude Feast	592
If Our Class Were a Soup . . .	221
Imaginary Plants	198
Insect Homes	305
Let Us Grow Lettuce!	66
Looking Closely at Leaves	215
Neighborhood Food Maps	373
People Who Feed Us	125
Plant a Pizza	128
Plant a Rainbow	237
Planting a Tops and Bottoms Bed	151
Root-View Cups	183
Saving Seeds	245
Seasonal Food Wheels	527
The Secret Strategies of Food Advertising	545
Who Eats What?	91

## Lessons That Require or Benefit From More Than One Session

LESSON	DESCRIPTION OF SESSIONS	PAGE
Agents of Change	The first session focuses on hearing about a food activist, brainstorming food and health issues within the school, and generating ideas for solutions. The second session focuses on implementing the solution.	429
Becoming Cafeteria Mentors	The first session focuses on learning to navigate the cafeteria salad bar and preparing to present to younger students. The second session focuses on presenting to younger students.	452
Changemakers	The first session focuses on hearing about a food activist, brainstorming food and health issues within the community, and generating ideas for solutions. The second session focuses on implementing the solution.	558
Get to Know a Crop	The first session focuses on students researching a crop. The second session focuses on students presenting arguments for whether they should grow that crop in their school garden.	424

Gratitude Feast	The first session focuses on planning a gratitude feast. The second session focuses on hosting the feast.	592
Learning from Our Elders	The first session focuses on preparing to interview elders about food and healthy eating. The second session focuses on hosting elders to share stories with the class.	475
People Who Feed Us	In the first session students listen to a story and brainstorm people in their community who help to feed them. In the second session students draw a portrait of one of these community members.	125
Poetic Produce	In the first session students do a tasting activity, generate descriptive words, and start writing in groups. The second session allows students to finish writing and perform their creative writing for the class.	419
Rotting Away, Day by Day	In the first session, students look for signs of decomposition in the garden, consider the various factors that influence the rate of decomposition, and then bury a specific object. The second session occurs a couple weeks later, when they unearth their object and make observations.	596
The Secret Strategies of Food Advertising	The first session focuses on introducing and discussing advertisement strategies. The second session has students create their own fruit and veggie advertisements.	545
Tops and Bottoms Popsicles	The first session students identify plant parts and help to prepare popsicles. The second session gives students a chance to taste the popsicles once they're frozen.	208
Quick, Pickle That!	The first session students make custom quick pickles in groups. In the second session students taste each group's pickles.	342
Who Eats What?	The first session includes discussion of what different animals eat, reading a story, and cutting and sorting images. In the second session, students assemble and color books and share them with classmates.	91

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# Lessons with Project-Based Learning Opportunities





# Service Member Notes

Please use this space to jot down notes to help you prepare for leading hands-on lessons. This is a great space to record ideas for adapting a lesson to meet the needs of your students and reflect the local culture and wisdom shared by community members and partners. Remember to also include ideas shared by school staff and teachers, from tips about the ideal time to lead a specific lesson in the garden to how the lesson might connect to state or district standards.

Lesson Title and Page:
Notes
Lesson Title and Page:
Notes



Lesson Title and Page:

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Notes







# FOODCORPS LESSONS

These lessons were developed by FoodCorps in collaboration with FoodCorps alumni, trainers, and partners in the field. We truly appreciate the input from this team and look forward to expanding FoodCorps Lessons to meet the needs of our corps in the future. A special thanks to Presenting Sponsor Target, FoodCorps National Leader for Healthy Kids.

**PRESENTING SPONSOR**



FoodCorps National Leader for Healthy Kids

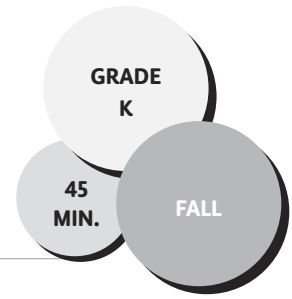


The background of the page is a light gray color with a repeating pattern of various fruits and vegetables. The items include watermelon slices, lemons, carrots, broccoli, grapes, and other produce, all rendered in a simple, line-art style.

# **Grade K LESSONS**

# Garden Explorations

**THEME:** LIVING UP TO OUR FULL POTENTIAL



## ESSENTIAL QUESTION

*How can we be kind to the living things in the garden, including plants, animals, and people?*

## LEARNING OBJECTIVE

✓ Students will be able to explain the care and safety agreements they will follow in the garden.

## CONCEPTS

agreements care harvest respect

### *Engaging the Classroom Teacher*

- During Action Step 5, suggest that the teacher help pairs of students find each other and their objects while following the agreements you've just established.
- Encourage the teacher to take their class out to the garden without you, and reinforce the garden agreements.

## LESSON DESCRIPTION

This lesson serves as an introduction to the garden by providing exploratory time and reviewing garden agreements.

## MATERIALS

- Garden Hunt Cards (p. 50)
- Poster board
- Markers
- Chime or whistle (optional)

## PREPARATION

- ▶ Print and presort Garden Hunt Cards to ensure you have enough pairs for the size of your class, and take out any cards with images of objects that students wouldn't find in your school's garden. Be sure to have multiple copies of the same pairs.

## ACTION STEPS

**1. Making Introductions:** Gather students in a circle and, one at a time, have them say their name and something about themselves, such as their favorite fruit or vegetable or their favorite thing to do outside. **(5 min.)**

**2. Playing Garden I Spy:** Demonstrate how to play I spy. Give an example such as *I spy with my little eye something that is really tall and has a yellow flower*. Accept guesses from students about what the object is. Then assign students partners, and have them play in pairs, taking turns with spying and finding objects. Before sending students out to explore, let them know the physical boundaries for their

exploration and how you will be calling them back, such as by saying, *When you hear me crow like a rooster, it's time to come back to this spot and gather in a quiet circle to hear what's next.* Use this same callback strategy every time with this group so they become accustomed to it. Options include crowing like a rooster, howling like a coyote, ringing a chime, blowing a whistle, or using a call-and-response chant. You might also ask the classroom teacher what strategy the class uses daily and adopt that. **(10 min.)**

**3. Developing Group Agreements:** Use your callback strategy to gather students back together. Once they're gathered, ask, *Did*



*you see any living things in the garden?* Lead students to consider how they could care for the living plants and creatures, including

*themselves, while they are in the garden.*

Explain, *It's important that we pay attention and keep all those living things safe and cared for.* Ask the following questions, one at a time:

*How can we keep plants safe and cared for?*

*How can we keep insects and other critters safe and cared for?*

*How can we keep each other*

*safe and cared for?* As students share answers

to each question, summarize their ideas, and

develop a few care and safety agreements that

they can follow when they are in the garden.

Keep the agreements brief, and come up with

a physical gesture to correspond with each

agreement. Record these so you can create a

visual poster later on to refer to them each time

this group visits the garden. **(10 min.)**

**4. Touring Care and Safety Agreements:** Create

fun, physical, and interactive ways to review

the care and safety agreements. For example, if

you have the agreement *Feet on the path!*

have students march in place and chant the

agreement. Or, for *Harvest with two hands,*

have them raise two hands and wiggle their

fingers. So when you need to remind students

about the agreement later, you have a hand

gesture to reinforce it. Consider taking stu-

dents on a tour or parade through the garden

to practice the agreements. As you're marching,

ask questions such as, *Can I pick this?* Have

students chant back an agreement such as *Ask*

*before trying.* **(5 min.)**

**5. Playing Garden Hunt Matching Game:** Show

students the Garden Hunt Cards, and explain

that they'll play a game where they'll find their

partner by finding who has the same card.



Once they find their partner, have the pair hunt around in the garden for what is pictured on their card. After they've found their object, tell them to come back to your gathering space. Whenever a pair comes back, send them out for a second or third round by giving them a new object to find. As they play, walk around the garden and reinforce the expectations by saying things such as, *You're being very careful to protect our plants by staying on the pathways!* or *It was thoughtful of you to leave that worm alone when you found it.* Also remind students that when we care for the edible plants (i.e., the plants we eat) growing in the garden, we are caring for the people who will eat them after they are harvested. **(10 min.)**

After the class has finished, create an illustrated poster that you can continue to post agreements on and refer to in future lessons. Include the agreements you developed together, including at least one example under each of the following three headings: Taking Care of Plants, Taking Care of Animals, and Taking Care of Ourselves.

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What was your favorite thing you saw in the garden today?*
- *What do you look forward to doing in the garden?*

### Check for understanding

- *What is one of the care and safety agreements*

*that's important to remember while you're in the garden?*

- *Why is it important to be safe and show care in the garden?*

## ADAPTATIONS

**Leaf-Match Variation:** Instead of using the Garden Hunt Cards, you can pass out leaves you've picked from different plants in the garden. Then students can find their classmate with the same leaf and together find the plant that the leaf belongs to.

**Art Extension:** Once students find their object, have them sit with their partner and each draw the object on paper. Alternately, have students draw a map of the garden.

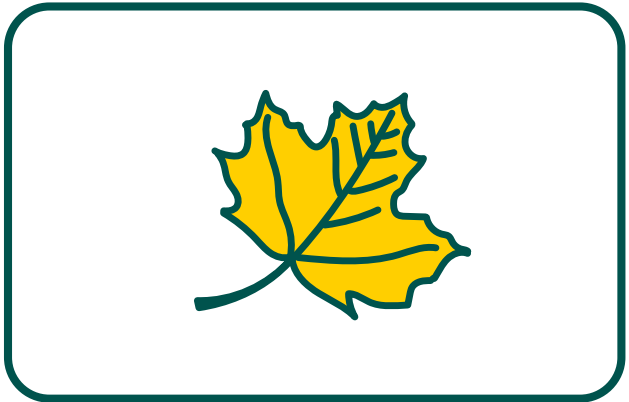
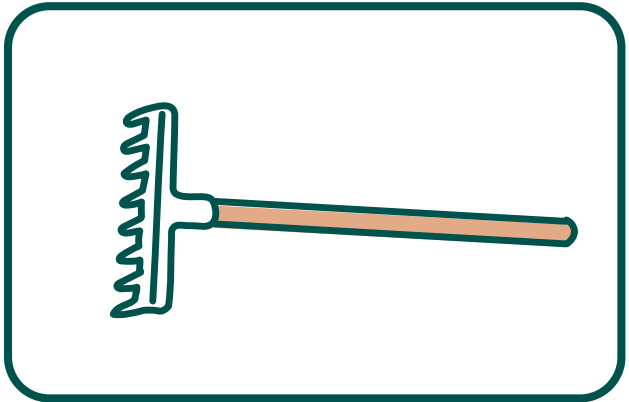
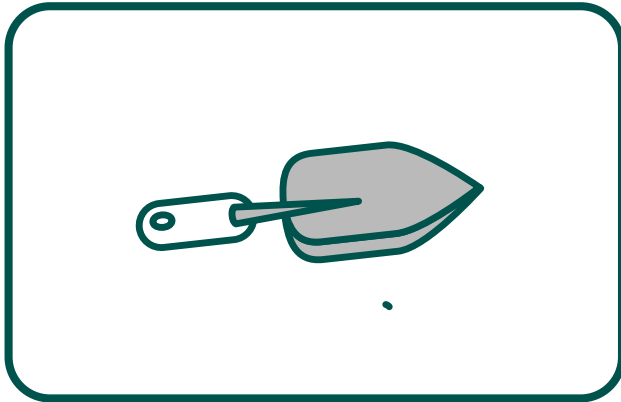
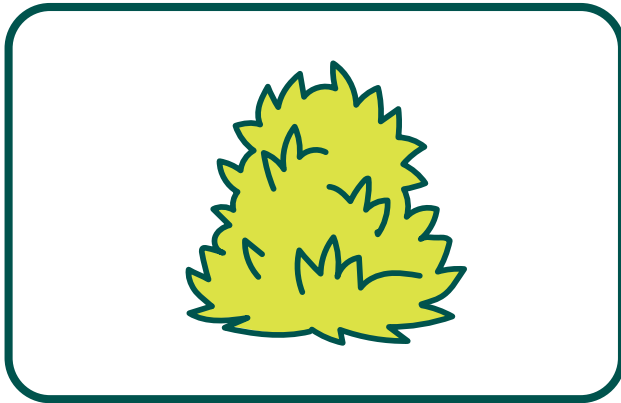
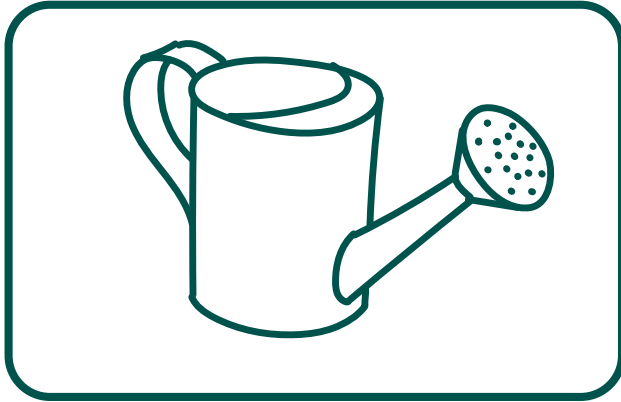
## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

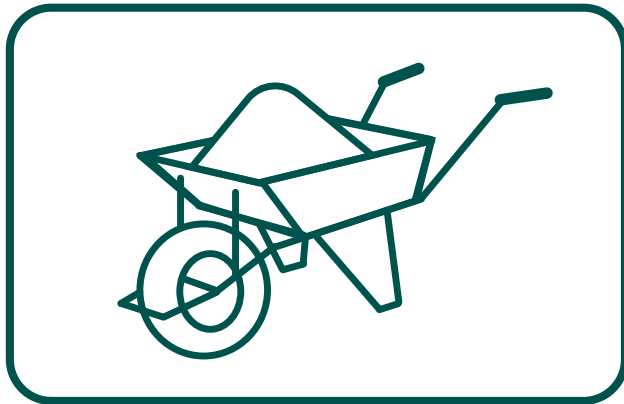
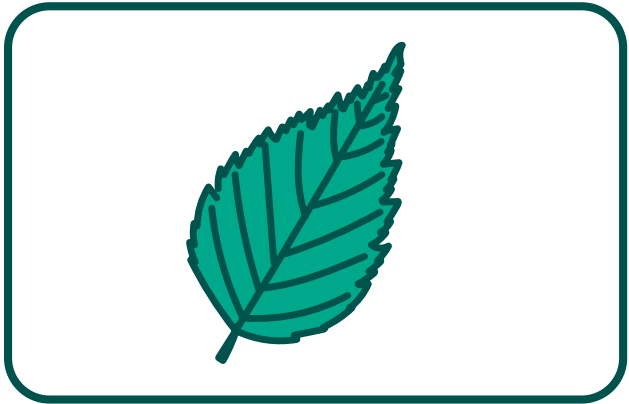
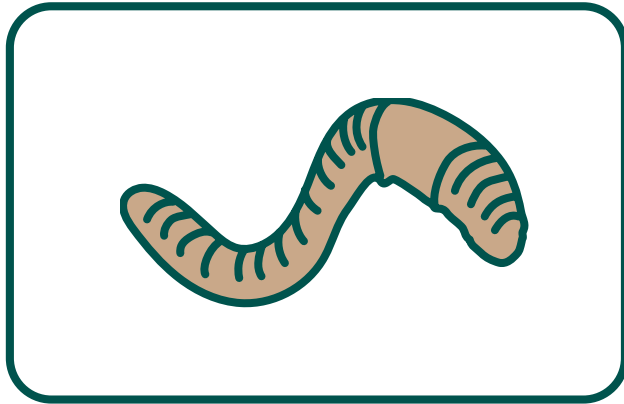
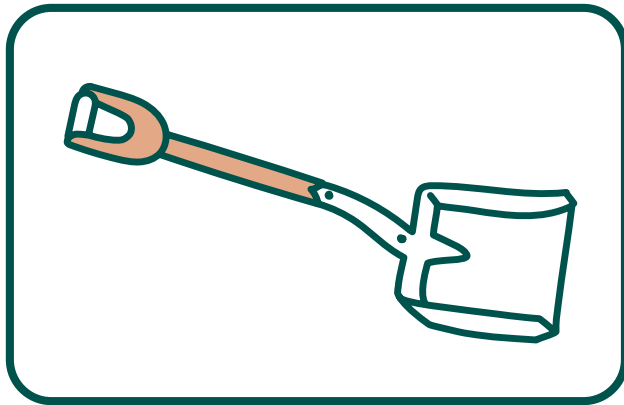
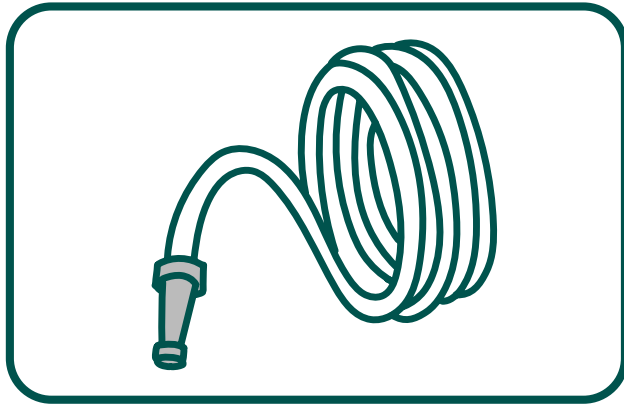
### CCSS.ELA-LITERACY.SL.K.1.A

Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).

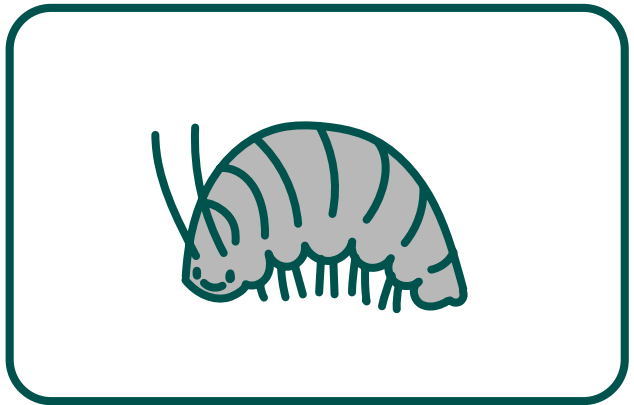
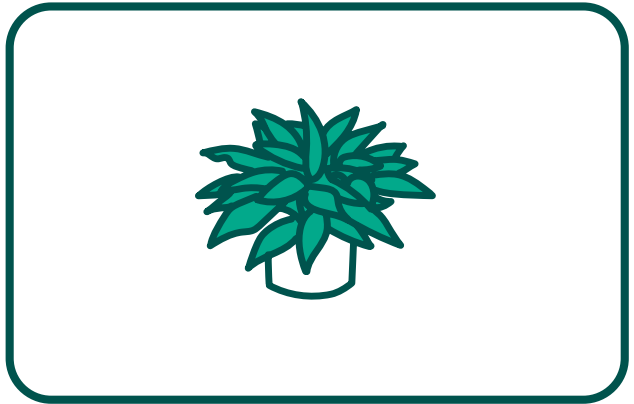
# Garden Hunt Cards



# Garden Hunt Cards

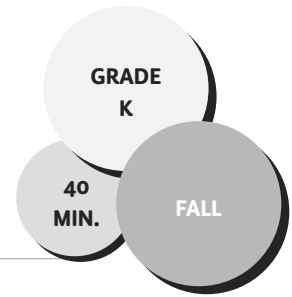


# Garden Hunt Cards



# Mindful Tasting

**THEME:** MAKING HEALTHY FOOD CHOICES



## ESSENTIAL QUESTION

*Why is it important to slow down and focus on our five senses while we eat?*

## LEARNING OBJECTIVE

✓ Students will be able to practice focusing on their senses while they eat.

## CONCEPTS

describing five senses mindful

### *Engaging the Classroom Teacher*

- During Action Step 2, encourage the teacher to pretend alongside students during the sensory field trip.
- During Action Step 5, ask the teacher to assist with handing out apples and ensuring students don't start eating them right away.

## LESSON DESCRIPTION

In this lesson, students learn the practice of slowing down and focusing on their senses while they're eating. They review the five senses, take an imaginary trip to an apple orchard, and end by mindfully eating two apple slices from two different varieties of apples.

## MATERIALS

- 2 varieties of apples (or other fruit); enough for each student to have 1 slice of each
- Descriptive Sensory Word Bank Poster (optional)
- Five Senses Poster (p. 56)

## PREPARATION

- › Cut each apple variety into one slice for each student, and put the apples on plates, ready to pass out.
- › Display the 5 Senses Poster.
- › Make a poster of the descriptive sensory word bank below:

SEE	TOUCH/ FEEL	SMELL	TASTE	HEAR
Red		Fresh	Juicy	Crunchy
Yellow	Smooth	Strong	Sweet	Crispy
Spotted	Rough	Dull	Sour	Quiet
	Bumpy	Stinky		
	Hard	Sweet		
	Soft			

## ACTION STEPS

**1. Engage:** Have students gather in a circle, and ask them if they can name the five senses. As students name each one, gesture to each corresponding body part, making glasses around the eyes for sight and sticking your tongue out for taste. You can also point to each body part on the poster. Say, *These are our five senses. (5 min.)*

**2. Sensory Field Trip:** Tell students that you're going to take them on a field trip in their minds to practice thinking about the five senses. Walk them through a sensory trip to an apple orchard (or other field trip appropriate for your location), miming all the different actions that you describe. Have them experience riding the bus and feeling the bumps in the road; students getting off the bus and smelling the farm; hearing the birds as you walk through the field; seeing the biggest, brightest apple in the tree; feeling their hearts beat as they climb up the tree, and tasting the apple at the end. Make it fun and physical by having students quietly run, climb, and jump in place. **(5 min.)**

### **3. Hand-Washing Break (5 min.)**

**4. Breathing Exercise:** Use an attention-getting strategy to bring students back to sitting quietly. Have them close their eyes and do a deep breathing exercise to gain focus and calm bodies. They might enjoy doing horse lips on the exhale. Do this a couple times or until the group is relaxed. **(5 min.)**

**5. Mindful Eating:** Explain to students, *Slowing down while eating helps us enjoy our food better. I'll be giving each of you a slice of apple, but we're going to take a really, really long time to eat it because we're going to notice everything we can about the apple using our five senses. And we're not going to eat it until I say to. Now everybody, close your eyes.* Once all eyes are closed, hand an apple slice to each student. Have students discuss each of your prompting questions with a classmate sitting beside them, so that everyone has a chance to share. You can then ask students to share what their neighbor said with the whole class.

**Touch:** Have students close their eyes and feel the apple with their fingers. Ask them to describe the texture of the skin and then the texture of the flesh to their neighbor. Ask them if it reminds them of something else they've touched.

**Smell:** With their eyes still closed, have students bring the apple to their noses and inhale. Ask them to describe the smell of the apple to their neighbor.

**Hear:** With their eyes closed, have students tap their fingernail on the skin and slide their fingertip along the skin and listen for any sounds.

**See:** Have students open their eyes and carefully examine the apple, describing the colors and shapes they see and any details they notice, for example bruises or mottled coloring.

**Taste:** Tell students to take one bite of their apple. Ask them to describe the taste and how the apple's taste changes as they continue chewing.

**Hear:** Have students use their ears again to listen to the sounds as they're munching on their apple. **(10 min.)**

**6. Repeat** entire sequence with a second variety of apple. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: *(5 min.)*

### Social and emotional learning

- *Did you enjoy eating your apple slowly? What other foods could you try eating like this?*
- *What would it be like if we ate our breakfast or lunch like this?*

### Check for understanding

- *What was the same, and what was different about the two apple varieties?*
- *Why do you think it's important to slow down and focus on all the things you can feel, see, hear, smell, and taste about your food?*

## ADAPTATIONS

**Reading:** Read the book *My Five Senses* by Ailiki to introduce or reinforce the concept of senses.

**Math Extension:** Have students vote on their favorite apple by moving to opposite sides of the room. Have students line up and observe which line is longer. Then count aloud together to see which apple is most popular.

**Mystery Canisters Variation:** Prepare mystery canisters with the fruit you'll be tasting as an opening engagement activity. For example, one canister would have apple seeds for students to hear, another would have sliced apples for them to smell, another would have a whole apple for them to feel, and then another would have images of an apple tree or blossoms for them to see.

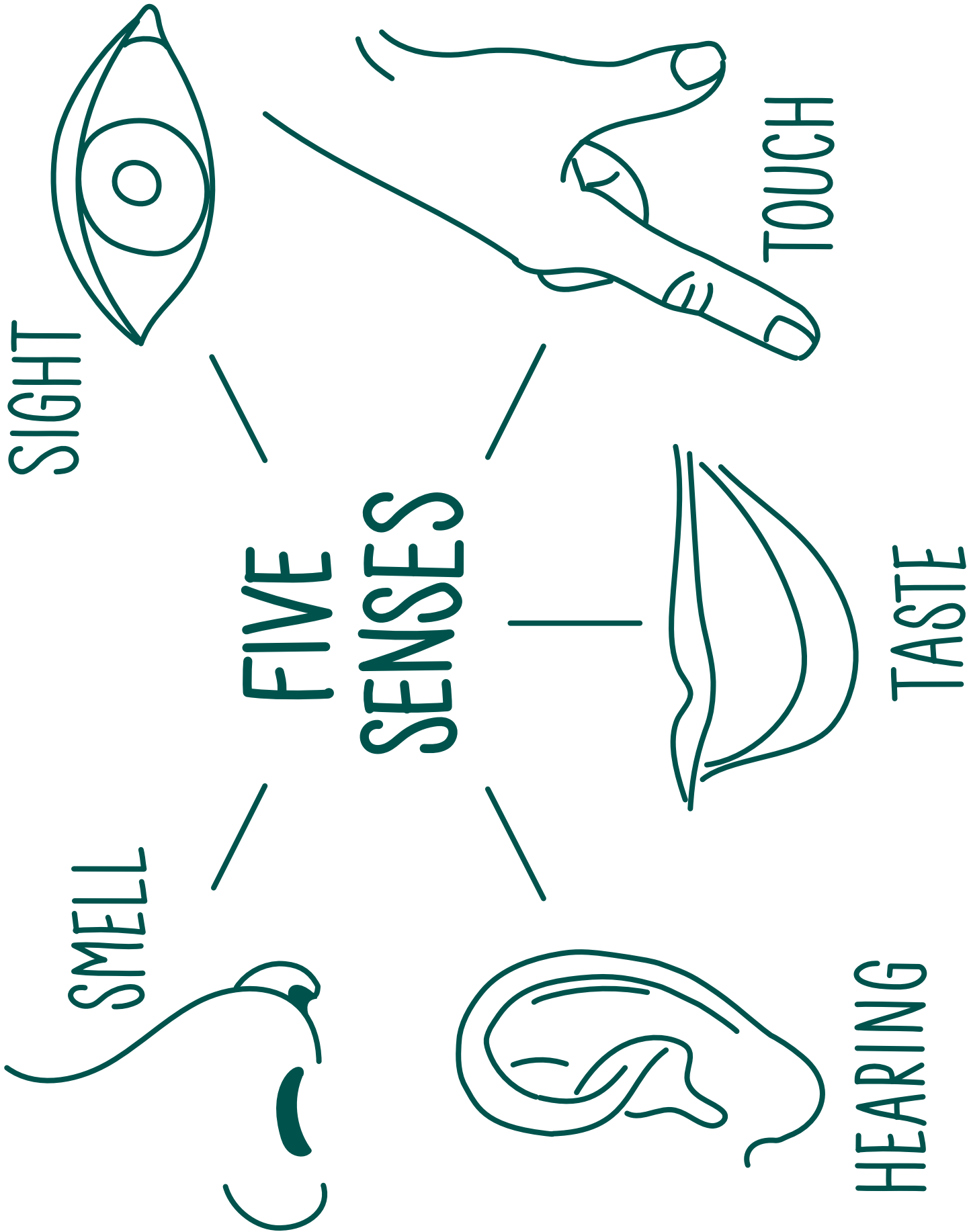
**Garden Setting:** You can lead students in mindfulness walks, noticing and describing the different smells, sounds, sights, and feel of the wind and the temperature. You can also try “sit spots” with older students, where each student finds a special quiet place to sit and observe the garden. They can make a “sound map” of their spot, noting every sound they hear while they're seated.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.SL.K.4

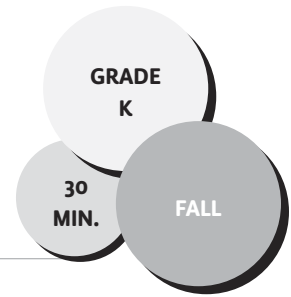
Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.





# Up, Up, Up We Grow!

**THEME:** EXPLORING THE ECOLOGY OF FOOD



## ESSENTIAL QUESTION

*How can we imagine what it feels like to be a plant?*

## LEARNING OBJECTIVE

✓ Students will be able to explain that a plant needs sun, soil, water, and air to grow.

## CONCEPTS

air soil space sun water

### *Engaging the Classroom Teacher*

During the role play in Action Step 4, suggest that the teacher help keep students engaged and moving their bodies in the spirit of the activity.

## LESSON DESCRIPTION

In this lesson, students play a guessing game, pretend to be a growing plant, and sing a song to consider what a plant needs to grow. This lesson is designed to be taught in conjunction with kindergarten lessons Let Us Grow Lettuce! and Fabulous Five.

## MATERIALS

- What a Plant Needs Poster (p. 60)
- Fruit and Vegetable Picture Cards (pp. 61-65)
- Props to represent each plant need (optional)
- Flashlight or cardboard cutout to represent sun
- Brown or beige sheet to represent soil
- Watering can or cardboard cutout of a raindrop to represent water
- Blue yarn or scarf to represent wind

## PREPARATION

- › Assemble or create your props.
- › Learn the “Sun, Soil, Water, Air” song by the Banana Slug String Band.
- › Find a way to display the What a Plant Needs Poster.

## ACTION STEPS

**1. Playing Who Am I Game:** Gather students in a circle. Tell them that you’re a mystery object (a plant), and have them guess what you are. Give students clues such as, *I really like the rain. I have lots of neighbors, but I don’t like to be too close to them. I cooperate with the bees! I get my food from the sun and air. My feet live in the ground.* Once they guess that you’re a plant, tell them that today you’ll be talking about what plants need to grow healthy and strong. Ask, *Have you or anyone you know ever had a plant? How did you care for it?* **(5 min.)**

**2. Singing:** Teach students the song, “Sun, Soil, Water, Air” by the Banana Slug String Band, displaying the What a Plant Needs Poster to reinforce the concepts. Incorporate hand gestures or movements for sun, soil, water and air. If you have time, do a freeze dance to the song, stopping on different words each time. **(5 min.)**

**3. Explain the Activity:** First, ask students to name their favorite fruit or vegetable. Have the Fruit and Vegetable Picture Cards displayed to help generate ideas. Alternately, you can pass one picture card to each student, and have them guess/share with the class what their fruit or vegetable is. Say, *We’re going to play a game where you each pretend that you’re a favorite fruit or vegetable seed, and you’ll use your bodies to show how you grow. Pretend I’m the gardener.* Before starting, have students check that they have space around themselves, and remind them to be careful of how they move so it doesn’t hurt others. Explain that seeds don’t like to be planted too close together either. **(5 min.)**

**4. Role Play:** Have students start as seeds, curled up on the ground. If using props, cover students’ legs with the sheet, and tell them that you’re planting them in the soil where they’ll need to be nice and warm to sprout. Ask, *Seeds, what else do you need before you can sprout?* (Water!) Walk around and “water” each student’s head with the watering can, and encourage them to sprout just a bit. Ask students again what they need. (Sun.) Say, *Yes, I hear that you make your very own food with energy from the sun, and carbon dioxide in the air helps, too!* Walk around, shining a flashlight on the students’ arms (careful not

to point it in their eyes) and waving your wind scarf or cutout. Encourage students to continue growing as you give them more water, sunshine, and air. Remind them that their feet are rooted in the soil, getting nutrients they need to grow strong. You can also remind them that they are rooted to deter them from moving around the space too much. Once the students are starting to stand tall with their arms up high, ask them individually what type of plant they are, and if they have a fruit, root, or leaf you can harvest. If you have extra time, you can repeat this whole cycle at different speeds, such as a speed round, a slow-motion round, or the like. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did it feel to use our bodies to pretend we were plants?*
- *How did we make sure we were safe with our bodies?*

### Check for understanding

- *How are plants like us? How are they different from us?*
- *How can we take care of plants that we’re growing?*

## ADAPTATIONS

**Reading:** To extend the lesson, between Action Steps 1 and 2, read *Lola Plants a Garden* by Anna McQuinn or *From Seed to Plant* by Gail Gibbons, and discuss what the plants in the story needed to grow.

**Mindful Movement Variation:** For a grounding activity, frame the role-play as a mindful movement sequence. Have students start as seeds curled in a ball on the ground, and then kneeling, sitting on their heels, or squatting and stretching their arms overhead as they grow, and finally standing in tree pose as an adult plant.

**Age (Grades 3–5):** If you have access to a field, try a game of Farmer Tag where there are a couple farmers who are it, trying to tag students to become seeds. Once a student is tagged by a Farmer, they crouch into a seed position. Then the student waves over the Water person (wearing a blue armband) and, after getting watered, sprouts one arm into the air. Then the student waves over the Sun person (wearing a yellow armband). Once the student has been tapped by both Sun and Water, the student stands with both arms up high, to show they're a fully grown plant, and the Farmer will come harvest them and bring them to the designated "farmer's market" (e.g., a soccer goalpost). Keep playing until the farmers and their sun and water helpers have all the students in the farmer's market or have a farmer's market jailbreak and switch roles.

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

### **NGSS K-LS1-1**

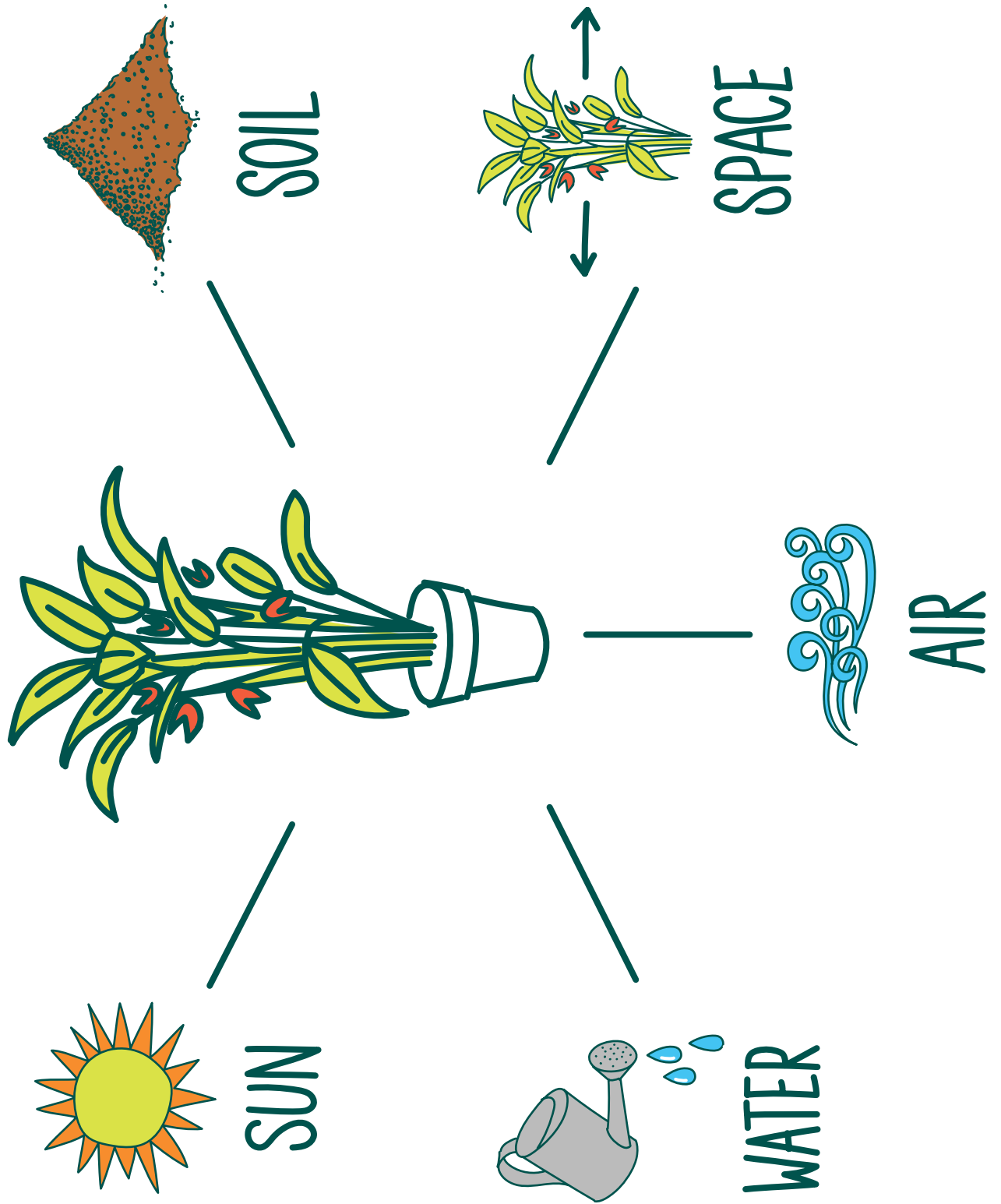
Use observations to describe patterns of what plants and animals (including humans) need to survive.

English Language Arts Common Core State Standards

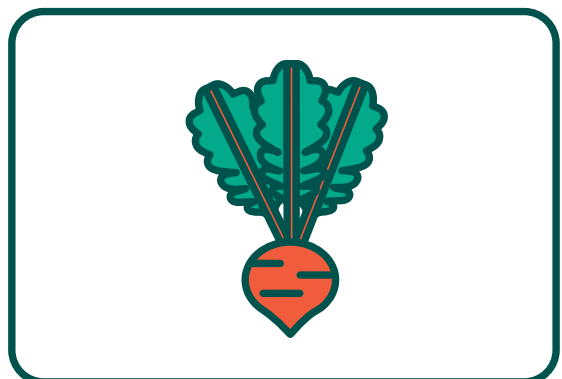
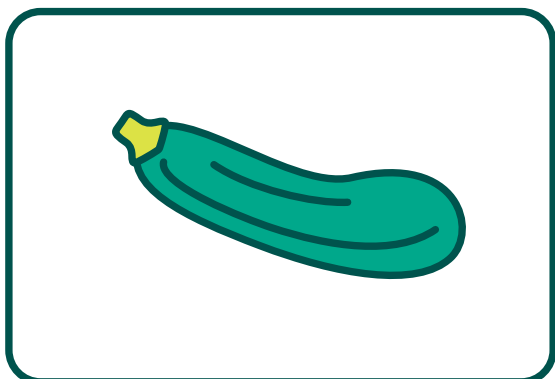
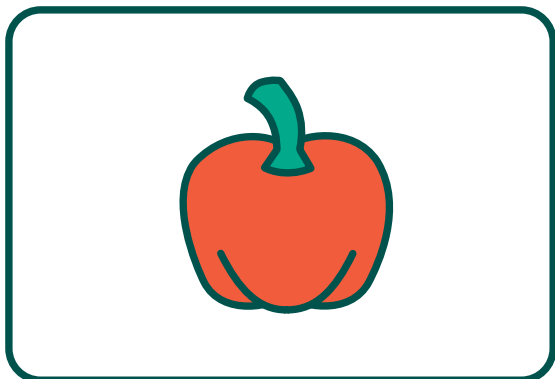
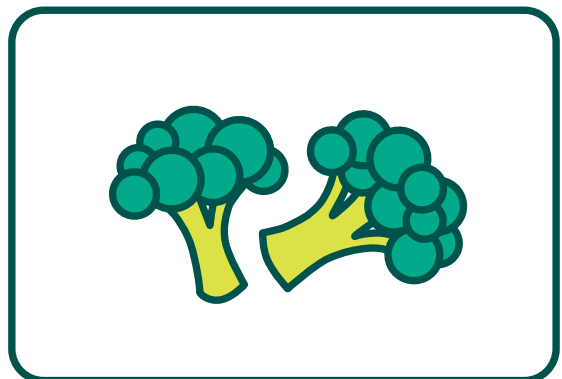
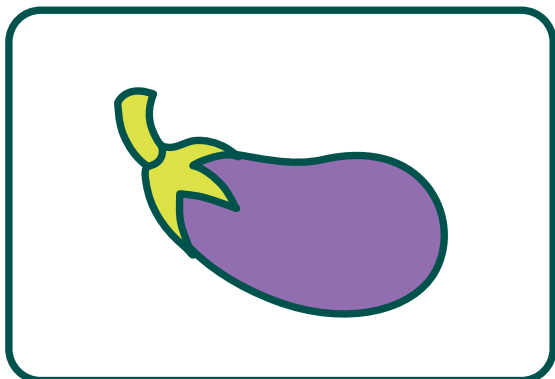
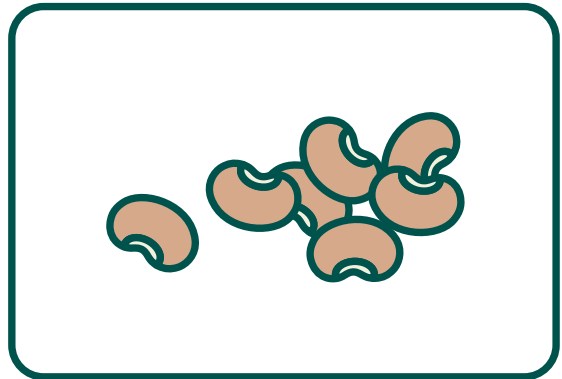
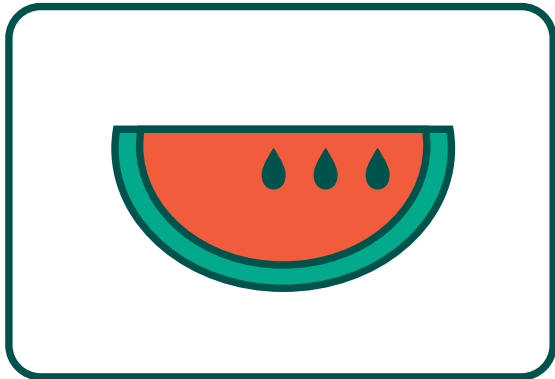
### **CCSS.ELA-LITERACY.SL.K.1**

Participate in collaborative conversations with diverse partners about *kindergarten topics and texts* with peers and adults in small and larger groups

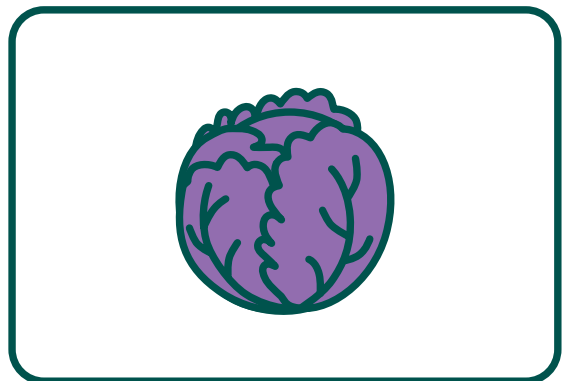
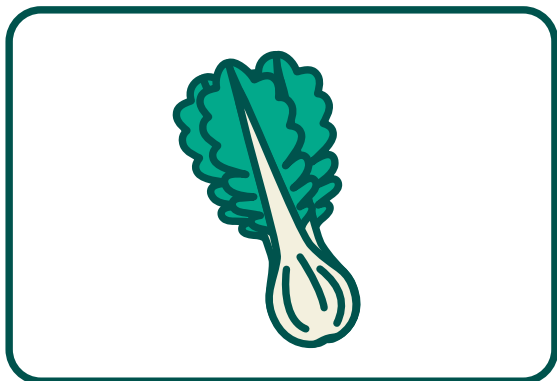
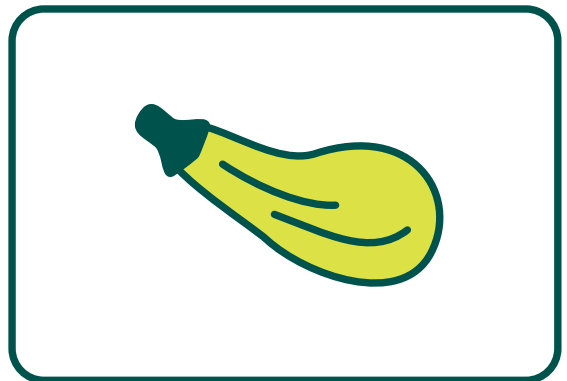
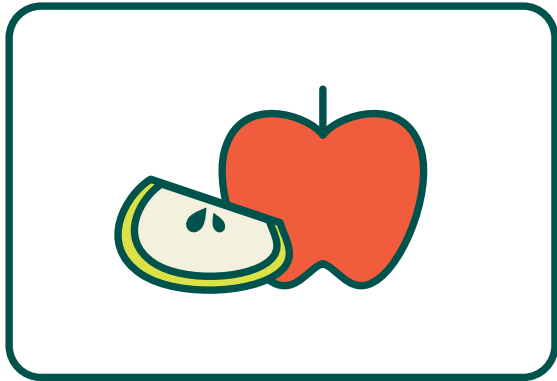
# What a Plant Needs



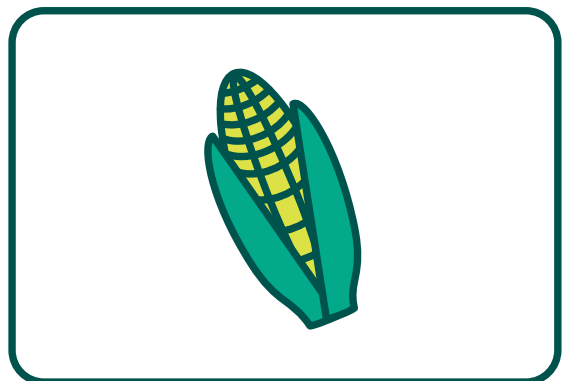
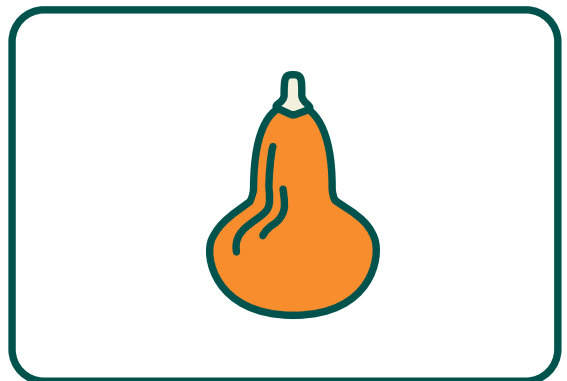
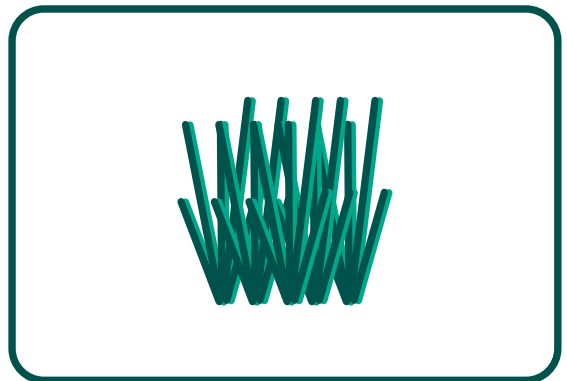
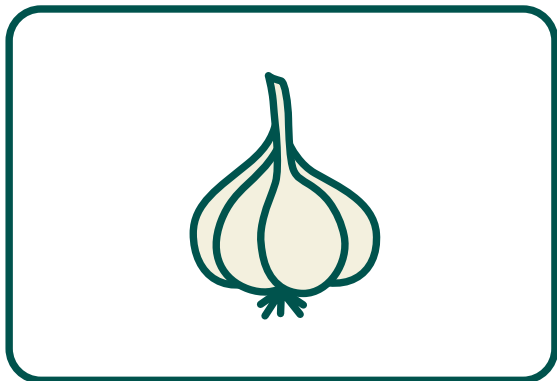
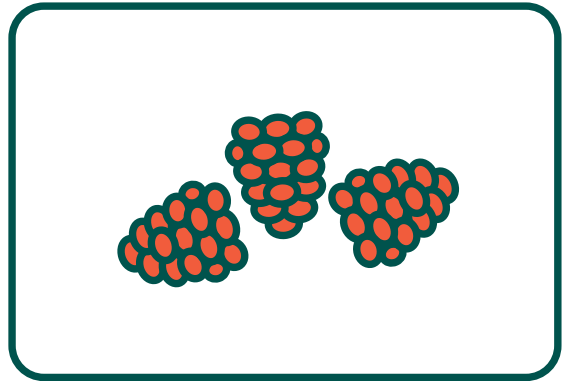
# Fruit and Vegetable Picture Cards



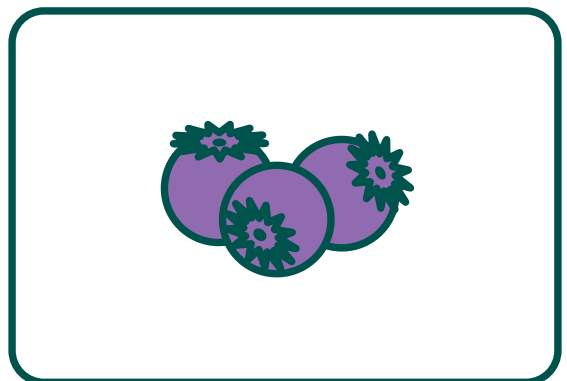
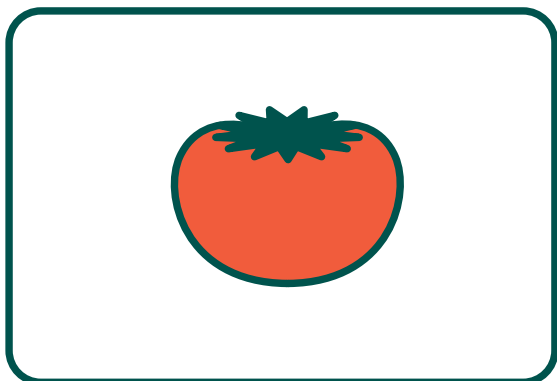
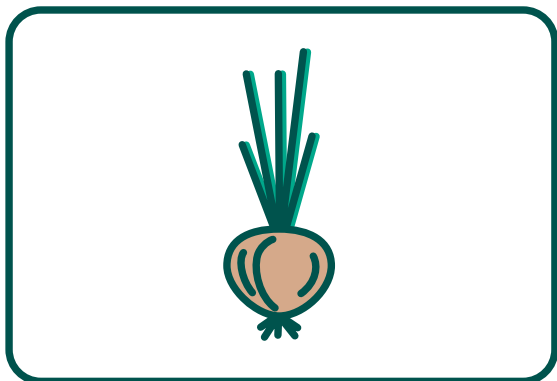
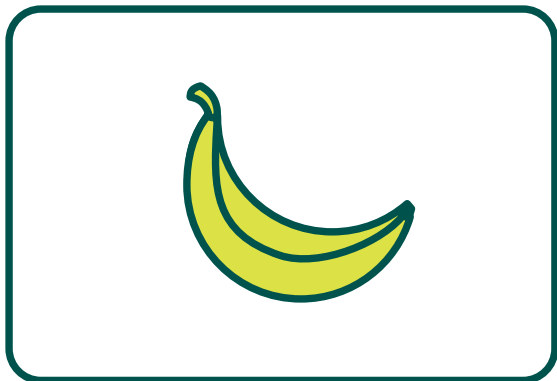
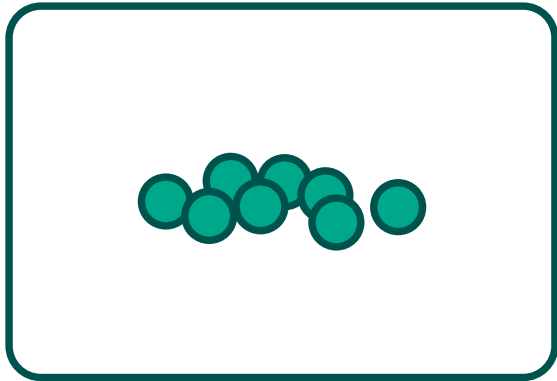
# Fruit and Vegetable Picture Cards



# Fruit and Vegetable Picture Cards

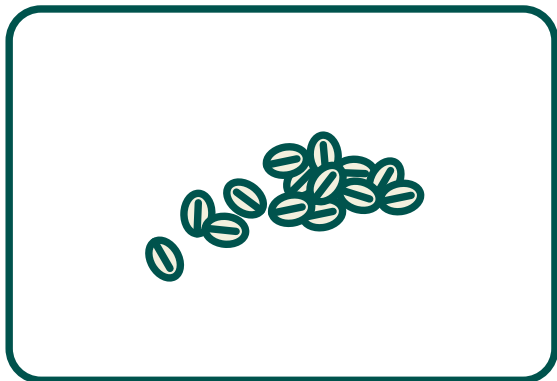
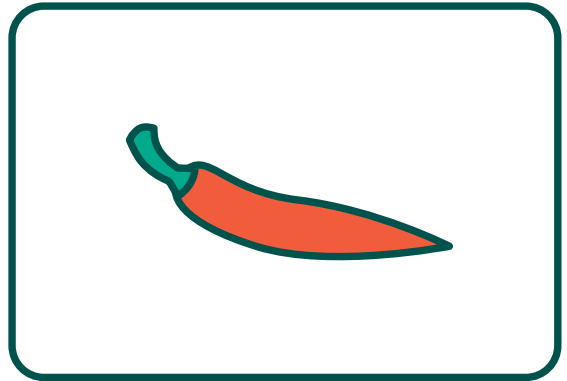
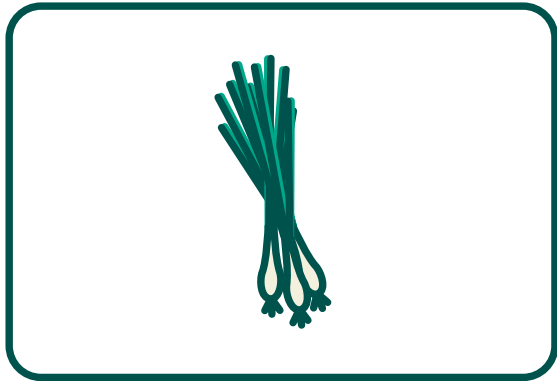


# Fruit and Vegetable Picture Cards



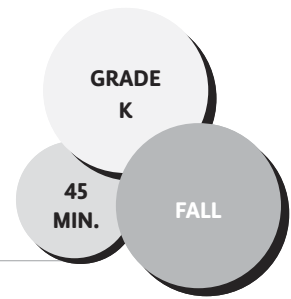


# Fruit and Vegetable Picture Cards



# Let Us Grow Lettuce!

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*How can we give plants everything they need to live and grow?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain what a plant needs to grow.
- ✓ Students will be able to sow seeds.

## CONCEPTS

harvest nutrients seed tool safety

### *Engaging the Classroom Teacher*

- During Action Step 2, suggest that the teacher take half the students to explore while you take the other half. Ask the teacher to model by participating in the tasting as well.
- During Action Step 4, ask the teacher to assist having students evenly spaced around the bed or to have them lead the seed broadcasting in a second bed for more space.

## LESSON DESCRIPTION

Students review what a plant needs to grow and then broadcast and water lettuce seeds in a prepared garden bed. This lesson is designed

to be taught in conjunction with *Up, Up, Up We Grow* and *Fabulous Five*.

## MATERIALS

- Approximately 1 cup of nursery-grade sand (available at garden centers)
- 1 2-gallon bucket or other container
- 3–4 packets of lettuce seeds, appropriate for your climate; loose-leaf varieties work best for broadcasting the seeds
- 1 large head of lettuce
- 5 watering cans or large bucket and recycled quart-sized yogurt containers
- What a Plant Needs Poster (p. 60)

## PREPARATION

- › Learn "Sun, Soil, Water, Air" by the Banana Slug String Band.
- › In your bucket or other container, mix lettuce seeds with sand, reserving enough seeds for each student to have one to observe.
- › Prepare the garden bed where students will broadcast the seeds.
- › Fill watering cans to be ready for students to share. You can make your own watering cans by collecting clean, empty, quart-sized yogurt containers and poking or drilling several holes in the bottom.
- › Display the What a Plant Needs Poster.

## ACTION STEPS

**1. Discussing:** Gather students in a circle. Give each student one of the reserved lettuce seeds. Ask them to close their eyes and squeeze their seeds until you tell them it's time to open their eyes. While their eyes are closed, place a head of lettuce in the center of the circle. Now tell them they can open their eyes to see what their seeds can make! Ask students what they think a plant needs to grow from a seed into a full-grown, food-producing plant. Consider singing "Sun, Soil, Water, Air" by the Banana Slug String Band to help them remember. Explain, *Today we're going to plant seeds outside, and we'll have to make sure we give our seeds all the things they need.* Review the What a Plant Needs Poster from Up, Up, Up We Grow! **(5 min.)**

**2. Hunting or Tasting in Garden:** Move to the garden if you're not already there. Gather students and ask, *Do we already have plants in our garden that are ready to eat? We're going to go on a hunt for something that we think is ready.* Remind students of expectations, including having permission before they pick. You can facilitate the hunt as a game such as hot and cold, or let students freely explore. If you don't have any crops currently growing in your school garden, divide your head of lettuce, and have a simple tasting where each student eats a leaf. This will help build anticipation for the lettuce they'll be planting. Tell students, *Leaves take in nutrients from the soil and energy from the sun. Nutrients help us to be healthy and energy helps us be able to do things. This means that, when we eat leaves, we are getting nutrients and energy to make us glow with health!* Have students look down and thank the soil, and look up and thank the sun (being

careful not to look directly at it). **(10 min.)**

**3. Demonstrate Sowing Seeds:** Show students that you've mixed the tiny lettuce seeds with sand. Demonstrate taking just a handful and sprinkling it over a patch of the garden bed. Say, *Watch how I spread the seeds gently. And I'm looking to see where my friends are, so I'm not getting any on them.* Ask students to place one of their hands on their hip. Explain that one way to know they're being careful when they sprinkle their seeds is to make sure their hand doesn't go higher than their hip. Then show students how you water your seeds. **(5 min.)**

**4. Planting a Lettuce Bed:** Have each student take a handful of the seed/sand mixture and stand around the garden bed. You can have two students at a time sprinkle their seeds, or have a countdown where the group does it all together. Then let students use watering cans to water their seeds. You might have them count or say a quick chant to limit the amount of water each student can pour. **(10 min.)**

**5. Drawing:** In the garden or in the classroom, have students draw a picture of the lettuce bed they just created. Ask them to include all the things the plant needs to grow. They may also include themselves and their family eating lettuce. Alternatively, you can provide students with wide plant tags and have them draw something the plants need, such as a water drop or some sunshine, on each one. Have them stick their tags in the garden bed next to their seeds. **(10 min.)**

## Simple Kid-Friendly Dressing

- 3 parts olive oil
- 1 part rice vinegar
- 1/2 part honey
- Salt to taste

Shake ingredients in a lidded jar until dressing is emulsified.

### REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

#### Social and emotional learning

- *How did we practice being safe in the garden today?*

#### Check for understanding

- *What's growing in our garden right now?*
- *What will our plants need to grow?*

### ADAPTATIONS

**Follow-Up:** Bring students out to the garden to thin the lettuce bed by having pairs of students harvest small plants. You can then prepare a simple salad with the harvested greens and a homemade vinaigrette.

### ACADEMIC CONNECTIONS

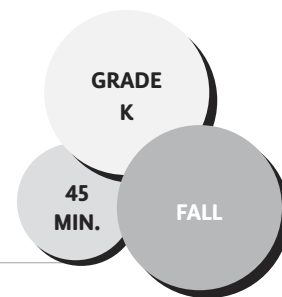
Next Generation Science Standards

#### **NGSS K.LS1.C.**

All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.

# Veggie Wraps

**THEME:** PREPARING HEALTHY FOOD



## ESSENTIAL QUESTION

*How can we use vegetables to make a healthy snack?*

## LEARNING OBJECTIVE

✓ Students will be able to combine ingredients to make a healthy snack.

### CONCEPTS

healthy snack      ingredient  
sharing              vegetable

### *Engaging the Classroom Teacher*

- During Action Step 3, an alternative is to suggest that the teacher make the wrap following your verbal instructions.
- During Action Step 4, suggest that the teacher help students wash their hands while you distribute trays with materials to table groups.
- During Action Step 5, suggest that the teacher help students who need additional support as they make their veggie wraps.
- During Action Step 6, encourage the teacher to model trying new things by eating the snack alongside the students.

## LESSON DESCRIPTION

In this lesson, students listen to a read-aloud about the wonderful variety of vegetables, and they share ingredients to create veggie wraps with a spread such as hummus. See the lesson Plant Part Wraps for a cooking lesson that focuses on the six plant parts.

## MATERIALS

- *Rah, Rah, Radishes!* by April Pulley Sayre
- 3–4 vegetables students may not be familiar with to “show and tell”

### Tray with the following for each group of 4–6 students:

- Whole wheat or rice flour tortillas (one for each student)
- 3 or more bowls, each filled with a different chopped or grated vegetable, such as cauliflower, bell peppers, cucumbers, cherry tomatoes, romaine lettuce, shredded beet or carrot, or whatever is available and in season
- Pair of mini tongs for each bowl
- 2 16 oz tubs of hummus, cream cheese, or other spread, enough for approximately 1 tablespoon for each student
- 1–2 plastic knives
- 1 whole, intact sample of each of the vegetables for demonstration
- Plate for each student
- Materials for cleanup

## PREPARATION

- › Cut up several types of vegetables, differing in color and texture, for students to place in their veggie wraps.

- › Prepare trays for each group as well as a tray of the whole vegetables.

## ACTION STEPS

**1. Discussing:** Gather students in a circle and ask, *What is a vegetable?* Then ask students to name as many vegetables as they can. Pass around several different vegetables (that students may not be familiar with) to feel and observe. **(5 min.)**

**2. Reading:** Read a book about a variety of vegetables, such as *Rah, Rah, Radishes!* by April Pulley Sayre. As you're reading, ask students to raise a quiet hand when they hear the name of a vegetable they've eaten and to put their hand on their head when they hear about a vegetable for the first time. While you're still in a circle, show students each of the vegetables you brought for the tasting, and see if they can identify them. Pass them around the circle, allowing students to touch and smell them, but instructing them to be gentle and not to taste them. Explain to students that today you're going to be making a snack using different vegetables. **(10 min.)**

### 3. Demonstrate Making a Veggie Wrap:

Model the process of making a veggie wrap. If the classroom has a document camera, it can be helpful to project your actions on the screen. First use a plastic knife to spread some hummus (or other spread) on the wrap, showing students you only need a little. If using hummus, share that hummus is a flavorful dip made primarily from beans. Then demonstrate adding only one or two pieces of each veggie on top and rolling it up. Emphasize sharing and only taking a small amount so there's enough to go around. **(5 min.)**



**4. Hand-Washing Break:** This is a good time to distribute trays to table groups. **(5 min.)**

**5. Making Veggie Wraps:** Have students return to their tables and instruct them to place one tortilla on their plate. Walk them through each step. Circulate through the room, providing support to those who need it and guiding students to share and pass the tongs to their neighbors. **(10 min.)**

**6. Tasting:** Have students wait until everyone has created their veggie wraps before tasting. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- Ask yourself: Did I take turns and share with my classmates?

### Check for understanding

- How would you describe the taste of your veggie wrap?
- What were the names of the vegetables we put into our veggie wraps?

- *What were the colors of the vegetables we put into our veggie wraps?*
- *What else would taste good in our veggie wraps? (You might consider raw and cooked vegetables, other dips, etc.)*
- *Who would you like to make this snack for and why?*

## ADAPTATIONS

**Art Extension:** Have students create a visual recipe by drawing all the ingredients they put in their veggie wrap inside a circle to represent the tortilla.

**Less Resource-Intensive Option:** If tortillas are too expensive or hard to find, consider making your snack on large crackers.

**Upper-Grade Variation:** If you'd like to make a more involved recipe, use the setup for cooking vegetables in the lesson Sauté to have students make rainbow tacos or fajitas.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.SL.K.1.A**

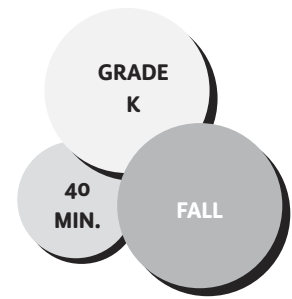
Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).

### **CCSS.ELA-LITERACY.SL.K.6**

Speak audibly and express thoughts, feelings, and ideas clearly.

# Fabulous Five: What a Plant Needs to Thrive

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



Adapted with permission from Shelburne Farms' *Cultivating Joy and Wonder*

## ESSENTIAL QUESTION

*What does a plant need to grow?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain what a plant needs to grow.
- ✓ Students will be able to plant a seed.

## CONCEPTS

air soil space sun water

### *Engaging the Classroom Teacher*

- During Action Steps 2–5, suggest that the teacher pass out the stations' beads to each student, helping them string the beads onto their pipe cleaner if they need the support.
- During Action Steps 6 and 7, suggest that the teacher support students as they scoop a container of soil or compost, bring it to the garden bed, and sprinkle it over the newly sown seeds.

## LESSON DESCRIPTION

In this lesson, students go on a mystery journey, following clues around the garden while learning what plants need, before planting their own seeds. This lesson is designed to be taught in conjunction with *Up, Up, Up We Grow!*, *Let Us Grow Lettuce!*, and *Bean Buddies*.

## MATERIALS

- Letter envelope
- Bag of beads for each station (1 bead for each student)
  - Yellow for Sun
  - Blue for Water
  - Clear for Air
  - Green for Space
  - Brown for Soil
- 1 For each student
  - Pipe cleaner
  - Popsicle stick
  - Large bean seed
- Station Clues and Station Images (pp. 75–85)
- Fabulous Five Worksheet (p. 86)
- 5 stakes (1 for each clue station)
- Pinwheel, make your own or purchase
- 10–15 ½ quart containers or plant pots (for carrying finished compost to garden bed)
- Finished compost (bagged or from garden)

## PREPARATION

- › Prepare clue stakes, laminating and stapling pictures to the stakes. Tape the bag of corresponding beads to each stake as well.
- › Set up locations for each clue in the scavenger hunt.
  - › For the sun station, choose the sunniest spot in the garden or a place where sunflowers are planted.
  - › Make the water station at a garden bed in need of water. Fill watering cans for students to use at this station.



- › The air station should be in a wide open space in your garden where students will have plenty of room to do jumping jacks.
  - › Make the space station a couple garden beds where students can plant their seeds. Use popsicle sticks to indicate how far apart your seeds should be spaced from each other.
  - › The soil station can be at your compost pile if you have one.
- › Place bean seeds into an envelope with the first clue.

## ACTION STEPS

**1. Seeds and Clue 1:** Gather students in a circle and say, *My friend is a farmer, and she gave me this special packet of bean seeds. She told me to share them with a special group of kids, but I'm not sure what I'm supposed to do with them.* Pass out the seeds to each student, and when your envelope is empty pretend to theatrically discover the first clue, saying, *Wait! There's a message here.* As you read each clue, be sure to read slowly, emphasizing important words and using hand gestures to aid students' cognition. Read aloud the first clue and ask students, *Where do you think our seeds want to go?* (Somewhere sunny!) Tell students to be sure to hold onto their bean or put it in their pocket if they have one. **(10 min.)**

**2. Sun and Clue 2:** Guide students to the next clue, letting them mostly lead the way. Once you find the sun stake, have students take a moment to bask in the sun with their eyes closed, saying, *Let's warm up our seeds and ourselves.* You might ask students to take a couple breaths in and out to savor the sunny moment (if it's a sunny day!). Then have the

classroom teacher or volunteer pass out a pipe cleaner and yellow bead to each student, and explain that this represents the sun, while you read the next clue. Ask students, *What are our seeds telling us they need in addition to sun?* (water) **(5 min.)**

**3. Water and Clue 3:** Have students lead you to the water stake and say, *Now that we know plants need water, let's help these plants by watering them.* Have students take turns with watering cans, watering a garden bed close to the water stake. Meanwhile, pass out blue beads to represent water. Once everyone has had a turn, read aloud the third clue, pausing to allow students to fill in the blank by saying "air." **(5 min.)**

**4. Air and Clue 4:** Once at the air station, say, *When I say "go!" we're going to do ten jumping jacks. Ready? Go!* Ask students how they feel, and point out, *When our bodies work hard, we breathe deeper because we need air, just like our seeds do.* Pass out clear beads, and read the next clue, again allowing students to fill in the blank by saying "space." **(5 min.)**

**5. Space and Clue 5:** Once students find the space station, explain that you think this is where the seeds are ready to be planted! Ask students to put their arms out to show how much space they like around their body, and explain that plants need their space too. Show students with your hands how far apart their seeds should be spaced from each other, and explain how they should pull out a popsicle stick and plant their seed in its place to make sure it has enough space. Show students how deep they should plant their seed using your finger and ask them all to point to the depth

on their finger as well. Tell students to place seeds more shallow than their normal depth to account for the compost students will add to the bed. As students finish planting their seeds, pass out the green bead and then read aloud the final clue. **(5 min.)**

**6. Soil:** At the soil station, show students how to take a scoop of compost, and explain that they'll bring this back to where they planted their seed. If you have a thriving compost system, take time to show students some interesting features before completing the task. **(5 min.)**

**7. Nurturing Our Seeds:** Back at the space station, demonstrate how to gently sprinkle the compost over the garden bed, and gently pat down the soil. Then have students water their seeds. Ask, *Have we given our seeds all they said they needed? Let's see.* Go through a checklist of all the needs, asking students to determine whether their seed has them. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did it feel to plant a seed and give it what it needs?*
- *Ask yourself: Was I safe and respectful in the garden today?*

### Check for understanding

- *What are the things you need to grow? How are they the same and different from plants?*

## ADAPTATIONS

**Dress Up a Plant Variation:** As a way to engage students at the beginning of the lesson, play Dress Up a Plant, as described in FoodCorps lesson "Plant Part Mystery," where you or the classroom teacher are dressed up by the students to resemble a plant. Have a bag of props and costume material for them to choose from to ensure the plant has roots, a stem, leaves, flowers, etc. Then once the plant is fully dressed, have them theatrically drop the first clue and say, *The plant is giving us a message!* Then continue with the hunt.

**Worksheet Extension:** Have students complete the Fabulous Five Worksheet, coloring and labeling each thing a plant needs. Write together as a class, displaying the words so students can copy them.

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

### NGSS LS1.C

Organization for Matter and Energy Flow in Organisms

All animals need food in order to live and grow.

They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1)

Seed

# Clue 1

For me to grow big and strong,  
You'll have to help me along.  
Five things I need to stay alive—  
We'll call them the **fabulous five!**  
The first will surely help me wake.  
It's cold in here for goodness sake!  
I must warm up and feel the light—  
Take me where it's warm and bright.

Sun

## Clue 2

I'm much warmer, thanks a bunch,  
But now I think it's time for lunch.  
I make my own food whenever I'm hungry,  
But the problem is, I'm really *thirsty!*

Look around—you need to think,  
and find something for plants to drink.

**Water**

## Clue 3

You need me, and I need you!

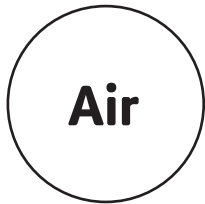
Now for your third clue:

We eat and drink and need to share,  
'Cause both of us must breathe the

\_\_\_\_\_.

Look around—think and observe.

Can you see where wind is pushing air?



## Clue 4

Even though I'm little now,  
I'll soon be big enough—somehow.  
I'll grow with others (it's not a race).  
Just don't plant us too close,  
I need my \_\_\_\_\_.

Look around! You'll see a sign,  
showing plants with room, growing fine.

Space

## Clue 5

Sun, water, air, and space —  
Are things I need to live.  
But there's one more,  
It's dark and brown,  
Just under your feet,  
So please look down,  
It's \_\_\_\_\_!

**Soil**

# The Fab 5!

**Sun**

**Water**

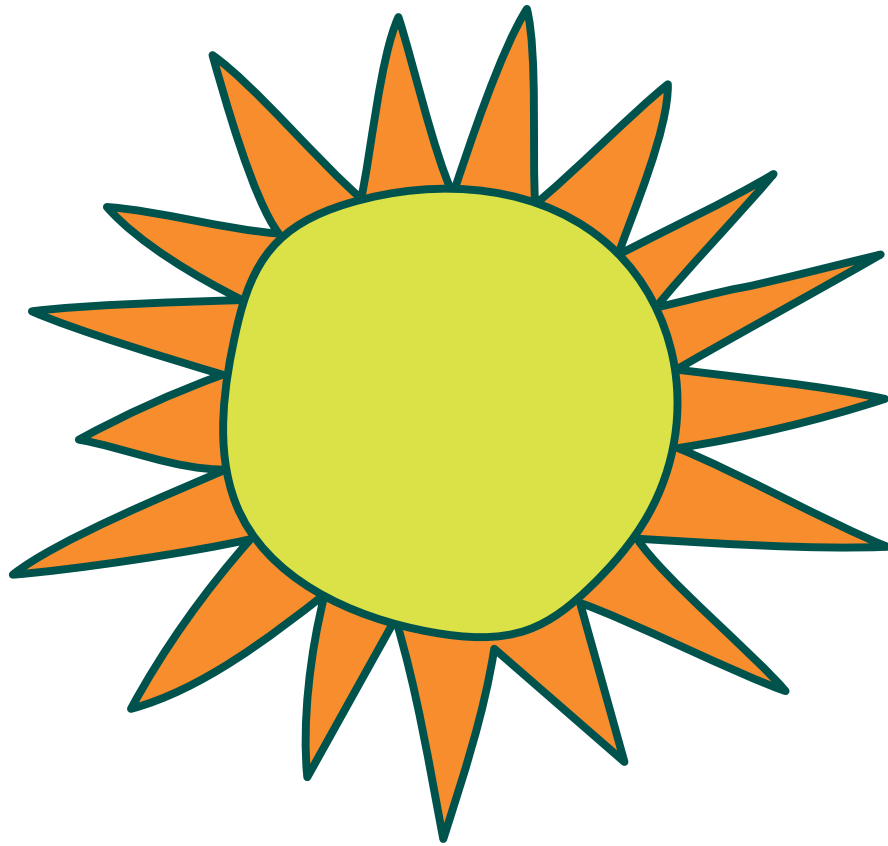
**Air**

**Space**

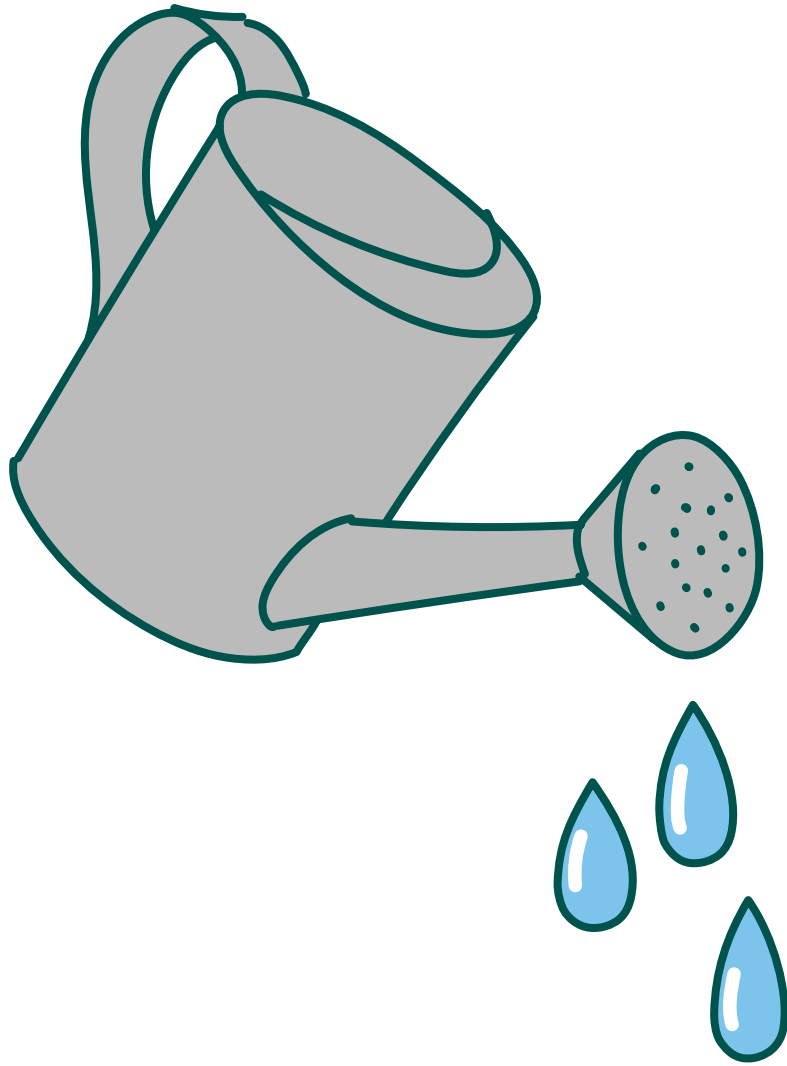
**Soil**

Plant your seeds!

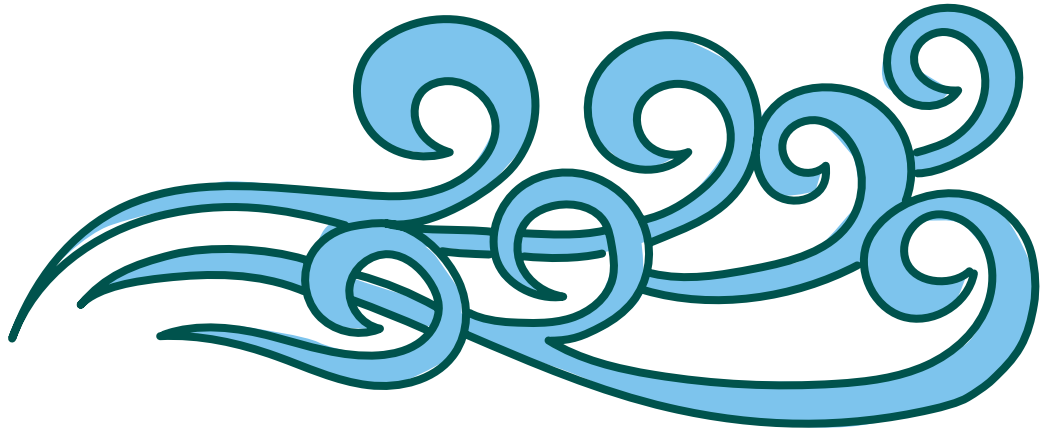




SUN



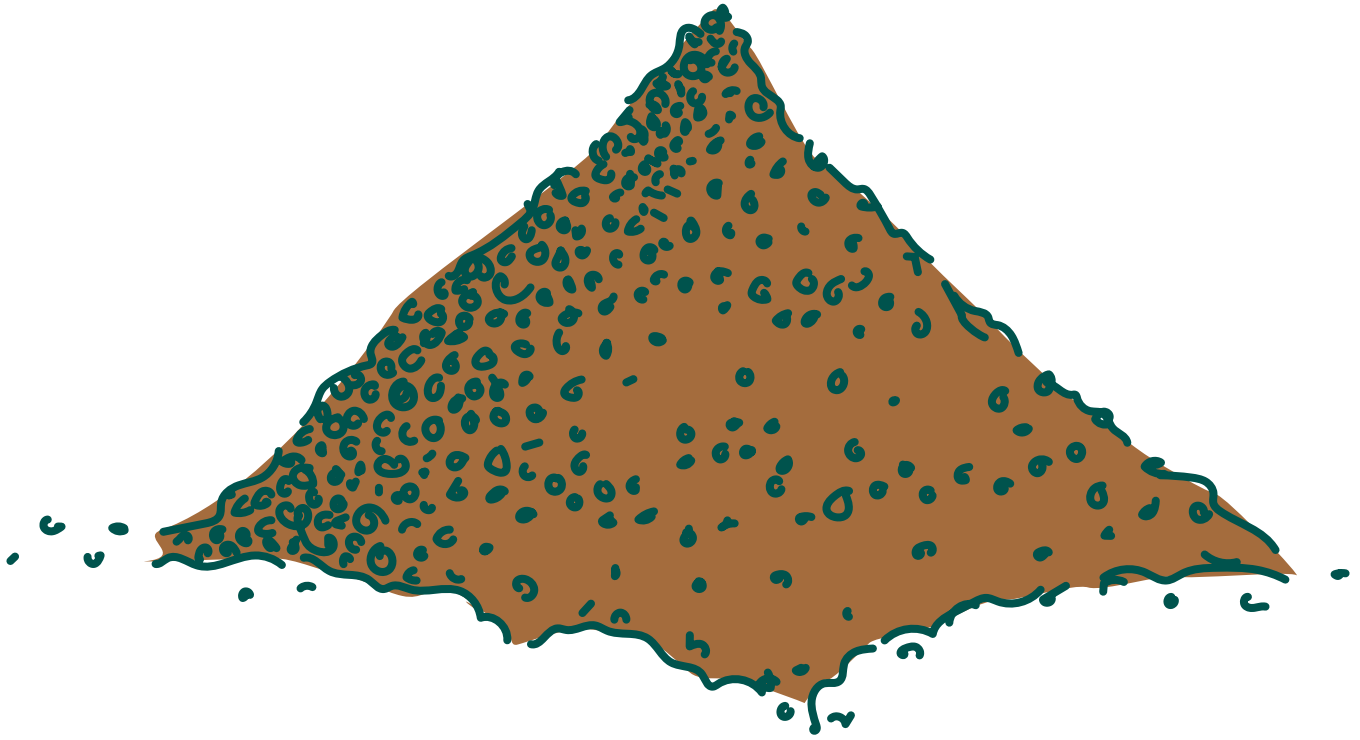
WATER



AIR

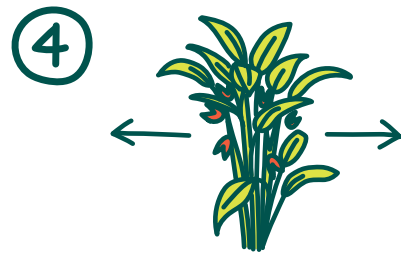
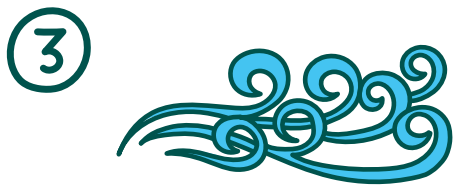
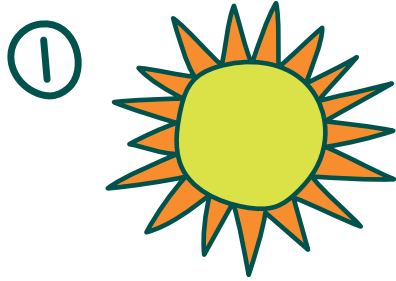


SPACE



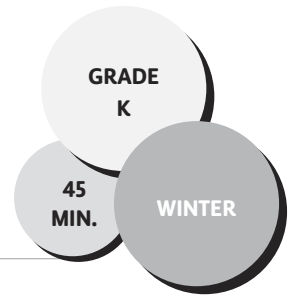
SOIL

# Fabulous Five: What a Plant Needs



# Rainbow Smoothie

**THEME:** MAKING HEALTHY FOOD CHOICES



## ESSENTIAL QUESTION

*How can we create a healthy snack using lots of fruits and vegetables?*

## LEARNING OBJECTIVES

- ✓ Students will be able to identify the colors of fruits and vegetables.
- ✓ Students will be able to describe the flavor of the smoothie with adjectives.
- ✓ Students will be able to prepare a healthy snack.

## CONCEPTS

healthy ingredient smoothie

### *Engaging the Classroom Teacher*

- During Action Step 5, suggest that the teacher support students working on preparing the ingredients.
- During Action Step 6, suggest that the teacher support students in filling out the worksheet.

## LESSON DESCRIPTION

In this lesson, students play a memory game to become familiar with the colorful ingredients for a smoothie the class will make and enjoy together.

## MATERIALS

- Small blanket, towel, or handkerchief
- Rainbow Smoothie ingredients (see recipe below)
- Small cups for each student
- Blender
- Extension cord

### Tray of the following for each group of 4–6 students:

- Kale leaf for each student (or other ingredient for students to process)
- Flexible cutting mats
- Empty bowl for processed ingredients
- Empty bowl for compost
- Rainbow Smoothie Worksheet (p. 90)
- Crayons
- Materials for cleanup

### *Rainbow Smoothie*

**Yield:** 4 ½ cups (24 servings of 3 table-spoons)

- 1 cup liquid (water, juice, almond milk, soy milk, etc.)
- 1 cup yogurt (full-fat plain or vanilla)
- 1 cup berries (fresh or frozen)
- 1 cup fruit
- 1 banana (fresh or frozen)
- ½ cup leafy greens (kale, collards, chard, or spinach, etc.)

**Note:** Include at least one frozen ingredient, so you don't have to include ice cubes.

- In a blender, add greens and liquid ingredients first, and blend until greens are just small flecks.
- Then add fresh and frozen fruits, and blend until the texture is smooth, adding additional liquid as needed.

## PREPARATION

- › Prepare a tray of the whole fruits and vegetables that will be going into your smoothie to show to students.
- › Select one or two ingredients for your smoothie that kindergartners can lend a hand in preparing (e.g., kale that can be torn into small pieces, strawberries that can be destemmed, bananas or clementines that can be peeled, etc.). Prepare a tray with some of each ingredient students will prepare for each small group.
- › Set up a station with your blender and other ingredients close to a power outlet where all students can see you.
- › Photocopy the Rainbow Smoothie worksheet for all students.

## ACTION STEPS

**1. Memory Game:** Gather students seated in a circle with your covered tray of sample ingredients in the center. Say, *Underneath this blanket I have all the ingredients we're going to put into a smoothie we'll be making today. But first, we're going to play a memory game. On the count of three, I'll take away my blanket and show you what I brought, but it's going to be very quick, so you'll have to pay close attention.* Lift the blanket and then replace it over the fruit. Have students turn and share with their neighbor all that they remember seeing under the blanket, then discuss

it as a class. Encourage students to describe or use hand gestures to show the ingredients they don't know the names of. Then reveal the ingredients once more, and go over the name of each, having students repeat the words while you hold up the ingredient. You can continue playing the memory game by having students close their eyes while you remove one of the ingredients. Then have them see if they can recall which is missing. Explain, *We're adding all these colors to the smoothie because having all the colors makes the smoothie care for all parts of our body. (10 min.)*

**2. Color Dance:** With all the ingredients on display, ask students questions such as *What's the color of the long leaf we're going to put into our smoothie?* After they give the answer (e.g., green), say, *Any student who is wearing a green shirt stand up and do a dance until I say, "Stop."* Continue until you've gone through all the colors present. End by saying, *Now everyone who didn't get a chance yet, stand up and do a three-second dance! (5 min.)*

### 3. Hand-Washing Break (5 min.)

**4. Model Ingredient Prep:** Explain to students that having fruits and vegetables that are all the different colors of the rainbow is healthy. Show students how they should prepare the ingredient you'll be passing out to each small group. For example, show students how you take the kale leaf off its stem, tear the leaf into small pieces, put the pieces in the group bowl, and put the stem into your compost bowl. Remind students to keep their hands clean as they work. **(5 min.)**



**5. Making the Smoothie:** Pass out ingredients to each table group. Have the classroom teacher circulate through the room, and provide support in helping students share. Meanwhile, add the other ingredients to the blender, or have student helpers add each one. Then call each group to come up and add the prepared ingredient. Have them add the ingredient in increments so each student in the group gets a chance. Once students have contributed to preparing the ingredients, and their table is cleaned up, pass out the Rainbow Smoothie Worksheet where students will draw fruits for the different colors of the rainbow. **(10 min.)**

**6. Tasting:** While students are coloring their worksheets, portion the smoothie into small cups for each student and distribute. Remind students to wait until each student has one before tasting. Enjoy together! **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did the ingredient you worked on help make our smoothie?*
- *When did we share and take turns while making our smoothie?*

### Check for understanding

- *How does your smoothie taste? What words can you use to describe it? What color is it? Look for opportunities to expand students' vocabulary, such as by asking, Is it smooth? Gritty? Sour? Sweet? Tangy? etc.*
- *Why do you think it's important to eat fruits and vegetables that are lots of different colors?*

## ADAPTATIONS

**Extension:** Create large dice with different colors on each side of the cube. Have students take turns rolling, and when the die lands on a particular color, challenge them to name all the fruits and veggies they can of that color.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards


### CCSS.ELA-LITERACY.SL.K.4

Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

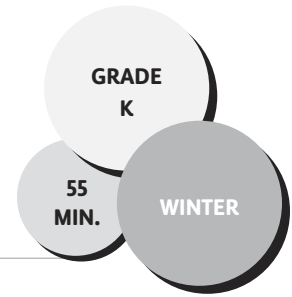
# Rainbow Smoothie Worksheet

**Directions:** Draw a picture of a fruit or vegetable for each color.

<b>RED</b>	
<b>ORANGE</b>	
<b>YELLOW/WHITE</b>	
<b>GREEN</b>	
<b>BLUE</b>	
<b>PURPLE</b>	

# Who Eats What?

**THEME:** EXPLORING THE ECOLOGY OF FOOD



## ESSENTIAL QUESTIONS

*Where does our food come from?*

*How are animals alike and different?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain that their food comes from plants and animals.
- ✓ Students will be able to discuss how eating a wide variety of foods from plants and animals keeps them healthy.

### CONCEPTS

food as energy    humans are animals  
plants

### *Engaging the Classroom Teacher*

During Action Steps 3 and 4, suggest that the teacher circulate through the room, supporting students in cutting and pasting and keeping track of their materials.

## LESSON DESCRIPTION

In this lesson, to gain a better understanding that all living things need food to grow, and food comes from plants and animals, students will listen to a read-aloud and create their own book matching animals to what they eat. This lesson works well split into two sessions—one session for discussion, reading, and cutting and

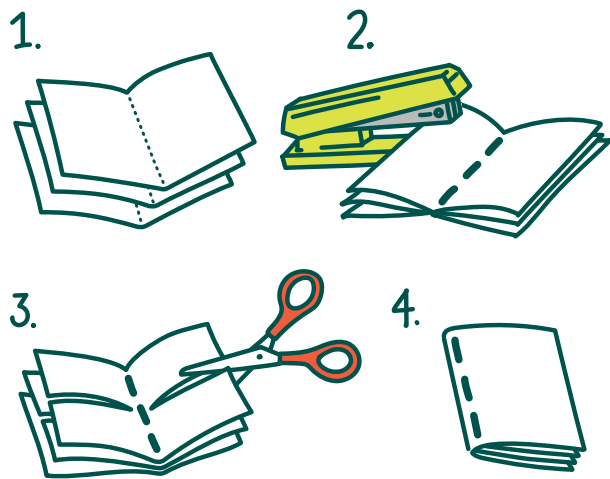
sorting images and the second for making and coloring in the books and sharing them with classmates.

## MATERIALS

- *My Very First Book of Food* by Eric Carle
- *Who Eats What? Matching Cards* (pp. 94-95)
- A crop or picture of a crop with evidence of insects eating it, such as a chard leaf with holes in it
- Glue sticks
- Scissors
- Paper
- Paper cutter (optional)

## PREPARATION

- › Create folded mini books for students to glue pictures into. Fold three pieces of paper in half and staple on the centerline. Cut the two inner pages in half, so the pages are split, leaving the outer page as the cover.
- › You might choose to cut out images for students prior to the lesson if you are limited on in-class time and feel that students may struggle to cut out images themselves.
- › Make a completed mini book with the *Who Eats What? Matching Cards* pasted into the book as a model for students. (See Adaptations for a less resource-intensive option.)



## ACTION STEPS

**1. Observing:** Gather students in a circle and tell students, *It's time to put on your detective caps because I have a mystery for you to solve. How did the holes get in these chard leaves I've been growing?* Pass around your chard leaf or other nibbled crop, and ask students to look at it carefully. Field guesses from students, and get to the idea that an insect, or maybe even a larger animal, must have been eating it. Help them see the connection between the animals in our garden and humans by saying something like, *Hmm. So the plant that I've been growing to eat as food, insects like to eat as food too!* **(5 min.)**

**2. Reading:** Explain that you're going to read a book about what different animals eat. Read *My Very First Book of Food* by Eric Carle. After reading, ask, *Which animals eat plants? Which animals eat other animals?* Then ask students to respond as a whole class, *Are humans plants?* (No). *Are humans animals?* (Yes!). Ask students to turn and talk to a neighbor, asking the question, *How are we different from plants? Then have a couple students share what they discussed with their partner. Then*

*have students discuss how we are the same as plants, ultimately getting to the idea that we all need food and energy to grow and live. Go around the circle and have students share something they eat. You might even have them say, "I'm an animal, and I eat \_\_\_\_!"* **(10 min.)**

**3. Sorting Foods:** Demonstrate for students how to cut out the Who Eats What? Matching Cards, and match a pair or two together as a class based on which living being eats what for food. If you have a document camera and screen, use it here. Have students return to their desks. Pass out the matching card sheets and scissors for students to cut out and match. Circulate through the room, supporting students and asking probing questions if you see they've mismatched cards. **(10 min.)**

**4. Making Books:** Show students your completed book and how you neatly pasted the animal on the top half and what it likes to eat on the bottom half. Then show students the page that says "Me," and show them how you drew a picture of yourself, and below you drew your favorite food. Pass out mini books and glue sticks to each student. Encourage students to color their pictures once they're finished gluing the images. Explain that, to be healthy, humans need more than one food; they need lots of different foods from plants and animals every day. Ask students, *What are some foods from plants and animals that you like to eat?* **(15 min.)**

**5. Reading with Partners:** Once students clean up their tables, have them find a place in the room to partner read their new books. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: (5 min.)

### Social and emotional learning

- What was your favorite part of this activity?
- What was hard about this activity? How did you solve the problem?

### Check for understanding

- What do we like to eat that a \_\_\_\_\_ likes to eat?
- What does a \_\_\_\_\_ eat that we usually don't eat?
- How did you figure out what had been eating our plant?
- Where does our food come from?
- Why do you think it's important that we eat so many different foods?

## ADAPTATIONS

**Garden:** After passing around the leaf with the evidence of insect bites, have students work in pairs to go outside and find the leaf and potentially the culprit! Hunt for other evidence of animals eating plants for food. Find the plants in the garden that humans eat for food.

**Reading Extension:** Read *Trout are Made of Trees* by April Pulley Sayre to explore the ideas of food chains and the interconnectedness of different animals.

**Fewer Materials:** If you don't have the time or resources to create the mini books for students prior to the lesson, you can have them cut out the pictures and glue them to

construction paper instead.

**Food-Web Variation:** Use the Who Eats What? Matching Cards to create a simple food web on construction paper.

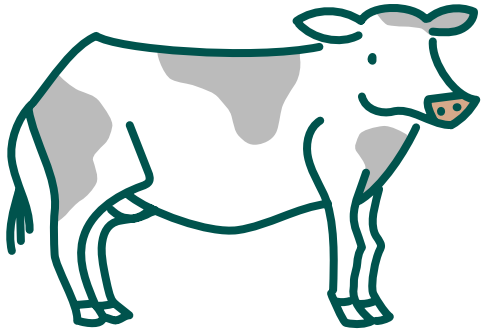
## ACADEMIC CONNECTIONS

Next Generation Science Standards  
Life Science Disciplinary Core Idea

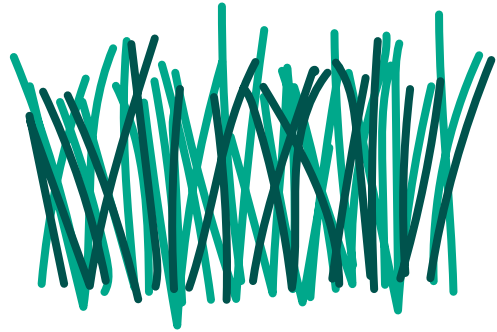
### NGSS K.LS.1.C

All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.

# Who Eats What? Matching Cards



**COW**



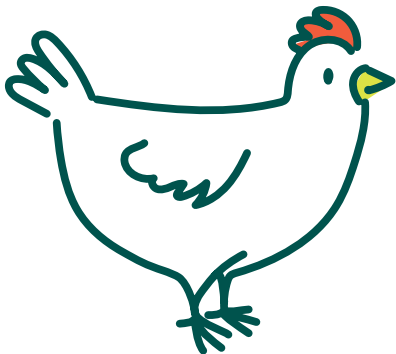
**GRASS**



**BEE**



**POLLEN**

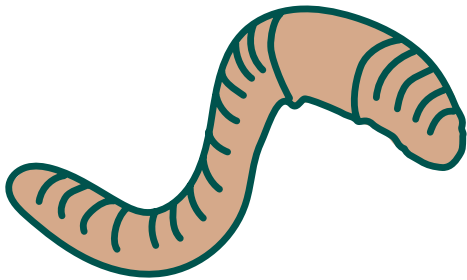


**CHICKEN**



**GRASS AND BUGS**

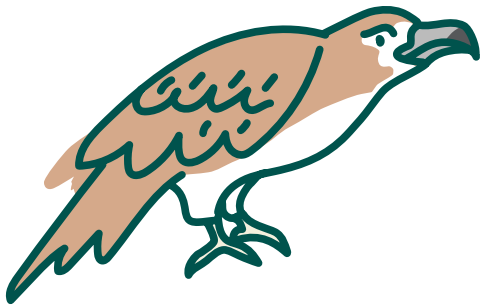
# Who Eats What? Matching Cards



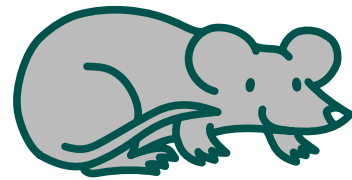
WORMS



FOOD SCRAPS



HAWK



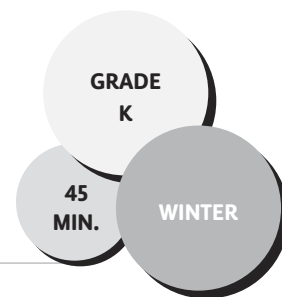
MOUSE

ME ↗

WHAT I EAT ↗

# Bean Buddies

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*How do we help a seed sprout?*

## LEARNING OBJECTIVES

- ✓ Students will be able to identify what a plant needs to grow and thrive.
- ✓ Students will be able to prepare a seedling and make predictions about its growth.

### CONCEPTS

observation prediction sprout

### *Engaging the Classroom Teacher*

- Prior to the lesson, check in with the teacher to see whether they'd prefer the version where students track the Bean Buddies growth in class (on the window) or on their own (as a necklace).
- If making Bean Buddy necklaces, make one for the teacher, so they can wear it the day of (under their shirt) and be a part of the big reveal to students.
- During Action Step 3, suggest that the teacher support students struggling to make their Bean Buddies.

## LESSON DESCRIPTION

In this lesson, students listen to a story to learn about the optimal conditions for a bean seed to

germinate, and then they make Bean Buddies in zip lock bags. Students draw pictures and make predictions about their seed's growth.

## MATERIALS

**For each student:**

- Bean seeds
- Zip lock bags (or little jewelry bags for necklaces)
- Paper towels (or 1 cotton ball for each student)
- Observation Log (p. 99)
- Permanent marker
- 2 or more spray bottles
- Crayons
- Paper and pencils
- *One Bean* by Anne Rockwell

## PREPARATION

- › Soak beans overnight for better germination.
- › Photocopy the Observation Log for each student.
- › Make your own Bean Buddy beforehand to troubleshoot any issues and have a model to show students.
- › Make a sample Observation Log as a model for students.

## ACTION STEPS

**1. Engage:** Gather students in a circle, and explain that today they'll be learning more about what plants need to grow by sprouting their very own seed. Ask, *How many people have planted a seed before?* Discuss students'



prior experiences growing plants. Then explain that you have a special buddy who you've brought with you today, and that by the end of class, everyone will have a new buddy! If you're wearing a Bean Buddy necklace, dramatically reveal it to students. **(5 min.)**

**2. Reading:** Read *One Bean*, which tells the story of a young boy soaking and sprouting a bean as the students will do. To check for understanding, ask questions about the story such as, *How did the boy know it was time to plant his bean?* Alternatively, for a more whimsical approach, tell students the story of "Jack and the Beanstalk." Explain that you'll be giving them magical bean seeds today as well. Have them close their eyes and imagine climbing the beanstalk that'll grow from their seeds. Ask, *What place will your beanstalk take you to?* **(5 min.)**

**3. Making Bean Buddies:** Say, *Now we're going to make friends with a bean!* Show students your model Bean Buddy. Encourage students to help each other while making their Bean Buddies. Pass out paper towels to each student and a couple spray bottles to share. You may want to predetermine the number of spritzes that will adequately dampen the towel, and tell students to only use that many. Then pass out one seed to each student, and have students fold their paper towel behind the bean. Finally, pass out zip lock bags, and have students place their bean inside. **(10 min.)**

**4. Discussing Plant Life Cycle:** Have students recall a plant's life cycle. Ask, *Which part of the plant is the bean? Which part of the plant do you expect to grow out of the seed first? What do you think will grow next?* **(5 min.)**

**5. Drawing:** Pass out crayons, paper, and pencils for students to draw pictures of their seeds and how they think their seeds will look in one week. This is a good time to have students use a permanent marker to write their name on the zip lock bag and their drawing. Have students clean up and collect their Bean Buddies, explaining that you'll tape them to the window to help them sprout, and that's where they'll check on them every day. (10 min.)

**6. Sharing:** Return to the circle, and have students share their drawings with a partner. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What was your favorite part of the activity?*
- *What was hard? How did you solve the problem?*

### Check for understanding

- *What do seeds need to grow into plants?*
- *How long do you think it will take until we see the bean sprout? How big do you think its leaves will get?*
- *Why doesn't the bean seed need soil to sprout? Do you think it'll need to be in soil soon?*

## ADAPTATIONS

**Observation Extension:** Have each student set up a log where they will record observations with pictures of the progress of the plants' growth.

**Necklace Variation:** A fun alternative is to have students keep the Bean Buddies in their pockets or on a string as a necklace, explaining that the warmth from their bodies will help them germinate. Have them care for their Bean Buddy independently at home, and make it a challenge to see whose Bean Buddy is alive and thriving day after day.

## ACADEMIC CONNECTIONS

Next Generation Science Standards Disciplinary Core Ideas

### **NGSS K.LS1.C**

Organization for Matter and Energy Flow in Organisms – All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.

### **NGSS 1.LS1.A**

Structure and Function – All organisms have external parts... Plants also have different parts (roots, stems, leaves, flowers, fruits, and seeds) that help them survive and grow.

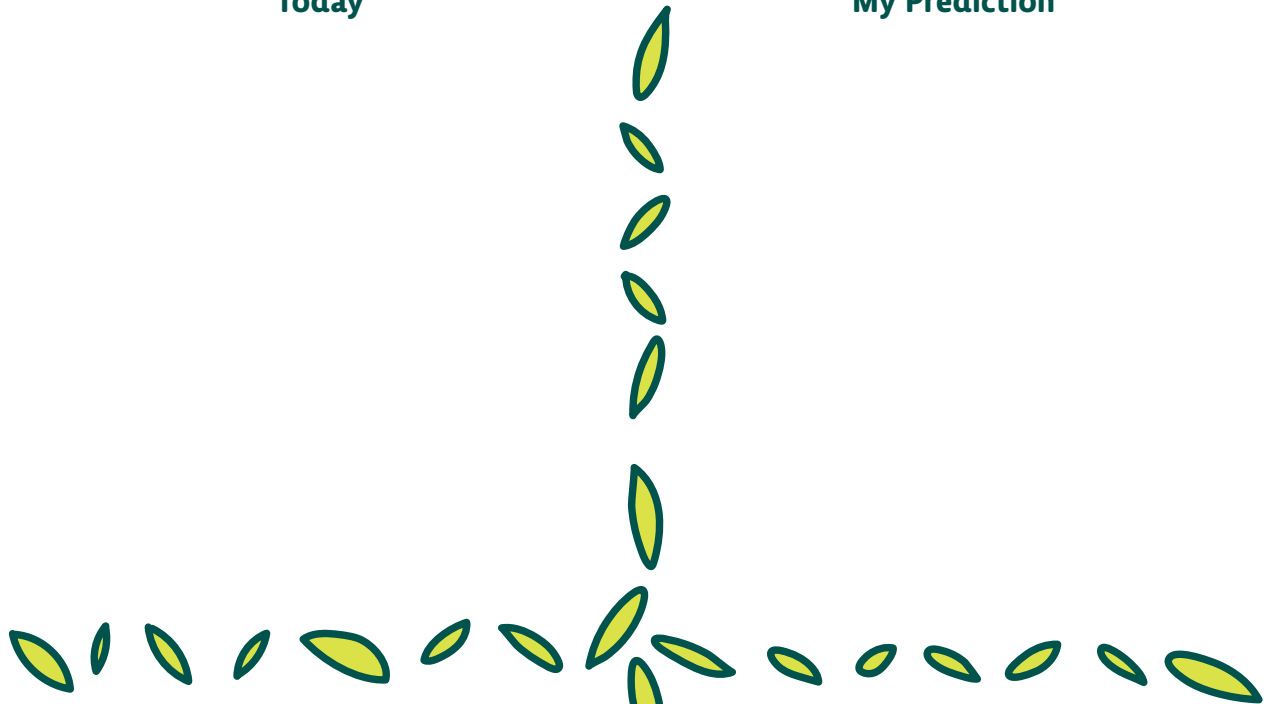
# Observation Log

Name: \_\_\_\_\_

Project: \_\_\_\_\_

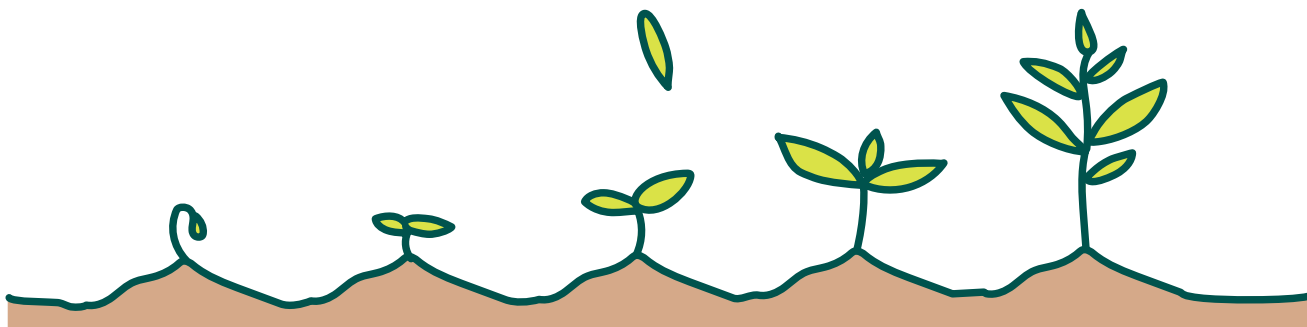
Today

My Prediction



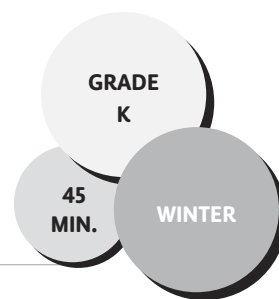
On \_\_\_\_\_  
date

On \_\_\_\_\_  
date



# From Beautiful Beans to Delicious Dip!

**THEME:** PREPARING AND ACCESSING HEALTHY FOODS



## ESSENTIAL QUESTION

*How can we work together to create a healthy snack?*

## LEARNING OBJECTIVE

✓ Students will be able to prepare fresh vegetables and herbs by hand.

## CONCEPTS

herb   ingredient   snack

### *Engaging the Classroom Teacher*

- During Action Step 2, suggest that the teacher support students while they sort beans.
- During Action Step 5, suggest that the teacher support students while preparing the ingredients for the snack.

## LESSON DESCRIPTION

In this lesson, students learn to process fresh foods by hand as they prepare herbs and vegetables to enjoy with a bean dip. This lesson can be taught in conjunction with the lesson Bean Buddies.

## MATERIALS

- A mix of dried beans for students to sort, count, and explore
  - Seed Sorting Mat (p. 104)
  - Food processor or blender
  - Extension cord
  - Spoon
  - Can opener
  - Measuring spoons and cups
  - Serving bowl for dip
  - Napkins
  - Bean Dip ingredients (see recipe below)
  - 2 heads of cauliflower or broccoli or another vegetable that students can easily break down with their hands
  - 2 bunches of herbs such as rosemary, thyme, or oregano
  - Container for compost
  - Materials for cleanup
- For each group of 4–6 students:**
- 1 bowl of produce
  - 1 medium-sized bowl
  - 1 small bowl for dip
  - Several cutting mats to share

## PREPARATION

- › Open the cans. Rinse and drain the beans.
- › Slice the citrus.
- › Set up an area in the room visible to students where you can plug in the food processor and make the bean dip as students watch. Have measuring cups and spoons and other ingredients stationed there.
- › Portion broccoli and herbs into bowls for students so that half of the class will be working on each.

### Bean Dip Recipe Ingredients

**Yield:** 2 ¼ cups, 25 servings of 1 ½ table-  
spoons

You can make a hummus-like dip with garbanzo beans and lemon; a black bean dip with cilantro and lime; or a white bean dip with parsley, rosemary, and thyme.

- 2 (15-ounce) cans of beans (garbanzo, black bean, or white bean), drained and rinsed
- 4 tablespoons olive oil
- 4 tablespoons fresh leafy herbs such as parsley, cilantro, or basil
- 2 tablespoons lemon or lime juice, more to taste
- 4 teaspoons herbs such as rosemary or thyme
- 1 teaspoon of salt, more to taste

Add all ingredients to a blender or food processor fitted with a steel blade, and blend until smooth. Taste and adjust seasoning, as needed.

## ACTION STEPS

**1. Engage:** Gather students in a circle, and tell them they'll be making a tasty snack together. Ask students to raise their hands if they've eaten beans before. Ask, *How do you like to eat them?* Take a few answers, and explain that today you'll be making a bean dip with herbs to eat with veggies. **(5 min.)**

**2. Exploring the Ingredients:** Give groups of students a bowl with a variety of dried beans, covered with a napkin. On the count of three, have them lift the napkin to see what's underneath. Give them a few minutes to explore. Provide challenges like, *Can you find the biggest bean? The smallest? Brightest? A solid color? Spotted? Smoothest?* Challenge students to count different types and compare: *How many red beans do you have? Are there more red or white beans? Are there more solid or spotted beans?* Then pass around a couple sprigs of whatever herbs you're using. Ask students to look at them, touch them, and smell them. Ask, *What does it smell like to you?* **(5 min.)**

**3. Model:** Say, *When you go back to your seats, you're all going to be my helpers for making our bean dip. Some helpers will work on our veggies, and some helpers will work on our herbs.* Show students how to break up the broccoli and how to pull herb leaves from the stems. Remind them that they won't want the broccoli too small, or they won't be able to dip it. **(5 min.)**

**4. Hand-Washing Break (5 min.)**

**5. Prepping Veggies and Herbs:** Give half the students the broccoli to break up and half the students herbs to pick and tear. Provide each group

with a couple cutting mats as clean work surfaces to share, and have them put their finished product in the empty bowl you provide them. Circulate through the room, guiding students who need help. Gather the herbs and veggies, and have students clean up their spots. **(10 min.)**

**6. Cooking Demonstration:** Ask for students' attention at the station where you've set up your blender. Explain that you'll now show them how to make the bean dip. Add your cans of beans and other ingredients to the blender, explaining and showing students each step. To have students consider the importance of each ingredient, ask questions such as, *How do you think the flavor will change after I add the lemon?* Blend the ingredients, then say, *I'm going to try it to see if it needs anything else.* After you've made adjustments and blended again, portion the dip into bowls for each group. **(5 min.)**

**7. Tasting:** Tell students that everyone is going to wait until you tell them to eat. Say, *We're going to be sharing our dip, which means making sure we don't take too much and that we don't share germs.* Explain that to prevent germs they'll only dip each piece of veggie into the dip once; model what that looks like. Give each group a bowl of dip. Have one student pass out plates and another student pass out a couple veggies to each student. Have everyone taste the bean dip together. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did working together help us make this bean dip?*
- *How would you teach your family members to make bean dip? What tips would you give them?*

### Check for understanding

- *How would you describe the flavor of the bean dip? What herbs can you taste that we smelled earlier?*
- *What else might taste good dipped in bean dip?*

## ADAPTATIONS

**Art and Math Extension:** Have students sort and count dried beans over butcher paper to practice adding and subtracting. Make bean mosaic art by providing glue and construction paper. Make bean maracas by putting beans into cans, cardboard tubes, or just about anything!

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.L.K.5.C

Identify real-life connections between words and their use (e.g., note places at school that are colorful).

### CCSS.ELA-LITERACY.L.K.5.A

Sort common objects into categories (e.g. shapes, foods) to gain a sense of the concepts the categories represent.

Math Common Core State Standards

**CCSS.MATH.CONTENT.K.MD.B.3**

Classify objects into given categories; count the number of objects in each category and sort the categories by count.

**CCSS.MATH.CONTENT.K.CC.C.6**

Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.

# SEED SORTING MAT



Smallest



Spotted



Long



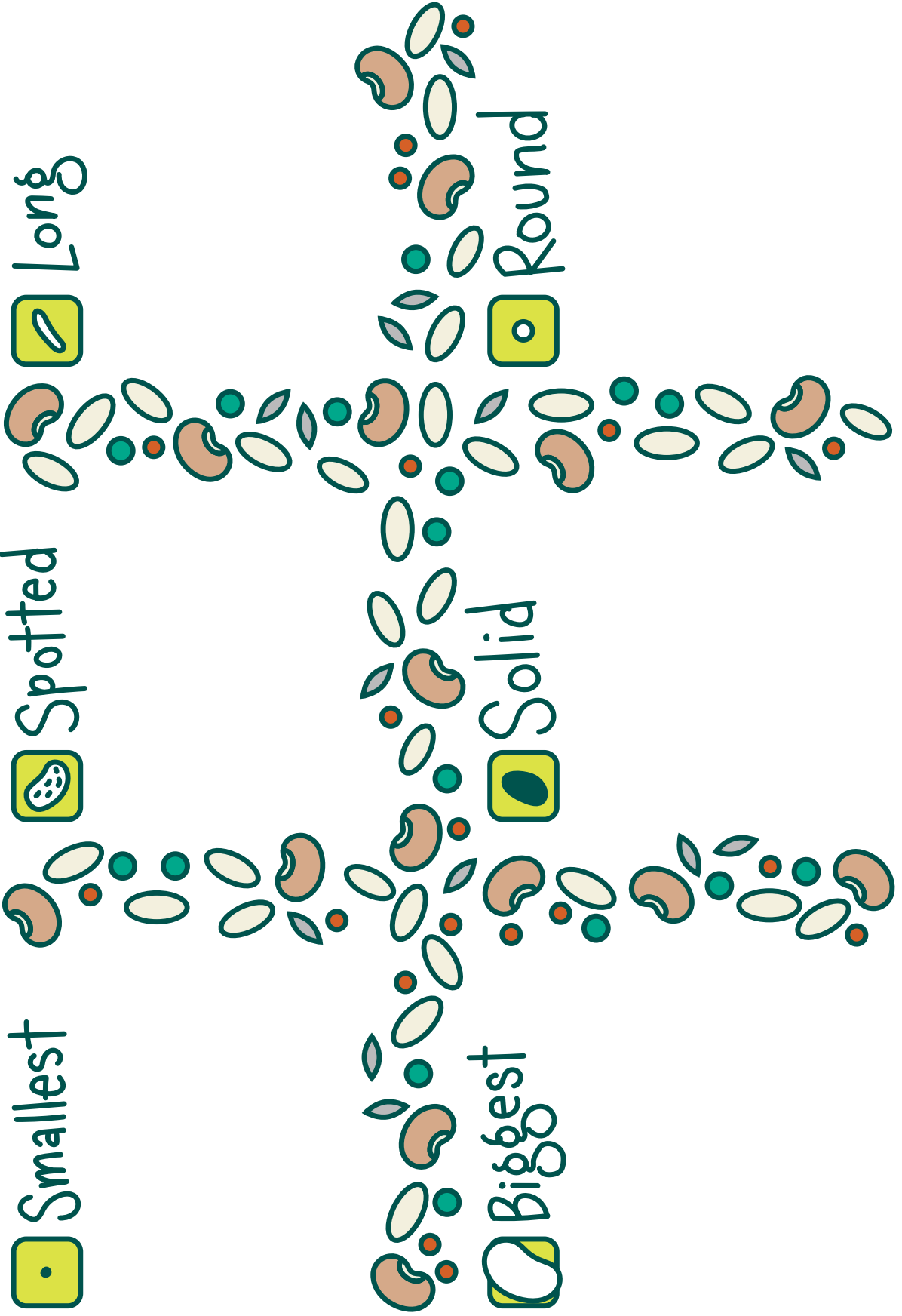
Biggest



Solid



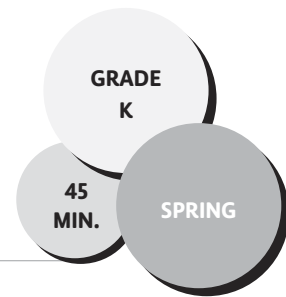
Round





# Budding Tastes

**THEME:** MAKING HEALTHY FOOD CHOICES



## ESSENTIAL QUESTION

*Why is it important to try new things and to continue to try things we didn't like the first time?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain that our preferences can change over time.
- ✓ Students will be able to explain the “power of yet.”
- ✓ Students will be able to identify their own food preferences.

## CONCEPTS

prefer preference taste bud yet

### *Engaging the Classroom Teacher*

- During Action Step 3, encourage the teacher to share an anecdote about a food they learned to like.
- During Action Step 4 and 5, suggest the teacher support students filling out their worksheet while you prepare the tasting. They may need prompting to think of foods they'd like to try.
- If giving students the At-Home worksheet, ask the teacher for the class procedure to send papers home to ensure it happens.

## LESSON DESCRIPTION

In this lesson, students think about how people's food preferences can change over time. They engage in a sensory exploration of herbs, read a book about a character becoming more open-minded, draw pictures of their own food preferences, and consider the “power of yet.” This lesson can serve as a great introduction to FoodCorps for a class you're just beginning with.

## MATERIALS

- 5–6 empty egg cartons, half dozen or full
- Minced herbs from the school garden (a handful of each, see preparation below)
- A book about a main character becoming more open-minded and trying new foods, such as *Sylvia's Spinach* by Katherine Pryor, or *I Will Never Not Ever Eat a Tomato* by Lauren Child
- Handheld mirrors (optional)
- My Taste Buds Worksheet (p. 108) for each student
- Crayons
- A simple snack from the garden, such as sliced radishes or air-popped popcorn with minced rosemary and butter or olive oil
- Paper towels
- Budding Tastes at Home Worksheet (p. 109)

## PREPARATION

- › Collect empty egg cartons to create a mini sensory station for small groups of 4–6 students. Place common herbs found in your school's garden in each section of the egg carton, for example, rosemary, lavender, parsley, lovage, mint, and thyme. You might

want to mince the herbs beforehand, so they release more scent. If you don't have access to many fresh herbs, you can use common pantry ingredients, such as lemon juice, vanilla extract, and spices on cotton balls. Essential oils on cotton balls also work, if you have them available.

- › Photocopy the My Taste Buds Worksheet.
- › Create a model of the worksheet to share with students by filling in a few foods you like and don't like yet but want to try.

## ACTION STEPS

**1. Sensory Exploration:** Pass out a sensory egg carton to each group of students. Instruct students to take turns smelling the contents of each section. Encourage them to pick up the herbs and rub them between their fingers, but remind them to put them back in the same section of the egg carton and not to taste. Instruct students to work in teams of two or three to see if they can recognize any of the smells. Ask them to share with one another which they prefer, explaining that the word *prefer* means to like something the most. Ask, *Which of these do you think you'd prefer to eat? (5 min.)*

**2. Reading:** Tell students that you're going to read a book about a character who prefers to eat certain things. Read *Sylvia's Spinach*, or *I Will Never Not Ever Eat A Tomato*. During the read-aloud, pause and ask questions about the characters' motivations, for example, why they might not want to eat the food in the story. After the read-aloud, tell students to think about how the main character was able to change their mind. **(10 min.)**

**3. Discussing Taste Buds:** Instruct students to quietly stick out their tongues on the count of three, explaining that their purpose is not to make funny faces at one another. If you have mirrors, use them here to enable students to look at their own tongues. Say, *Take a look. See those bumps on our tongues? Those are taste buds. They help us taste different flavors. Our taste buds send messages to our brain to help our brain decide if we like things. So our brain might think, "Wow this is a new taste, I'm not sure about this!" Sometimes when we try something new, right away our brain thinks, "I don't like this!" But really it takes trying something ten different times to really know whether we like something. Have students count aloud together up to ten. Tell students about a food you used to not like; for example, say, *I used to not like parsley, but my whole family loves it, so I kept trying just a little bit to train my taste buds to like it. I'm happy because now I can enjoy parsley with my family. Ask students, What's something you used to not like but now you do? Have students share with a partner and then have a couple students explain to the whole class their experience with a food they didn't always like. Say, So if we try something new for the first time or even the second time, instead of saying, "I don't like this," maybe we can say, "I don't like this yet!" What do you think is different when we add the word "yet"? This helps us remember that maybe our taste buds just need a chance to try it a few more times. (5 min.)**

**4. Drawing Food Preferences:** Show students your own drawing, explaining a couple of your pictures. For example, say, *On this side I drew roasted broccoli because I love it when it's roasted in the oven. And here I drew raw broccoli because I don't like that yet . . . but maybe I will if I try it a few more times. Or Over here I drew cottage cheese*

because it's a food I'd like to try. Consider associating a gesture with each category—for foods you like, rubbing your belly with a smile, and foods you'd like to try or don't like yet, tapping your finger on your chin with a quizzical look. Pass out the My Taste Buds! Worksheet and crayons to students. Circulate and encourage students to think of foods they'd be open to trying. **(15 min.)**

**5. Tasting:** While students are drawing, prepare a simple snack for them, such as popcorn with rosemary from the garden or sliced radishes with salt. Before eating, tell students that it's okay if they don't prefer something, but there are better ways to express that than saying "eww" or "yuck" because that can make it difficult for other people to enjoy it. Ask students what they can say instead. For example, "I don't prefer it," "I don't like this yet," or "My taste buds need more time!" Pass out the paper towels and snack as students are finishing their drawings. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How can we be respectful of others who have different tastes than we do?*
- *What was hard, or a challenge while working on this activity? How did you try to solve it?*

### Check for understanding

- *What are our taste buds?*
- *Why is it a good idea to try the same food more than once?*
- *What's the difference between saying "I don't like this" and saying "I don't like this . . . yet"?*

## ADAPTATIONS

**Garden:** If you have spring crops in your garden, such as fava beans, radishes, or lettuce, harvest these items with students, and make a salad together. Discuss with students the different flavors they are tasting and why they may or may not like them . . . yet.

**At-Home:** Have students bring home the Budding Tastes At Home Worksheet and ask their caregivers to name a food they didn't like (yet!) when they were in kindergarten, but they do like now. Have students draw these foods for homework and then share them in class. You can also have students track the number of times they try a new food at home.

## ACADEMIC CONNECTIONS

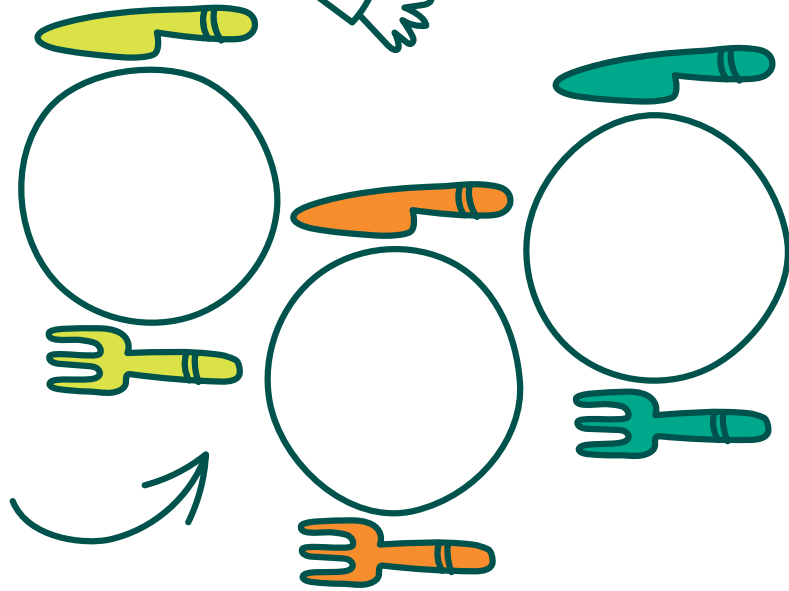
English Language Arts Common Core State Standards

**CCSS.ELA-LITERACY.RL.K.3** With prompting and support, identify characters, settings, and major events in a story.

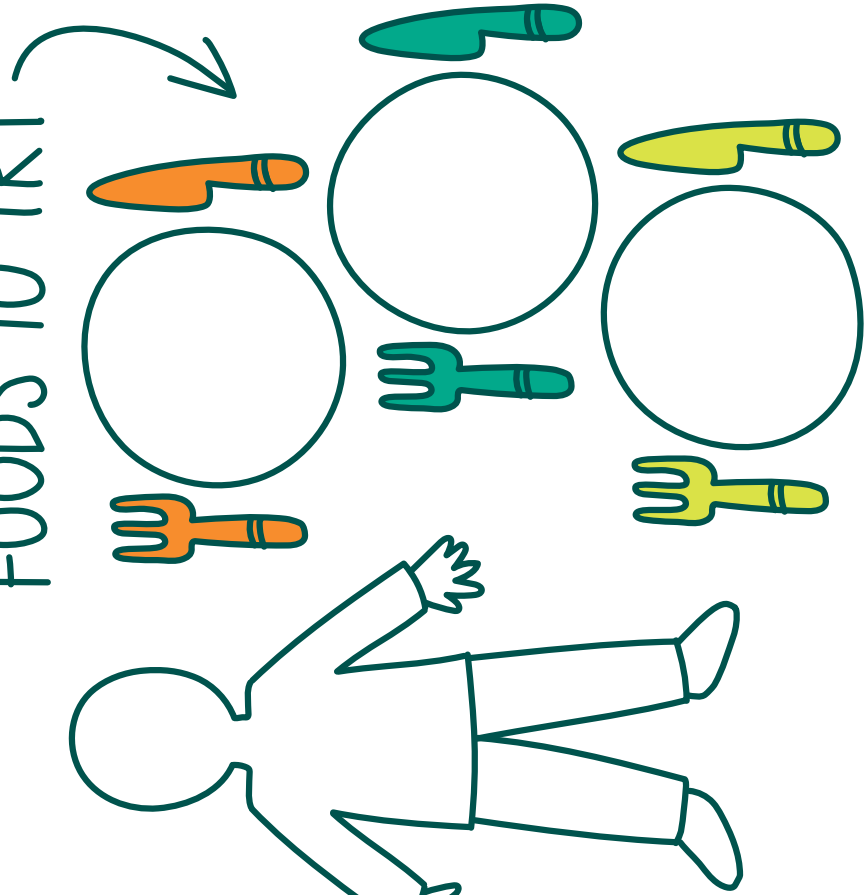
Name: \_\_\_\_\_ Date: \_\_\_\_\_

# MY TASTE BUDS

FOODS I LIKE



FOODS TO TRY



Name: \_\_\_\_\_ Date: \_\_\_\_\_

# BUDDING TASTES AT HOME

DIRECTIONS: Draw your caregiver as a kid not liking a food YET, and then as an adult when their taste buds have changed.

AS A KID!

I don't like yet.

AS AN ADULT!

I like now!

We tried a new food \_\_\_\_\_ times this week!  
DRAW THE FOODS YOU TRIED!

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

Sunday

# Perfect Parfaits

**THEME:** EXPLORING THE ECOLOGY OF FOOD

GRADE  
K

45  
MIN.

SPRING

## ESSENTIAL QUESTION

*Where does food come from?*

## LEARNING OBJECTIVES

- ✓ Students will be able to identify the source of different ingredients in a yogurt parfait.
- ✓ Students will be able to assemble a yogurt parfait.

## CONCEPTS

counting ingredients parfait

### *Engaging the Classroom Teacher*

During Action Step 6, suggest that the teacher support students with measuring and sharing ingredients while you give the directions.

## LESSON DESCRIPTION

In this lesson, students consider where their food comes from by matching pictures of parfait ingredients to their food sources (cows, bees, and plants). They then make their own yogurt parfait by counting and layering spoons of ingredients.

## MATERIALS

- 40 spoons (2 per ingredient per group)
- 25 bowls
- 2–3 quarts of berries (whatever kind is available)
- 2 quarts of plain yogurt (¼ cup each for 32 people)
- 8 cups of granola (bulk bin) or toasted, rolled oats (4 tablespoons each for 32 people)
- 4 cups of seeds, such as pumpkin or sunflower (2 tablespoons each for 32 people)
- Honey (in a squeeze bottle)
- Food Source Matching Worksheet (p.114)
- Perfect Parfait Recipe Worksheet (p. 113)
- Materials for cleanup

### For each student:

- Cup—clear plastic if you want to see the parfait layers
- Spoon

## PREPARATION

- › Photocopy Food Source Matching Worksheet for each student.
- › Prepare trays for groups of 4–6 students with the following:
  - › Bowl of berries with 2 spoons
  - › 2 bowls of yogurt with 2 spoons
  - › Bowl of granola with 2 spoons
  - › Bowl of seeds with 2 spoons

## Yogurt Parfait Recipe

### 1 serving

1/4 cup (4 tablespoons) plain yogurt

1/4 cup (4 tablespoons) berries

3 tablespoons of granola or toasted, rolled oats

2 tablespoons of seeds

1 drizzle of honey

Add ingredients in a clear glass or plastic cup in this order, and serve with a spoon.

## ACTION STEPS

**1. Engage:** Gather students in a circle and ask, *Where does our food come from?* When students say the grocery store, ask, *Where does the store get its food?* Once they start thinking about farms and gardens, ask, *How do farms and gardens get their food?* Keep discussing until they've traced food back to plants and animals. **(5 min.)**

**2. Matching Foods to Their Source:** Explain, *I'm going to give you a sheet with pictures of foods we eat and pictures of where those foods come from. Your job will be to match them together.* Pass out Food Source Matching Worksheet, and do one match together. If you have a document camera, use it for modeling and then sharing in Action Step 3. Circulate through the room, checking on students' progress and asking encouraging questions. **(5 min.)**

**3. Sharing:** Go over each pair of pictures with students and discuss them. Ask, for example, *How does yogurt come from a cow?* Or, *How does honey come from a bee?* **(5 min.)**

**4. Model:** Explain that they're going to make a delicious snack with all the ingredients they just sorted. Show them each ingredient, asking students to identify them. Model making a parfait, explaining, *For yogurt, you'll take four scoops. For berries, you'll take four scoops. For granola, you'll take three scoops. And then for seeds, you'll take two scoops.* It's a countdown—four, three, two, one! As you're demonstrating, clearly count out your scoops, and ask students to show you the numbers by counting on their hands. Explain to students that you'll give them these ingredients to share at their tables. Ask, *What will sharing look like while we create our parfaits?* Discuss how you're going to add one ingredient at a time, passing the spoon to the next person to add their amount. **(5 min.)**

### 5. Hand-Washing Break (5 min.)

**6. Making Yogurt Parfait:** Pass out trays of ingredients to groups. Pass out a cup to each student. Say, *First we'll add the yogurt. Show on your fingers how many scoops we're going to take of yogurt.* Then have students take turns. Then ask students to thank the animal or plant responsible for that ingredient. For example, have them say, *Thank you cow, for making the milk that made this yogurt!* Do these steps for each ingredient, showing scoops on their fingers, taking turns, and thanking the food source. Finally, ask students to make a signal to show that they'd like honey. Walk around and add a drizzle of honey for those students, and thank the bees. **(10 min.)**

**7. Tasting:** Have a couple helpers pass out spoons to each student, and have students wait until you tell them to try the parfaits. As you're eating, ask students to describe what they're tasting. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: (5 min.)

### Social and emotional learning

- *How did you share with your classmates?*
- *What were ways we were helpful to our classmates?*

### Check for understanding

- *What ingredients are in our parfaits? Where did these ingredients come from?*
- *What else would you like to eat in a yogurt parfait?*

## ADAPTATIONS

**Extension:** Have students create picture recipes by drawing the layers in their parfait and putting numbers beside each layer to represent the number of tablespoons they added of each ingredient.

**Fewer Materials:** Instead of students assembling their parfaits in table groups, you might consider setting up three buffet lines that groups walk through one at a time. This option is good for cutting down the number of bowls and spoons needed and if you want to give students a chance to get up and move. The downside is you don't count together as a class.

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

### NGSS K.LS1.C

Organization for Matter and Energy Flow in Organisms – All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.

Math Common Core State Standards

### CCSS.MATH.CONTENT.K.CC.B.5

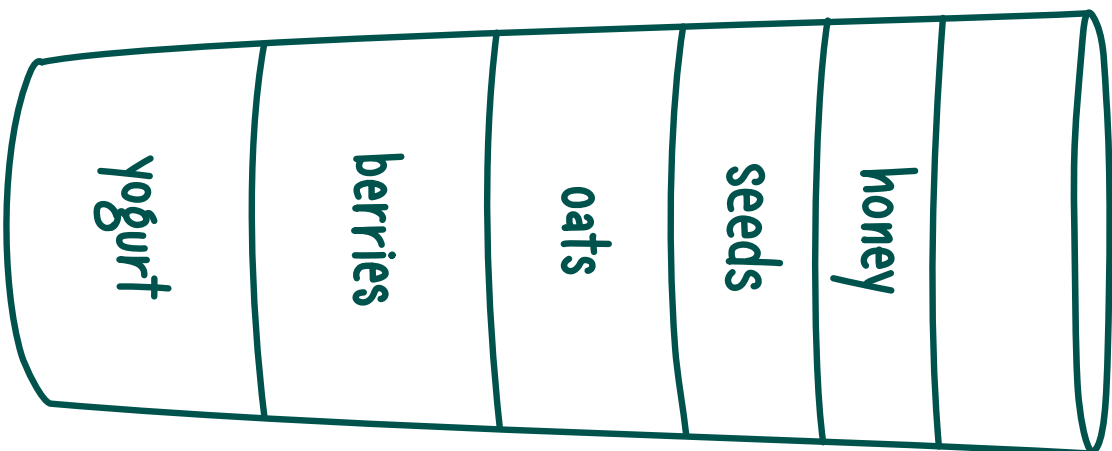
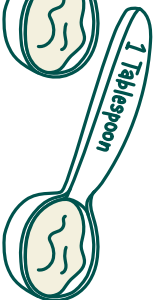
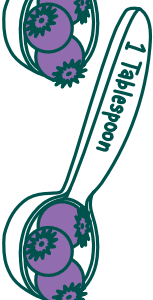
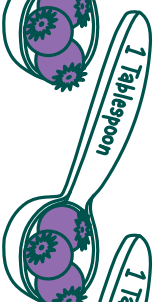
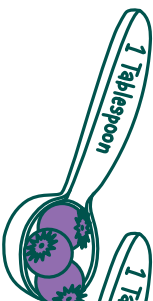
Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.



Name: \_\_\_\_\_

Date: \_\_\_\_\_

# PERFECT PARFAIT RECIPE



—

—

—

—

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# Food Source Matching Worksheet

Directions: Match each food on the left to its source on the right

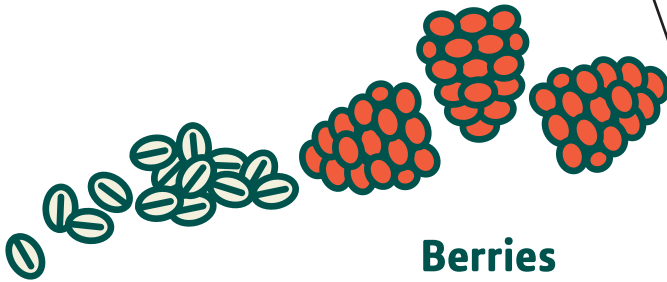
## Foods We Eat



Honey Jar



Sunflower Seeds



Rolled Oats

Berries

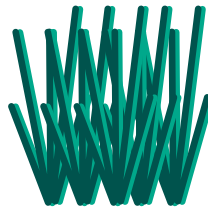


Yogurt

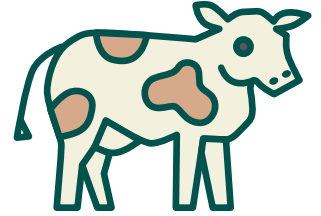


Pumpkin Seeds

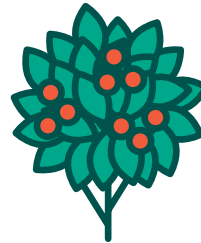
## Where Food Comes From



Oat Grass



Cow



Berry Bush



Pumpkin



Sunflower



Bee and Beehive

# Sunflower House

**THEME:** GROWING AND ACCESSING HEALTHY FOODS

GRADE  
K

45  
MIN.

SPRING

## ESSENTIAL QUESTION

*What do flowers need to grow?*

## LEARNING OBJECTIVE

✓ Students will be able to sow sunflower seeds.

### CONCEPTS

sow sprout seed seedling

### *Engaging the Classroom Teacher*

- Prior to the lesson, coordinate with the teacher about your strategy for caring for the seedlings, whether the class will do it independently or with you in subsequent weeks. See the After Class Action Step below.
- During Action Step 4, suggest that the teacher support students in sharing materials, sowing their seeds, and writing their names on their cups.

## LESSON DESCRIPTION

In this lesson, students engage in a medley of sensory activities as an introduction to the garden, including making a sound map, doing a blind tasting of garden fruits and vegetables, and creating collections of objects with opposite attributes from inside the garden. This lesson can be taught in conjunction with Sunny Honey Seed Snacks.

## MATERIALS

- Newspaper or vinyl tablecloths (optional)
- *Sunflower House* by Eve Bunting
- 1 packet of sunflower seeds to plant
- 1 sample cup for each student
- 12-quart bag of organic seed starting mix, in a tub for easy cleanup
- 2-3 cups of shelled, unsalted sunflower seeds to eat
- Permanent marker
- Trays for carrying cups
- Spray bottle
- Observation Log (p. 118, optional)
- Plant Care Schedule (p. 119)

## PREPARATION

- › Identify an outdoor planting space, if possible. If not, prepare an indoor planting space. You may want to put newspaper or vinyl tablecloths down to minimize the mess.
- › Coordinate with the classroom teacher to create a schedule for students to water and care for their seedlings.
- › Pre-irrigate your seed starting mix by adding water until it is about as damp as a wrung-out sponge.
- › Poke 3–4 drainage holes in the bottom of each sample cup.
- › Prepare trays with the following for groups of 4–6 students:
  - › Sample cups
  - › Sunflower seeds

- › A container of organic seed starting mix
- › 2 spoons or other small scoops to use in the seed starting mix

## ACTION STEPS

**1. Tasting:** Gather students and explain that because it's spring it's a great time to plant flowers. Give students clues about what flower you're talking about without naming it. Say, *The flower seed that we're going to plant today grows big and tall, even bigger than me. The head of the flower moves to face the sun during the day. Birds love to eat the seeds, and so do I! Can you guess what it is?* Pass around edible, shelled sunflower seeds for students to try. If you have a document camera, consider breaking open one of the unshelled planting seeds to help make the connection. You may want to explain how we use sunflower seeds to make many other foods like sunflower oil and sunflower seed butter. **(5 min.)**

**2. Reading:** Read *Sunflower House*. As you're reading, stop and ask questions to check for understanding. For example, say, *"I Sow my sunflower seeds." I wonder what the word "sow" means. Can we guess based on the picture?* Have students turn to a partner to think-pair-share. Because the book consists of rhyming couplets, give students a chance to anticipate the predictable second rhymes by pausing and allowing them to chorally guess the word. After reading, invite students to act out certain events from the book with their bodies, such as planting seeds. **(10 min.)**

**3. Model:** Explain to students that just like the child in the story, they're going to sow sunflower seeds today. Show them how to

plant their seeds. Fill your sample cup with seed starting mix, and tell students that you'll make a hole as deep as your first knuckle. Have students point to their first knuckle as you point to yours. Place two seeds in the hole, and ask students, *Now what should I do? Remind me, what do seeds need to grow?* Cover your seeds, and spritz your soil with as many sprays needed to saturate the soil, and tell students that they should only spray their soil that amount of times. **(5 min.)**

**4. Sowing Seeds:** Give groups of 4–6 students a tray with the materials, and remind them to share, taking and planting just two seeds. While they're working, walk around the room, and write each student's name on their cup. Have students clean up their spots. **(15 min.)**

**5. Sharing:** Gather in a circle, and ask students to share where they plan to plant their sunflower seedling or to whom they plan to give the plant. If you plan to later transplant seedlings in the garden together as a class, discuss when their seedlings will be ready to be transplanted outside. Depending on your region, this might include explaining when the last frost is. Consider looking at the calendar together and counting the days until they'll be ready. **(5 min.)**

**(After Class):** Determine how you will care for the sunflower seeds as they germinate and grow. Ask the classroom teacher ahead of time if they can grow in a windowsill in the classroom, with students rotating the job of watering them every day with a spray bottle to keep the soil moist (but not soggy). Or you might put them all in a tray and grow them in another location such as a school greenhouse, if you have one, and then

bring them back to students when they're ready to transplant. Because you planted two seeds in each cup, many will grow two plants. In those cups, once plants are about four inches tall, cut off the smaller of the two to let the other one grow. They'll need to be transplanted soon after, either as a second session with the class or by sending them home with students.

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: (5 min.)

### Social and emotional learning

- *What was your favorite part about sowing our sunflower seeds?*
- *What part was hard? How could we practice or learn to solve that problem?*

### Check for understanding

- *How will we take care of our sunflower seeds over the next couple of weeks?*
- *When do you think we'll see them sprout?*

## ADAPTATIONS

**Observation Extension:** Have each student set up a log where they'll record observations with pictures of the progress of the plants' growth.

**Mindful Movement Extension:** After the reading, provide students an opportunity to move their bodies by having them pretend to be sunflowers. Prompt them to take deep breaths, taking in the air they need to grow. Then pretend you're the sun, or hold a sun prop and move it around the circle, encouraging students to stretch their bodies in the sun's direction and move their faces to face the sun.

**Garden Setting Variation:** You can lead this activity outside where students are sowing seeds in a circle directly into the ground to create a sunflower house. Mark off the area and prepare the soil, then bring students out to either direct sow or transplant their sunflower seedlings. Grow them over the summer, and harvest and enjoy the seeds together in the fall! Even if you don't have an established garden, talk to your school grounds/maintenance staff to determine whether there is a location for your sunflower house.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.RL.K.1

With prompting and support, ask and answer questions about key details in a text.

Next Generation Science Standards, Life Science Disciplinary Core Idea

### NGSS K.LS1.C.

Organization for Matter and Energy Flow in Organisms – All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.

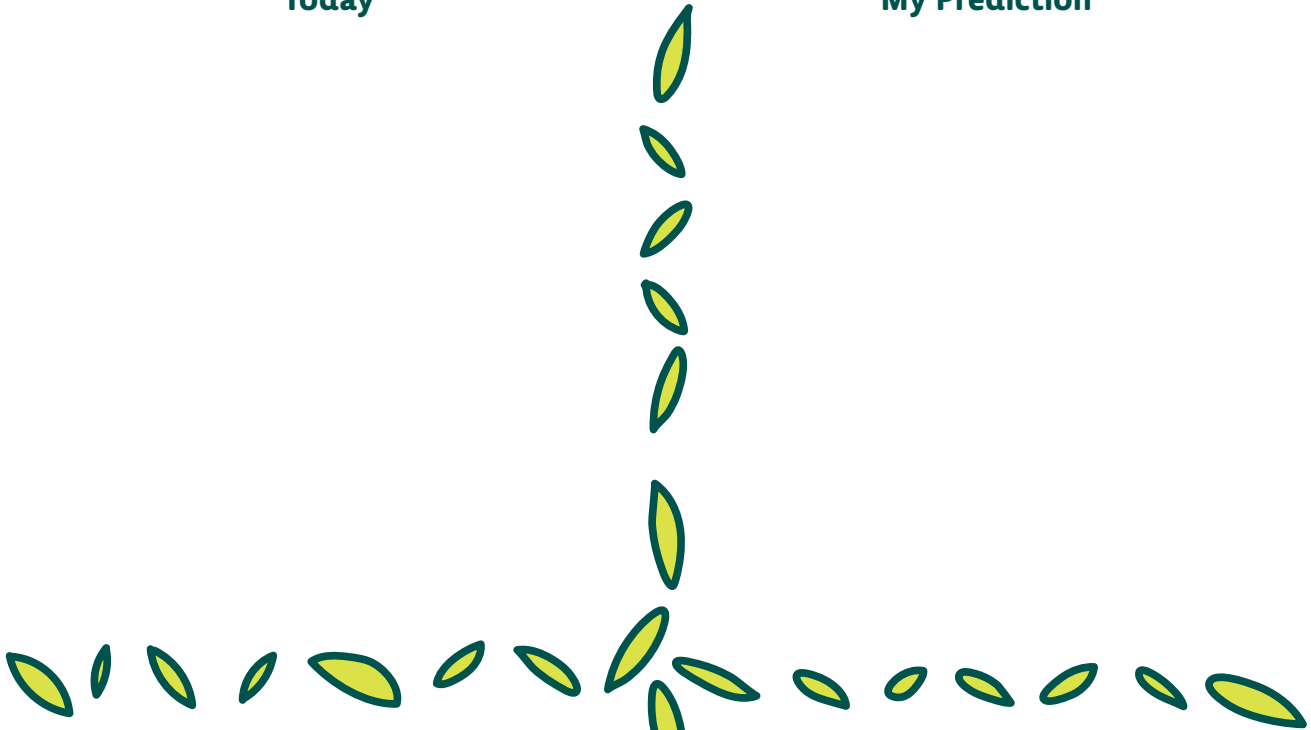
# Observation Log

Name: \_\_\_\_\_

Project: \_\_\_\_\_

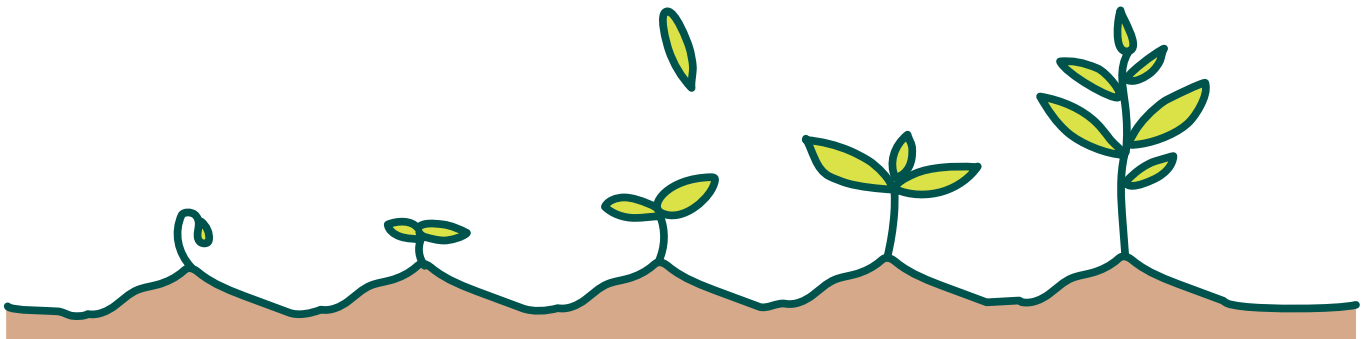
Today

My Prediction



On \_\_\_\_\_  
date

On \_\_\_\_\_  
date



# PLANT CARE SCHEDULE

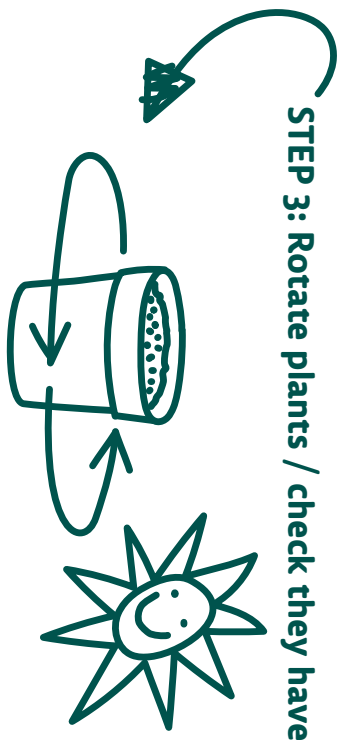
STEP 1: Feel the soil



STEP 2: Spray plants with water



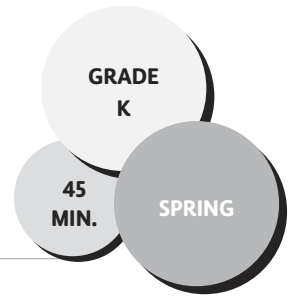
STEP 3: Rotate plants / check they have enough light



Day	Your Name

# Sunny Honey Seed Snacks

**THEME:** PREPARING HEALTHY FOOD



## ESSENTIAL QUESTION

*Why are seeds an important part of the foods we eat?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain that seeds are an important part of our diets.
- ✓ Students will be able to prepare a healthy snack rich in seeds.

## CONCEPTS

edible   nutritious   seed   snack

### *Engaging the Classroom Teacher*

- During Action Step 4, suggest that the teacher supervise the class independently sorting seeds, while you are working with one group at a time at the cooking station.
- During Action Step 5, suggest that the teacher help students clean up seed sorting.

## LESSON DESCRIPTION

In this lesson, students create a healthy seed snack and further explore seeds by sorting and grouping seeds.

## MATERIALS

- Bowl of sorting seeds for each group of 4–6 students (these can be expired seed packets, dried seeds saved from the garden, or inexpensive beans from bulk bins at the grocery store)
- ½ egg carton for each student (or a different container students can sort seeds into, for example, an ice cube tray)
- Seed-Sorting Mat (p. 124)
- Honey Seed Snack ingredients (see recipe below)
- At least 3 measuring tablespoons
- Measuring cup
- Plate for each student
- Optional: To show the sources of each ingredient, find a picture of or real example of each of the following: a sunflower, a sesame plant, a whole grain oat or stalk of oat grass, a honeycomb, and an almond
- Materials for cleanup
- Seeds We Eat Worksheet (p. 123; optional)

## PREPARATION

- › Set up a small table that students can easily gather around. On the table, place a bowl, your ingredients, and the measuring spoons and cups. If you collected images or objects to show the sources of each seed, display those at the table next to each ingredient (e.g., put the sunflower head next to the sunflower seeds).



## Honey Seed Snack Recipe

**Yield:** 30 servings, 1-inch balls

- 1 cup rolled oats
- 1 cup sesame seeds, divided  
(plus more for coating)
- 1 cup sunflower seeds
- 1 cup honey
- 1 cup nut butter (almond butter  
or sunflower butter; be sure to  
check the class's allergy list  
beforehand)
- 1 cup carob powder

• Mix oats, sunflower seeds, honey, nut butter, and half of the sesame seeds until it's incorporated and comes together as a ball. The powder should be completely hydrated.

• Scoop one level tablespoon of dough and form into a ball, approximately 1-inch or smaller. Roll the dough into 1-inch balls or smaller and then roll in sesame seeds.

### ACTION STEPS

**1. Seed Exploration:** Place a bowl of seeds in front of groups of students. Have students use their hands to explore the seeds, reminding them to keep the seeds inside the bowl. Ask them to describe what they feel and what they see. Say, *Do you know that inside each of these is a baby plant?! What are these called?* **(3 min.)**

**2. Seed Sorting:** Pass out a sorting tray (egg carton) to each student, and give them different prompts, depending on the types of seeds you've provided. You might have students sort based on color, shape, size, or texture. For example, say, *Find the smallest seeds, and put them in their own space. Now find the biggest*

*seeds, and put them in a different space, etc.* **(5 min.)**

**3. Explain the Activity:** Explain to students, *Many seeds are edible, which means we can eat them, and they're healthy for us too! Today we're going to be making a sweet snack with them.* Help students understand that seeds contain all the starting materials necessary to develop into complex plants. Say, *Inside of a seed is everything a plant needs to grow into a big plant. Because of this, they are really nutritious or good for our bodies.* Name the ingredients for students, and briefly describe how the snack is prepared. Then say, *As you're sorting your seeds in any way you'd like, I'll call you up in groups to help me make the dough.* **(2 min.)**

**4. Making the Dough:** Pass out Seed-Sorting Mats. While students are independently sorting seeds, call up students in groups of four to six and have them wash their hands. (Another adult might be able to help students who are the next group up.) Have each group focus on measuring one ingredient. Use measuring tablespoons to divide the work among more students, depending on your class size (note that one cup equals 16 tablespoons). Don't worry about amounts being so precise as long as they're all roughly even. **(15 min.)**

**5. Making the Snack:** Have students clean up from seed sorting. Give each student a plate, and provide groups with a small bowl of sesame seeds. Show students how to sprinkle a small amount of seeds onto their plate, and scoop a small amount of the prepared dough onto each plate. Demonstrate rolling a small piece of dough into a ball in your hands and rolling the ball around in the seeds. Circulate through the

room, guiding students who need support. At this point, you might want to pass out wipes or wet paper towels because students' hands and tables will be quite messy. Have them clean up their spaces while waiting to eat their snack. **(10 min.)**

**6. Tasting:** Once they've cleaned up, have students count down from three aloud as a group to try the honey seed snacks all together. Ask students to describe the taste and texture of the snack. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did you help make our snack?*  
*What were ways we shared while making our seed snacks?*

### Check for understanding

- *What were the ingredients in our seed snacks?*
- *Why are seeds a healthy food to eat?*
- *What other seeds or nuts could we add to the snack?*

## ADAPTATIONS

**Garden:** Take students on a guided walk through the garden to find and collect various seeds and pods.

**At Home:** Have students fill out the Seeds We Eat Worksheet (p. 123) with their caregivers.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

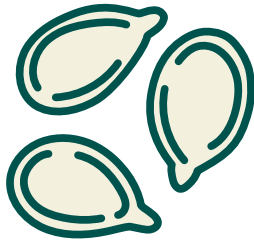
### CCSS.ELA-LITERACY.SL.K.1

Participate in collaborative conversations with diverse partners about *kindergarten topics and texts* with peers and adults in small and larger groups.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Seeds We Eat Worksheet

**Directions:** Draw pictures of foods that contain seeds you eat at home.



# SEED SORTING MAT



Smallest



Spotted



Long



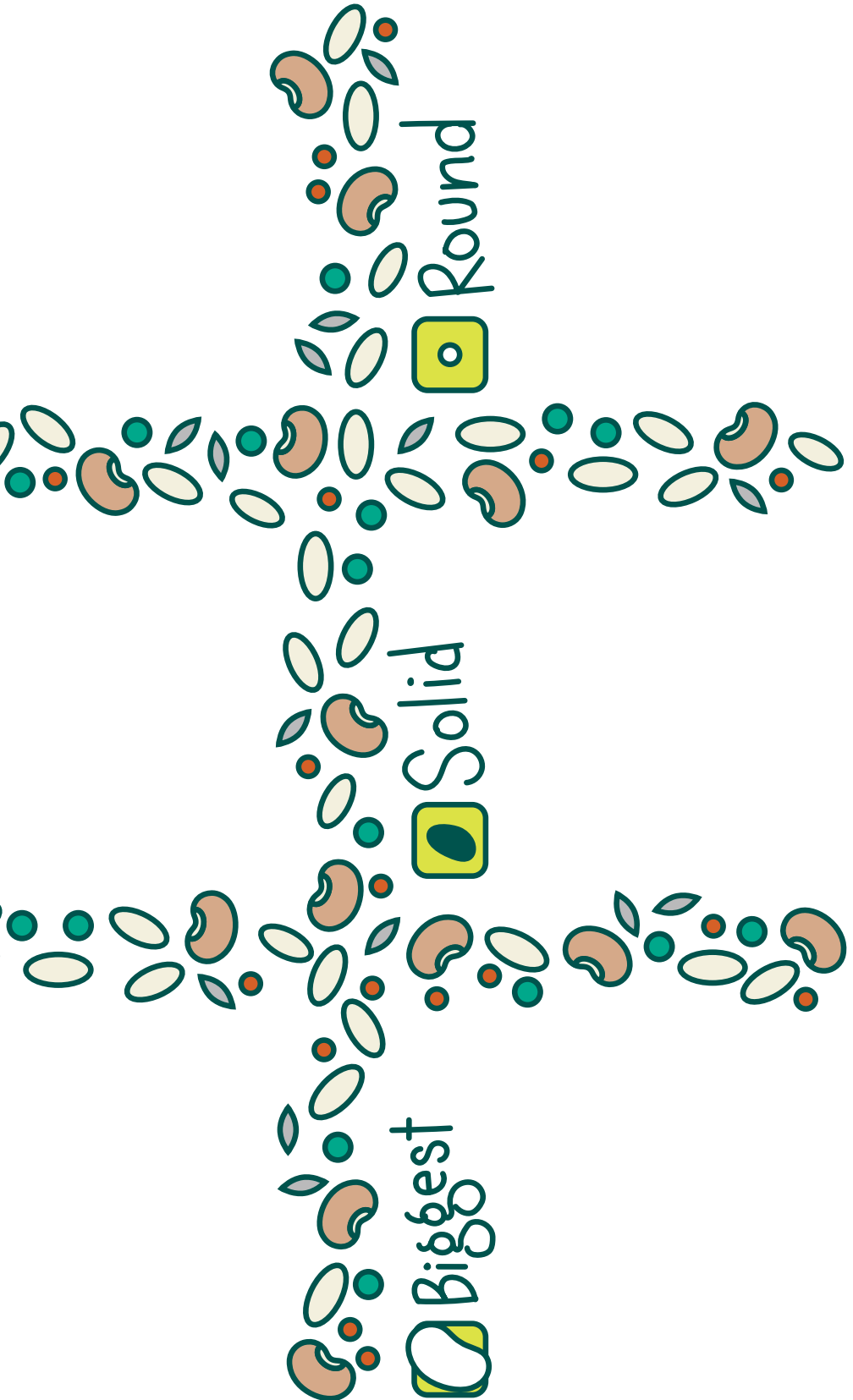
Biggest



Solid



Round



# People Who Feed Us

**THEME:** CONNECTING FOOD, CULTURE, AND COMMUNITY

(divided over two sessions)

GRADE  
K

65 MIN.

SPRING

## ESSENTIAL QUESTION

*Who helps provide the food we eat?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain how we rely on our community to eat.
- ✓ Students will be able to depict a community member who is integral to how we get our food.

## LESSON DESCRIPTION

In this lesson, students consider the various community members who prepare or provide the food they eat, and they create a portrait honoring one of these people.

## CONCEPTS

appreciation    community    portrait

### *Engaging the Classroom Teacher*

- Prior to the lesson, coordinate with the teacher about when you can return for part two to have students color their portraits. (Or see whether the teacher would like to have them continue coloring the portraits the next day.)
- During Action Step 4, suggest that the teacher support students in deciding who to draw, following the steps in creating their portrait, and passing out black markers once students are ready

to trace.

- During the second session, ask the teacher to support students as they use the crayons, markers, or paints.

## MATERIALS

- *Before We Eat: From Farm to Table* by Pat Brisson or *Zora's Zucchini* by Katherine Pryor
- Chart paper
- Model portraits (or photographs or video)
- Drawing paper
- Crayons (if you have the resources, time, and ambition, tempera paints would be a nice choice for this project)
- Pencils
- Washable black marker for each student
- Smocks for students (optional, if painting)

## PREPARATION

- › Create a model portrait beforehand using the materials you'll provide students.
- › Find and print people portraits to project or display. Alternatively, if you want to focus on gratitude toward school nutrition staff, ask to take pictures of those people to share with students. See *Community Food Helpers Video* adaptation below.
- › Write the following sentence starter on chart paper: *I drew a picture of \_\_\_\_\_*  
\_\_\_\_\_ *because* \_\_\_\_\_  
\_\_\_\_\_

› Divide art material into sets for groups of students to share.

#### SAMPLE CHART OF COMMUNITY FOOD HELPERS

- |                           |                         |
|---------------------------|-------------------------|
| • Baker                   | • Fisher                |
| • Beekeeper               | • Food packager         |
| • Cafeteria cook          | • Food pantry volunteer |
| • Corner store clerk      | • Food truck driver     |
| • Family members who cook | • Grocery store clerk   |
| • Farmer                  | • Rancher               |
|                           | • Restaurant cook       |

## ACTION STEPS

**1. Reading:** Gather students in a circle. Ask, *Who helps you get the food you eat?* Students responses may be limited to their family. Explain that you're going to read a book about other people in the community who help give you food. Read a book such as Pat Brisson's *Before We Eat*. Ask, *Who are the people who helped make the dinner that the people ate? Who else helped?* Alternatively, to initiate a conversation about depending on community for the foods we eat, read Katherine Pryor's *Zora's Zucchini*, about a girl who grows zucchini and shares it with her community. **(10 min.)**

**2. Brainstorming:** Have a conversation with students to generate a list of people in the community who help provide the food they eat. You might ask students, *Who prepares the food we eat at school? Who helps with the food we get at a store? Who makes the food we eat at a restaurant?* Adapt the questions and conversations to what is relevant to your community. Use chart paper to make a list of the people you come up with together. As you make the list, comment on how nice it is that so many people in our community help make the food we eat. **(10 min.)**

**3. Model:** Tell students they are going to draw a portrait of a person in their community who helps prepare their food. Explain that a portrait is a picture of someone that usually just shows a person's head and shoulders. Show students your portrait. Talk through the process of how they will create their own. Explain that the first step is to draw a picture of someone in pencil. Point out how you use all the space on your page for the person; encourage students to do the same. Explain that the next step is to trace their person with black marker. The last step is to color their portrait with crayons or tempera paints. **(5 min.)**

**4. Creating Portraits:** Pass out pencils and paper to students, and have them draw a portrait of their person. Remind them to take their time and to raise their hand when they're ready for a black marker. Then have them trace. Tell them they will complete the third step of coloring their portraits at the end of the lesson, if there is time. **(15 min.)**

**5. Sharing:** Have students bring their work back to the circle and share with their neighbor. Give students a sentence starter to structure their talk such as, *I drew a picture of \_\_\_\_\_ because \_\_\_\_\_.*

As they discuss, add comments that build appreciation and value for all the people in our community who prepare our food. Also discuss how nice it is when community members care for one another. **(5 min.)**

**6. Session Two:** Begin with a review of your last session with a warm-up, such as the role play adaptation. Then pass out back the portraits, and give crayons or tempera paints for students to complete their portraits with color. If using

paints, be sure to model how to use the paints, and go over expectations for using the materials responsibly. **(15 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How does it make you feel to think of all the people who help provide food?*

### Check for understanding

- *What does it mean to be part of a community?*
- *How do people in a community help one another?*

## ADAPTATIONS

**Classroom Guest Extension:** Invite community members to class to share about their role in growing or preparing food for the community.

**Physical Role-Play Extension:** After brainstorming, explain to students that you'll play a game where they have to act out each role they brainstormed. For example, call out *Farmer*, and have students pretend to be planting seeds or digging with a shovel. Then call out *Cook*, and have students pretend to be stirring and holding a big bowl.

**Gift Variation:** Frame the activity as creating a gift you'll be giving to the community members you discuss. The portrait could be the gift, or students could do another craft to give as a gift, such as painting a flower pot.

**Community Food Helpers Video:** Throughout your year, make short videos of community members who have participated in FoodCorps

events, such as family members, farmers, etc. Ask each person, *What role do you play in growing and preparing food for the community?* Then share this video with students at the beginning of this lesson to encourage them to consider the real, local food helpers in their community.

## ACADEMIC CONNECTIONS

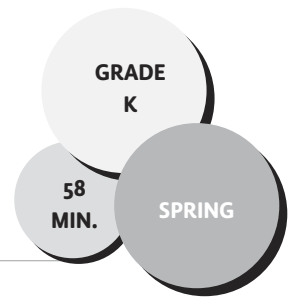
Common Core State Standards for English Language Arts

### CCSS.ELA-LITERACY.SL.K.1

Participate in collaborative conversations with diverse partners about *kindergarten topics and texts* with peers and adults in small and larger groups.

# Plant a Pizza

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*Where do our favorite foods come from?*

## LEARNING OBJECTIVES

- ✓ Students will be able to plant seeds and starts to create a pizza garden.
- ✓ Students will be able to explain the connection between a popular food and the plants that comprise it.

## CONCEPTS

ingredients   plant start  
sow   tool safety

### *Engaging the Classroom Teacher*

- Prior to the lesson, discuss with the teacher whether they'd like to engage the class in continuing to care for the plants and seeds for the remainder of the school year. Schedule these subsequent class activities, or discuss what care will entail if the teacher is willing to do this independently.
- Share that the final product will be a Class Pizza Pie poster, and discuss a plan for where it can be displayed.
- Ask the teacher whether they have an easy way of splitting the class into three groups.

- During Action Steps 3 and 4, suggest that the teacher supervise and support students as they cut, paste, and color their pizza slice, while you take groups one at a time to plant.
- During Action Step 5, suggest that the teacher help tape students' triangles into the class pizza pies.

## LESSON DESCRIPTION

In this lesson, students listen to a story read aloud and then plant vegetable starts that can be used for making pizza. In addition, they will design their own pizza slice with their favorite toppings and then put them together to make class pizza pies.

## MATERIALS

**One of the following:**

- *All the Way to America: The Story of a Big Italian Family and a Little Shovel* by Dan Yaccarino—to emphasize the cultural background of the food
- *Fidget Grows a Pizza Garden* by Jodie Fitz—to emphasize the process the students will go through
- *How a Seed Grows* by Helene J. Jordan—to emphasize the plant life cycle as students will be planting starts
- Broadfork or shovel
- Seeds and starts for planting



- Tomato
- Basil
- Wheat seeds or bell pepper starts (see chart below)
- 4–5 watering cans
- For each student:
  - My Favorite Pizza Slice Worksheet (p. 131)
  - Scissors
  - Crayons
- Large piece of butcher paper for Class Pizza Pie! poster
- Masking tape
- Colored dot stickers to divide students into planting groups (optional)

### PLANT THE FOLLOWING

- |   |   |              |
|---|---|--------------|
| • Tomato starts                                       | <b>Veggie Toppings</b>                        | <b>Herbs</b> |
| • Basil starts  | • Green onions                                | • Oregano    |
| • Hard Wheat seeds<br>(if possible in<br>your region) | • Dark leafy greens<br>(spinach, chard, kale) | • Thyme      |
|   | • Zucchini                                    | • Rosemary   |
|   | • Bell pepper                                 |              |
|   | • Hot chili peppers                           |              |
|   | • Onions                                      |              |

## PREPARATION

- › Prepare the bed you'll be planting by clearing out weeds and using a broadfork or other tool to loosen soil. If you are starting a new bed in the garden for this, consider making it in a circle to represent a pizza. If not, this also works in a garden bed of any shape.
- › On a large piece of butcher paper, draw three large circles. The radius of each circle should be the length of one of the pizza triangles from the Pizza Slice Worksheet. This is where students will tape their completed pizza triangles at the end of the lesson to create whole pizza pies.
- › Determine how you will divide the class into three groups for planting.

- › Prefill watering cans.

## ACTION STEPS

**1. Engage:** Gather students in a circle and say, *Today we're going to plant a really popular food in the garden. It comes in a triangle shape, it's cheesy and saucy and has chewy crust. Do you know what it is? (Pizza!) Have you ever seen pizza growing in a garden? Well, how do you think we're going to do it then? (5 min.)*

**2. Reading:** Read the book you've selected to students, helping them understand the connection between growing plants and eating pizza. Ask, *What are the ingredients that go into pizza that we can grow in our garden?* Introduce to students the ingredients you'll be planting today by showing them the plant seeds and starts. **(10 min.)**

**3. Making My Favorite Pizza Slice:** Explain to students they'll get a chance to create a visual of their favorite pizza slice. Show them the worksheet. Explain that they'll cut out their slice, but then draw their toppings with pencil and then color with crayons. Explain that while they're drawing their favorite toppings on their pizza slices, you'll take one group at a time to plant the pizza garden. If you have them, pass out dot stickers with three different colors, red for tomato, green for basil, and yellow for wheat, for example, so students will be able to easily identify what group they're in. **(20 min.)**

**4. Planting Rotations:** While students are creating their slices, call up one group at a time to plant with you, demonstrating how to plant the seed or start they're working with. Teach or review tool safety during the demonstration, saying, for example, *See how I gently dig so*

that soil doesn't fly up where it might bother my neighbor? Depending on the number of students and space you have, you might have pairs work together to plant one start. Have students water their plant, and be sure this small group understands how their plant plays a part in making pizza. **(6 min. each group)**

**5. Class Pizza Pies!:** Gather students back in a circle and give each student a piece of tape. Have them affix their pizza slice onto the class pies. Discuss how everyone's different preferences can come together to create one big pie. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- Ask yourself: Was I safe and respectful in the garden today?
- Ask yourself: What was something helpful that I or a classmate did in the garden today?

### Check for understanding

- What are the plants that we planted today that would help us make pizza?
- What part of pizza do tomatoes make? What part of pizza does wheat make? etc.

## ADAPTATIONS

**Circular Bed Variation:** If you have the space, make a circular pizza garden, planting your toppings in different wedges of the circle.

**Different Theme Beds:** Invite students to share common or favorite dishes from their

communities, and then work with them to plan theme beds to plant the ingredients for these dishes.

**Dairy and Meat Extension:** Consider placing figurines of cows and pigs in the pizza garden to honor where cheese, pepperoni, and sausage come from.

**Follow-Up:** In the fall, make pizza with the now second graders, making your own homemade tomato sauce and topping pies with veggies and herbs from the garden.

## ACADEMIC CONNECTIONS

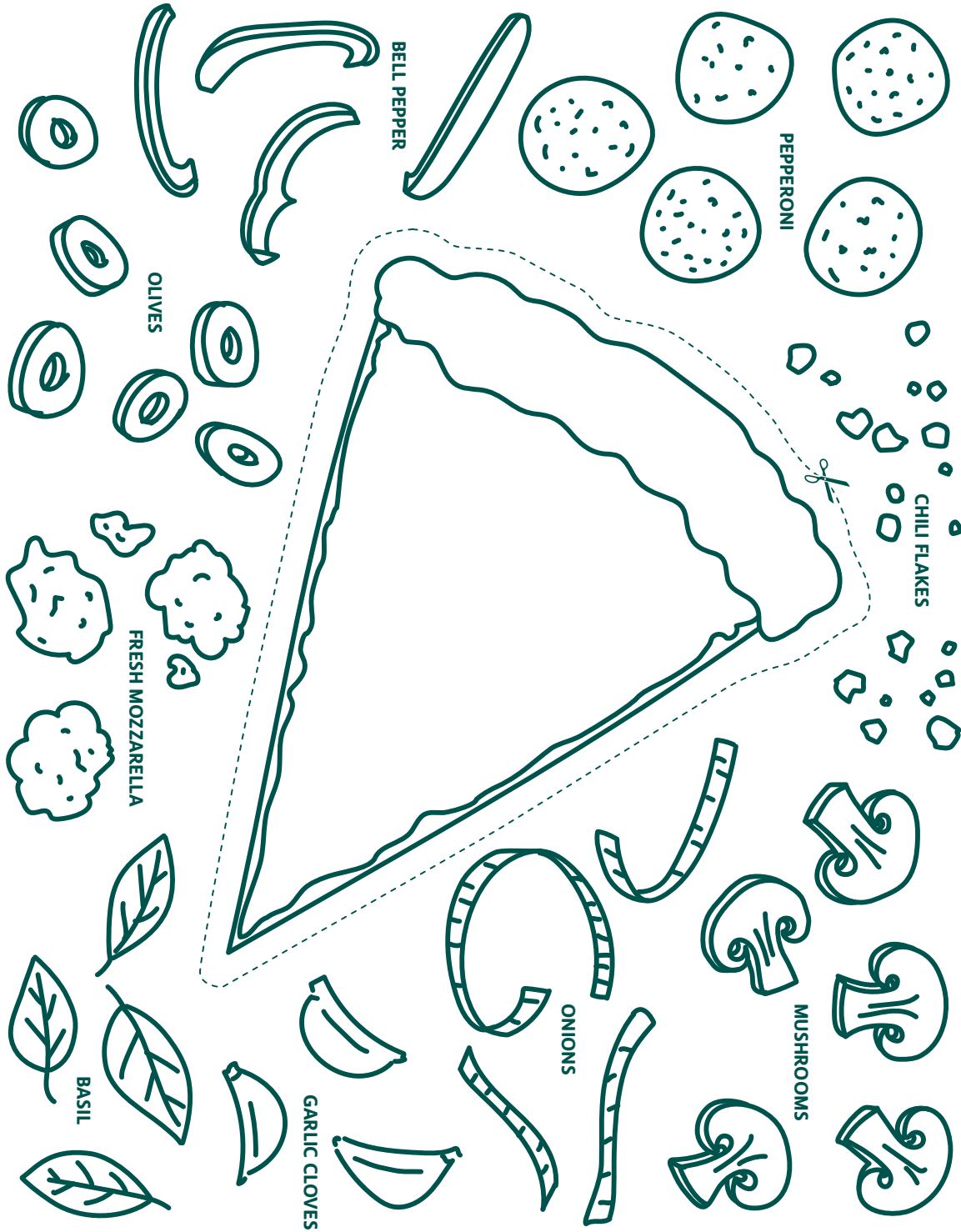
English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.RL.1.1

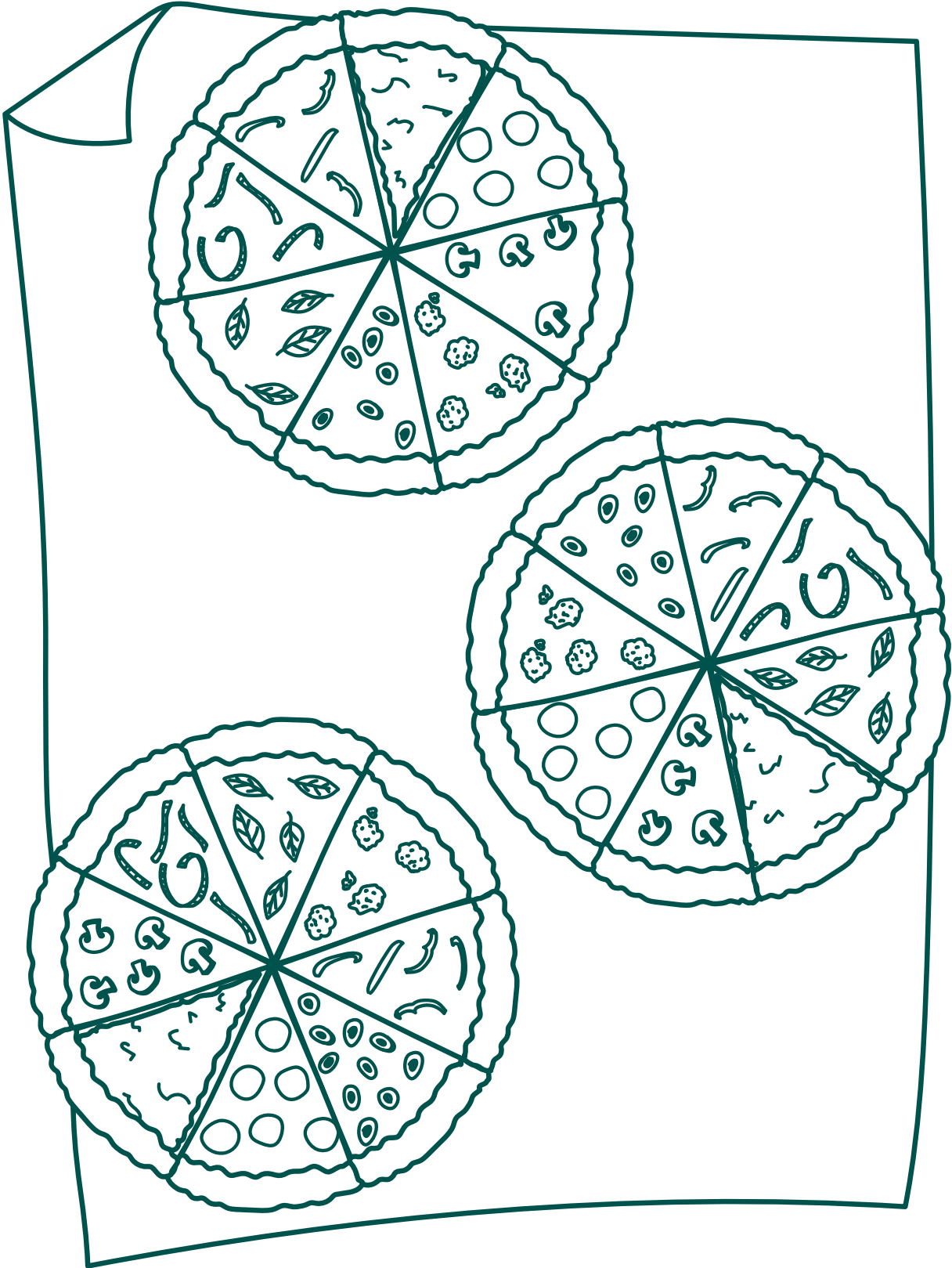
Ask and answer questions about key details in a text.

# My Favorite Pizza Slice

**Directions:** Draw and color your favorite pizza toppings on your pizza slice.  
Then cut out your slice.



# Example of Class Poster





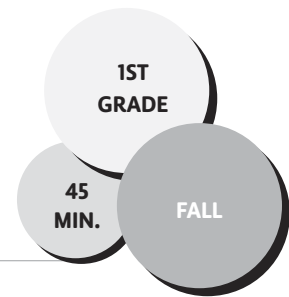


# **First Grade**

**LESSONS**

# Sensory Explorations

**THEME:** LIVING UP TO OUR FULL POTENTIAL



## ESSENTIAL QUESTION

*Why is it important to pay attention using our five senses in the garden?*

## LEARNING OBJECTIVE

✓ Students will be able to describe their natural environment based on sensory observations.

## CONCEPTS

edible   inedible   opposites  
rough   smooth

### *Engaging the Classroom Teacher*

During Action Steps 2 and 5, suggest that the teacher help supervise and guide students in their exploration of the garden.

## LESSON DESCRIPTION

In this lesson, students engage in a medley of sensory activities as an introduction to the garden, including making a sound map, doing a blind tasting of garden fruits and vegetables, and creating collections of objects with opposite attributes from inside the garden. This lesson can be taught in conjunction with kindergarten lesson Mindful Tasting.

## MATERIALS

■ Five Senses Poster (p. 138)

### For each student:

- Paper and clipboard
- Pencil
- 1 empty dozen egg carton for each group of 3 students
- Permanent marker
- 3 or more fruits, vegetables, and/or aromatic herbs from the garden for students to taste; examples might include berries, apples, cherry tomatoes, sugar snap peas, broccoli, mint, or basil
- A bowl for each sample of fruits, vegetables, or herbs

## PREPARATION

- ▶ Start gathering empty egg cartons from your community a couple weeks before the lesson to make sure you have a sufficient amount—about ten.
- ▶ Prepare egg cartons by writing opposite adjectives on the bottom of each carton. For example, write *smooth* down one half of an egg carton and then *rough* down the other half. Other adjective pairs might be *shiny* and *dull*, *alive* and *dead*, *soft* and *hard*, *wet* and *dry*, and the like.
- ▶ Prepare a model egg carton with the words *edible* and *inedible* on the bottom. Find six edible objects to put into the carton on the edible side and six inedible objects to put into the inedible side.
- ▶ Harvest and wash your produce, and place each into a bowl from which you can later

pass out samples to students.

## ACTION STEPS

**1. Introduction:** Gather students in a circle, and explain that today they're going to use their five senses to get to know the garden. Ask students to name the five senses, associating a physical gesture with each sense that they name. Show students the Five Senses Poster as you discuss the senses. **(5 min.)**

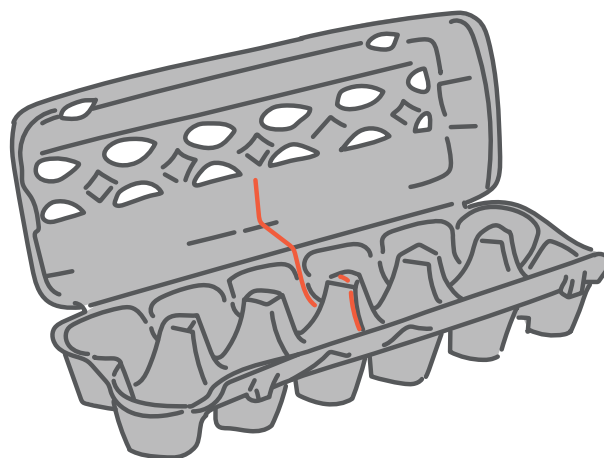
**2. Making a Sound Map:** Tell students that the first sense they'll be using is hearing, and explain that they're going to draw a map of the garden, but instead of drawing a map of the things they see, they'll draw a map of the things they hear. Say, *You'll sit or stand somewhere in the garden and maybe close your eyes, and if you hear a bird from this direction, you'll open your eyes and draw a bird in the part of the garden where you think you heard it. If you hear leaves blowing in the wind in this direction, then draw the leaves blowing in that direction. We're going to see if we can stay in one place and draw our sound maps for five minutes. Do you think we can do it?* Pass out a piece of paper to each student. Have students mark X in the middle to represent themselves, and let them know the signal to return to the circle. Have students scatter around the garden where you can still see them and then set the timer. After five minutes, gather students back in the circle, and have them show their sound maps to the students sitting next to them before sharing with the class some of the things they heard. **(10 min.)**

**3. Hand-Washing Break (5 min.)**

**4. Blind Tasting:** Tell students that they will

use their sense of smell and taste to try some items from the garden. Have students close their eyes. Pass out the first sample into each student's hands. Ask students to smell the item, and describe what they smell. Next have them taste it. Say, *What words would you use to describe what you taste? What does this remind you of?* Have students open their eyes. Show them the food they just tasted and then move on to the next sample. **(10 min.)**

**5. Collecting with Egg Cartons:** Explain that students will be exploring the garden using their five senses. Show students the example egg carton filled with the six edible and six inedible objects you collected. Say, *On this side I have one kind of thing, and on this side is the opposite kind of thing. Look closely. Can you guess what the opposite words are?* Give students time to guess and then reveal the words. Explain that they'll have a chance to collect items and create a collection to share with their classmates. Pass out distinct egg cartons to groups. Alternatively, if you'd like to simplify the activity, you can reinforce one concept by having all students look for the same attributes, for example, living and dead. Rather than guessing once they return to the circle, students can display and share their collections. **(10 min.)**





## REFLECTION

Have students discuss the following questions in small groups, then share with the class: (5 min.)

### Social and emotional learning

- Ask yourself: How can I be safe and respectful in the garden?

### Check for understanding

- Why do you think it's important to use all our senses when we explore in the garden?
- What was the most interesting thing you discovered in the garden today?

## ADAPTATIONS

**Simplified Sound Map:** You can also create a sound map as a class by sitting together in a circle and having students close their eyes. Each time they hear a new sound, they hold up a finger. After five minutes, they open their eyes and share what they heard (and where) while the teacher records their observations on chart paper.

**Meet a Tree Extension:** Have students play the game Meet a Tree. Split students into pairs, and have one partner close their eyes, while the guiding partner leads the pair to a tree or shrub. The student keeps their eyes closed while touching and smelling the tree or shrub. The guiding partner can direct the closed-eye partner to interesting parts of the tree or shrub to explore. Then the guiding partner leads the closed-eye partner back to the starting place, where they must find the tree or shrub the pair met.

**Human Camera Extension:** This activity is similar to Meet a Tree. The guiding partner (the photographer) brings their partner (the camera) to a beautiful plant or view in the garden. Once

there, the photographer positions the human camera, perhaps guiding the student's chin up or down and having the student open their eyes, like a shutter, to take a mental snapshot of what they see. The human camera should quickly close their eyes again, and the photographer can take a couple more pictures in different spots before they switch roles.

**Indoor Variation:** You can recreate these activities indoors, if needed. Instead of a sound map, play students a forest soundscape on YouTube. Have them draw what they think the place looks like, or challenge them to listen carefully and count as many different birds as they can. For the egg carton exploration, bring nature indoors with objects you gather from outside in piles for students to sort through.

## ACADEMIC CONNECTIONS

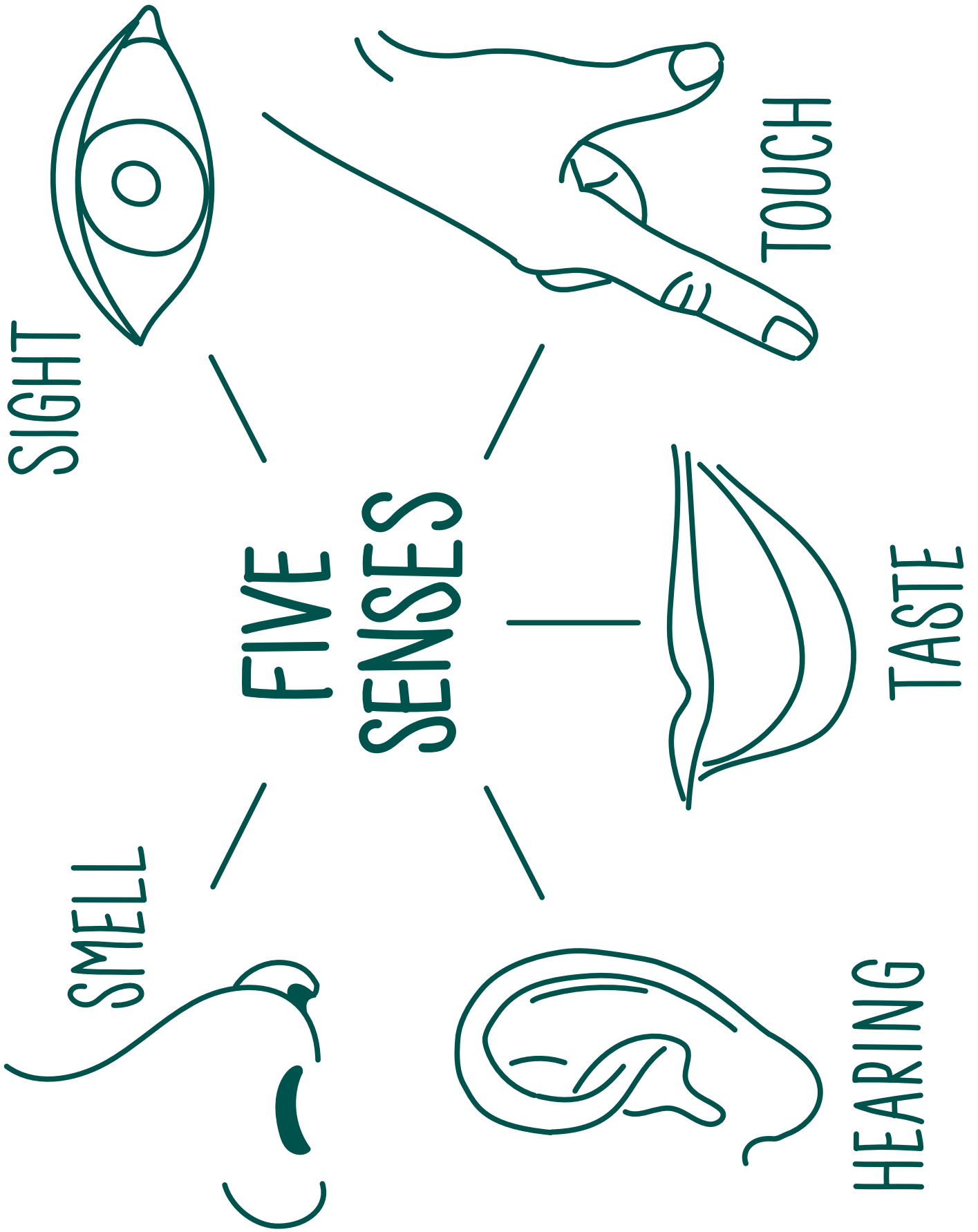
English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.L.1.1.F

Use frequently occurring adjectives.

### CCSS.ELA-LITERACY.L.1.5

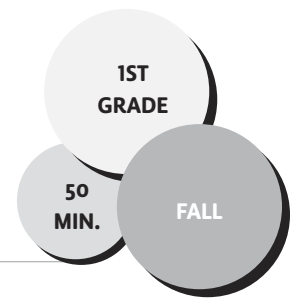
With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings.



# Go, Grow, Glow

Adapted from Life Lab's *The Growing Classroom*

**THEME:** MAKING HEALTHY FOOD CHOICES



## ESSENTIAL QUESTION

*How can eating certain foods help our bodies grow strong and healthy so that we can be who we want to be and do what we want to do in the world?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain how eating certain foods helps them be healthy.
- ✓ Students will be able to identify foods that fall under each go, grow, and glow category.

## CONCEPTS

energy go, grow, glow protein

### *Engaging the Classroom Teacher*

During Action Step 6, suggest that the teacher help students correctly categorize their favorite foods.

## LESSON DESCRIPTION

In this lesson, students play go, grow, and glow charades, learning about the different foods that help their bodies have energy (go), grow strong (grow), and stay healthy (glow). They then draw themselves in action and at their best, with connections to the foods that enable them to enjoy those activities. This lesson is designed to be taught in conjunction with lessons The Great

Balancing Act, Go, Grow, Glow Quesadillas and Plant a Go, Grow, Glow Bed.

## MATERIALS

- Index card for each student (optional)
- Go, Grow, Glow Poster (p. 142)
- Go! Grow! Glow! Worksheet (p. 143) for each student
- Projector and document camera or chart paper and markers
- Colored pencils and crayons

## PREPARATION

- › If you don't have a document camera to project the worksheet, create a version of it on chart paper to fill in with your own model.
- › Photocopy the Go! Grow! Glow! Worksheet for each student.

## ACTION STEPS

- 1. Engage:** Gather students in a circle, and ask them to think about their favorite activity, like running, reading, etc. If you want to practice literacy, pass out index cards, and have each student write the activity on their index card. Check in and encourage students to sound out what words begin with and use their own spelling, or let them draw a picture. **(2–5 min.)**
- 2. Playing Charades:** Say, *We're going to play a game where you act out your favorite activity*

and then we have to guess what you're doing. Take volunteers to stand up and act out their activity. The student who correctly guesses is the next one to act. If you've had students write their activity on index cards, play a new round by collecting everyone's cards, shuffling them, and taking volunteers to act out a random activity from the pile. You might have to support students in reading each other's writing. **(10 min.)**

**3. Explain:** Explain, *Did you know there are certain foods we eat that give us energy to do our favorite things? These are the "go" foods.* Have students wiggle their bodies to show using energy, then say, *There are also foods that help us grow and get strong. These are "grow" foods.* Have students show their bicep muscles. Then say, *There are also foods that help our skin, teeth, and hair look nice; help our brain think; and help our body feel good. These are foods that help us "glow"!* Have students give a full-toothed smile, and frame their faces with their hands. **(5 min.)**

**4. Guessing Game:** Show students the Go, Grow, Glow Poster, and go over some foods in each category saying, *Grains like bread and rice help us go! Protein-rich foods like beans, nuts, dairy, and meat help us grow! Fruits and vegetables help us glow!* For each category have students pantomime the gesture you taught them to reinforce the concept. Then play a game where you call out a food, and students must guess which category it goes in by performing the corresponding gesture. For example, say, *Chicken!* and then have students make a muscle. Or *Cucumber!* and have students make a big, glowing smile. **(10 min.)**

**5. Model:** Model for students how they'll be filling in the Go! Grow! Glow! Worksheet, using either the document camera or chart paper. Explain aloud while drawing a picture of yourself in the center of the wheel doing your favorite activity. Then draw some of the corresponding go, grow, and glow foods from each section of the Go, Grow, Glow Poster on the outer part of the wheel, emphasizing that go, grow and glow, foods help give us the energy, strength, and health to do our favorite things. **(5 min.)**

**6. Making a Go, Grow, Glow Wheel:** Pass out worksheets to students and then circulate through the room, guiding students to refer to the poster to remember which foods match which category (go, grow, or glow). **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What was your favorite part of the activity today? How did it make you feel?*

### Check for understanding

- *What are some go foods you like eating?*
- *What are some grow foods you like eating?*
- *What are some glow foods you like eating?*

## ADAPTATIONS

**Tasting Extension:** Have students make a go, grow, and glow snack, such as crackers with hummus and vegetables from the first-grade lesson The Great Balancing Act, or a yogurt parfait with granola from the kindergarten lesson Perfect Parfait.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.SL.1.1**

Participate in collaborative conversations with diverse partners about *grade 1 topics and texts* with peers and adults in small and larger groups.

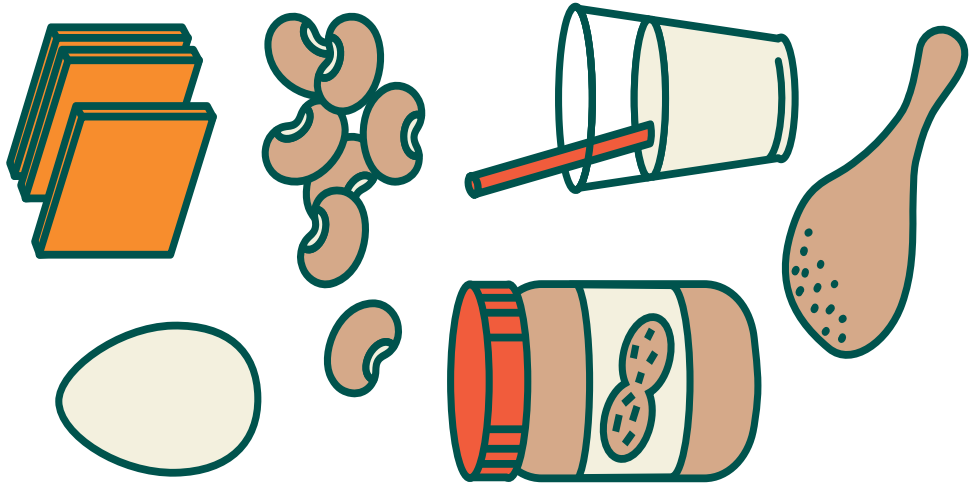
### **CCSS.ELA-LITERACY.L.1.1.J**

Produce and expand complete simple and compound declarative, interrogative, imperative, and exclamatory sentences in response to prompts.

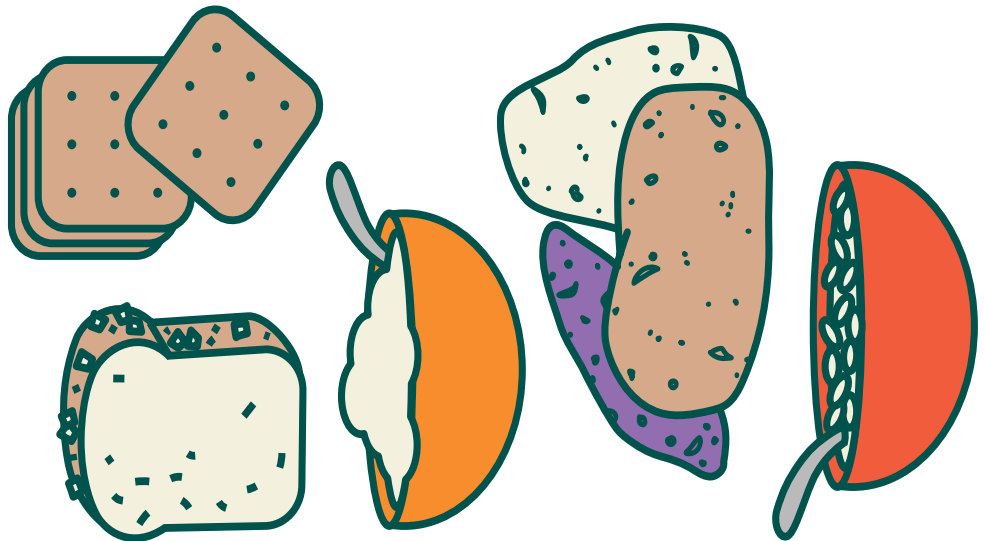
# GLOW FOODS



# GROW FOODS



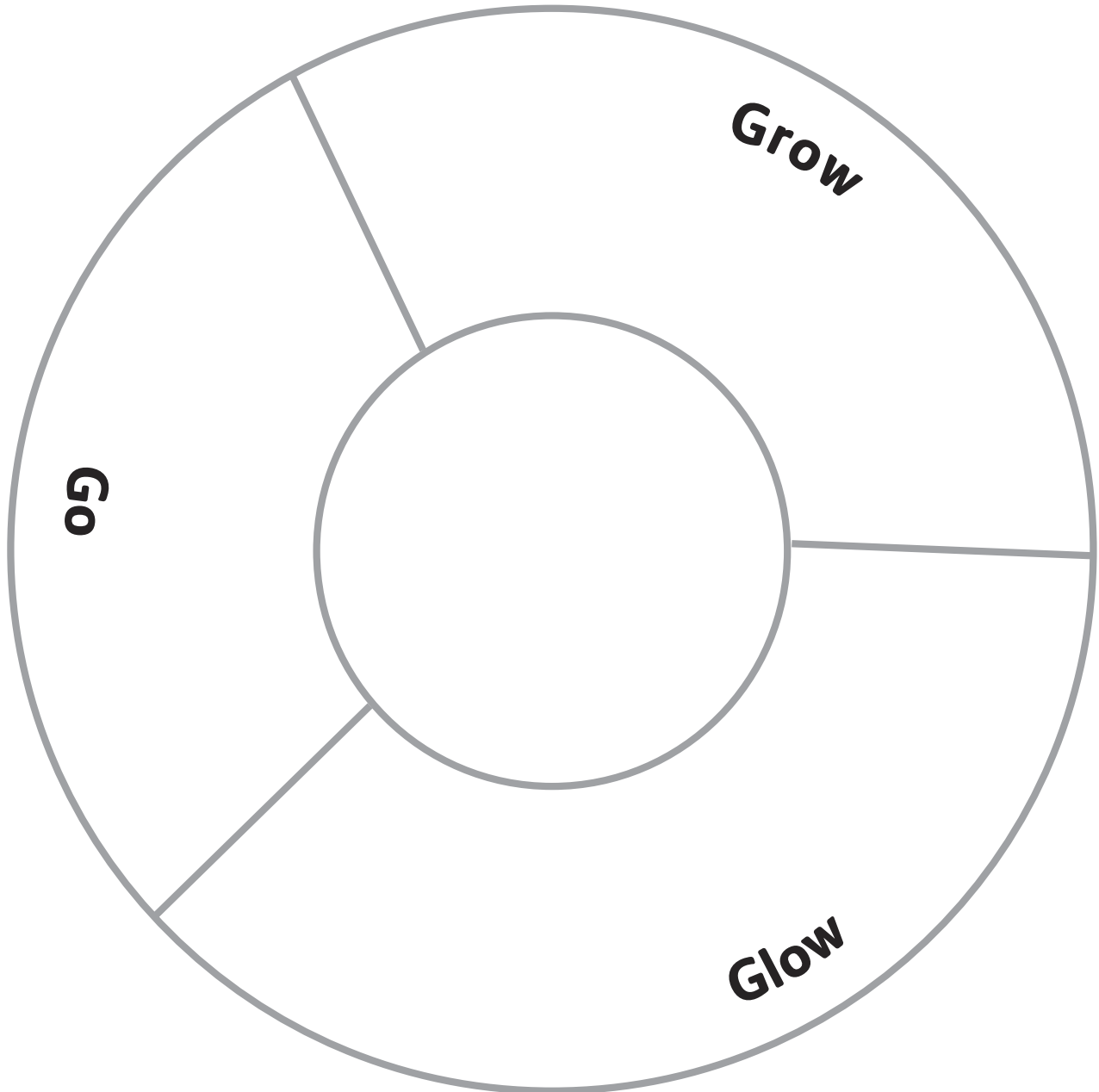
# GO FOODS



Name: \_\_\_\_\_ Date: \_\_\_\_\_

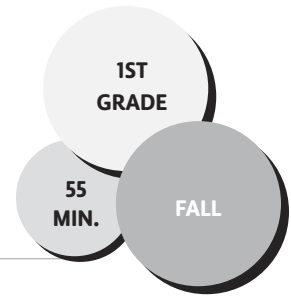
# Go! Grow! Glow! Worksheet

**Directions:** Draw a picture of your favorite activity in the middle circle.  
Draw the go, grow, and glow foods you like to eat on the outside of the circle.



# Plant Part Scavenger Hunt

**THEME:** EXPLORING THE ECOLOGY OF FOOD



## ESSENTIAL QUESTION

*Why is each part of the plant important?*

## LEARNING OBJECTIVE

✓ Students will be able to recognize and name the six plant parts.

## CONCEPTS

nutrients   pollinate   six plant parts

### *Engaging the Classroom Teacher*

During Action Step 4, suggest that the teacher help supervise students in their exploration of the garden. Students may need guidance for how to find their assigned plant part.

## LESSON DESCRIPTION

In this lesson, students learn the six plant parts through reading a picture book, singing a song, and hunting for the six plant parts in groups in the garden. This lesson is designed to be taught in conjunction with Plant Part Mystery, Plant Part Wraps, Tops and Bottoms Popsicles, and Planting a Tops and Bottoms Bed. See these lessons if you want to teach the parts of the plant concept indoors.

## MATERIALS

- *Tops and Bottoms* by Janet Stevens
- “Roots, Stems, Leaves” song by the Banana Slug String Band
- Plant Part Poster (p. 147)
- Six Plant Part Mini Posters (pp. 148-50)
- 6 baskets or trays (for students to collect plant parts)

## PREPARATION

- › Learn the song, “Roots, Stems, Leaves” by the Banana Slug String Band.
- › Display the Plant Part Poster.
- › Photocopy the Six Plant Part Mini Posters to provide each group during the scavenger hunt.

## ACTION STEPS

**1. Reading:** Gather students in a circle in the garden, and tell them they’ll be learning about the six parts of a plant. Read *Tops and Bottoms* about a clever hare and a lazy bear who agree to split the tops and bottoms of plants that Hare grows on Bear’s land. If you don’t have the text but have access to a computer and projector, find a video of a read aloud on YouTube. As you’re reading, ask questions about the characters, setting, and plot to check for understanding. For example, ask, *How do you think Bear is feeling right now? How do you know? What do you think Hare is going to do? Why do you*



*think he did that?* Discuss how, like Hare in the story, we grow plants to eat different parts of the plant. Ask students if they know the other names of the plant parts. **(15 min.)**

**2. Singing:** Teach students the “Roots, Stems, Leaves” song. Have students crouch down and touch their feet for roots, put their arms at their sides for stems, put their arms out for leaves, frame their faces with their hands for flowers, use their hands to make a circle the size of an apple above their heads for fruit, and “rain” their fingers down to the floor again for seeds. **(5 min.)**

**3. Explain:** Show students the Plant Part Poster. Focus on one plant part at a time, discuss its function, and then brainstorm edible examples. For example, say, *The roots help hold the plant in place and gather nutrients and water from the ground. Can you think of any roots we eat? The stem helps the water and nutrients travel through the plant and keep the plant tall and reaching for the sun. Can you think of any stems we eat? The leaves help the plant make its own food! Can you think of any leaves we eat? The flower attracts bees to help pollinate the plant, so the plant can reproduce and make seeds for new plants. Can you think of any flowers we eat? Can you think of any seeds we eat? The fruit grows around the seeds to protect them. Can you think of any fruits we eat?* **(10 min.)**

**4. Scavenger Hunt:** Divide students into six groups, one for each part of the plant. Explain that together with their group they’ll have to find their assigned plant part. Give each group a basket, tray, or other container to put their

collections into. Remind students to only pick plants that have ten or more of that part and to harvest with hands to protect the plant. Let them know the signal you’ll use to call them back when it’s time. **(10 min.)**

**5. Sharing:** Come back into a circle, and have groups briefly show and tell about their different plant parts. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did you work with your group to find your plant parts?*
- *Ask yourself: Was I safe and respectful in the garden today?*

### Check for understanding

- *Which plant parts do you like to eat?*
- *What clues did you look for to find your plant part?*
- *Which part of the plant holds the plant in place in the ground?*
- *Which part of the plant helps the plant make its own food?*

## ADAPTATIONS

**Language:** Sing a few rounds of “Roots, Stems, Leaves” in English, speeding up and slowing down. Next, try singing the song in Spanish. Sing *raiz* for root, *tallo* for stem, *hoja* for leaf, *flor* for flower, *fruta* for fruit, and *semilla* for seed.

## **ACADEMIC CONNECTIONS**

Next Generation Science Standards, Life  
Science Disciplinary Core Idea

### **NGSS LS1.A**

Structure and Function – All organisms have external parts . . . Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.

English Language Arts Common Core State  
Standards

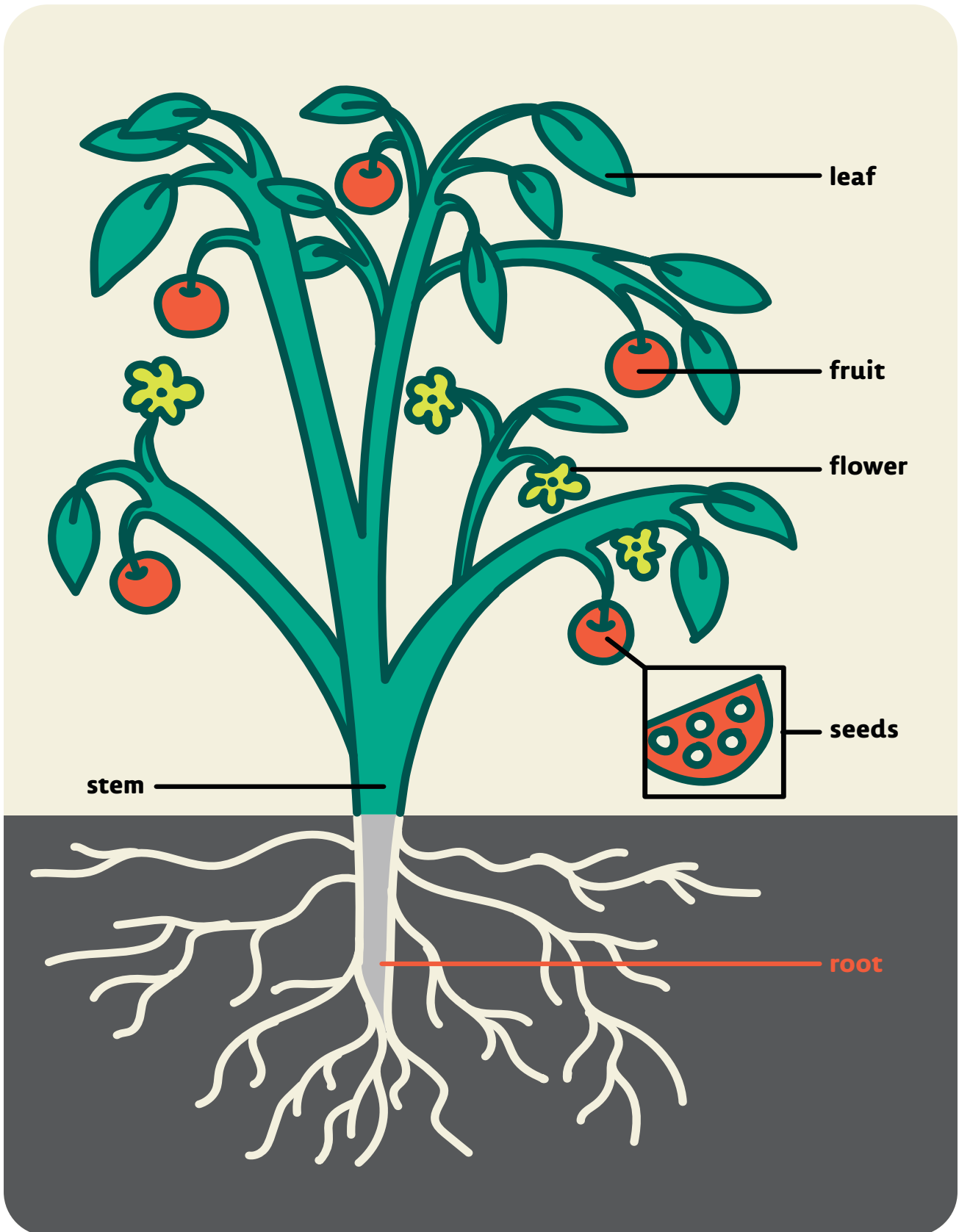
### **CCSS.ELA-LITERACY.RL.1.7**

Use illustrations and details in a story to describe its characters, settings, or events.

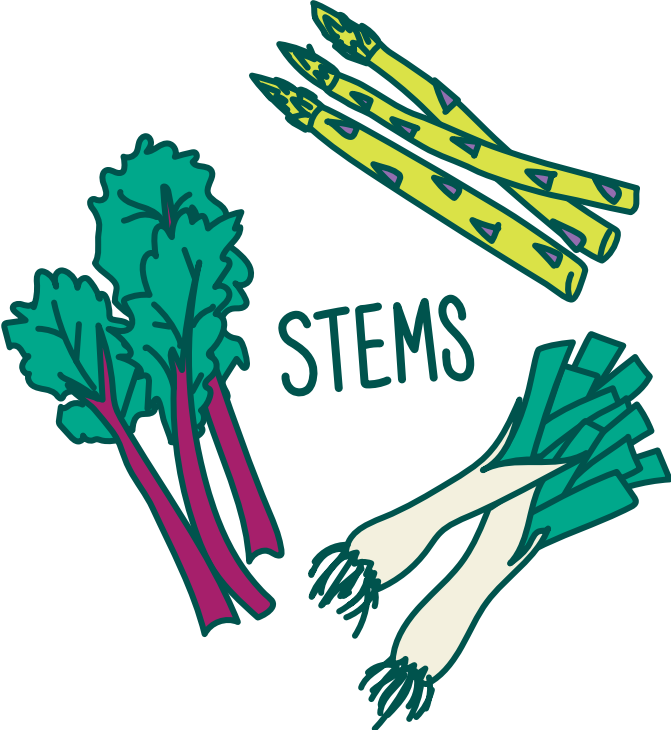
### **CCSS.ELA-LITERACY.SL.1.4**

Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.

# Plant Part Poster



**Teacher Directions:** Cut out for each group of students to use during scavenger hunt.

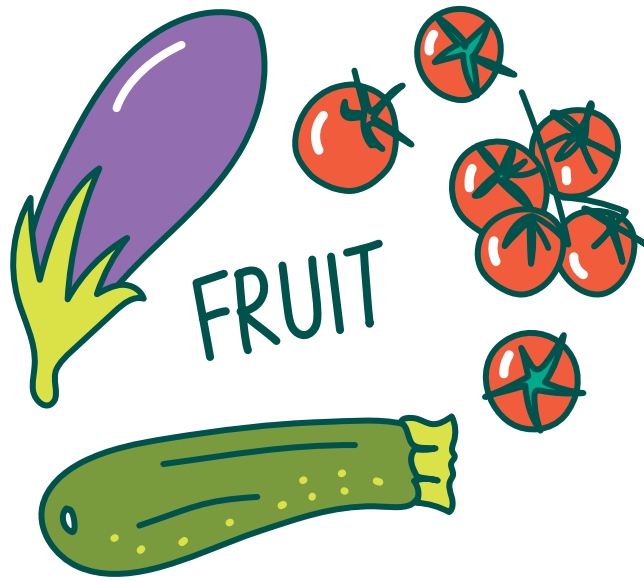




LEAVES

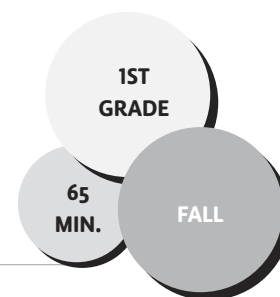


FLOWERS



# Planting a Tops and Bottoms Bed

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*Why is each part of a plant important for people to eat?*

## LEARNING OBJECTIVES

- ✓ Students will be able to name the different parts of a plant.
- ✓ Students will be able to plant starts in a garden.

## CONCEPTS

nutrients pollinate six plant parts

### *Engaging the Classroom Teacher*

- This lesson is highly dependent on the classroom teacher and even a third adult supporting the craft rotations. Discuss with the teacher ahead of time, and consider streamlining to just one craft, if necessary.
- See if the teacher has an easy way to divide the class into three groups.
- During Action Step 2, have the teacher and another adult supervise the craft rotations

## LESSON DESCRIPTION

In this lesson, students review the book *Tops and Bottoms*, which they read in the fall lesson, Plant Part Scavenger Hunt, and rotate through activities in the garden centered on leafy tops

and root bottoms. Students plant a Tops and Bottoms bed, make leaf rubbings, and use potatoes as stamps for printing. They then sample the greens and roots they've planted. (It will be key to have the classroom teacher and a second adult volunteer supervise the craft rotations while you assist students in planting.) Depending on your region, you'll want to schedule this lesson as early in the school year as you can, so plants have time to establish themselves before days become shorter. This lesson is designed to be taught in conjunction with Plant Part Scavenger Hunt, in which students first read the book, and *Tops and Bottoms Popsicles*.

## MATERIALS

### For Whole-Class Activities:

- *Tops and Bottoms* by Janet Stevens
- Hand soap or hand sanitizer
- Paper towels
- Small, raw sample of vegetables students will plant, such as turnips and lettuce or collards or beets and collards

### For Planting Station:

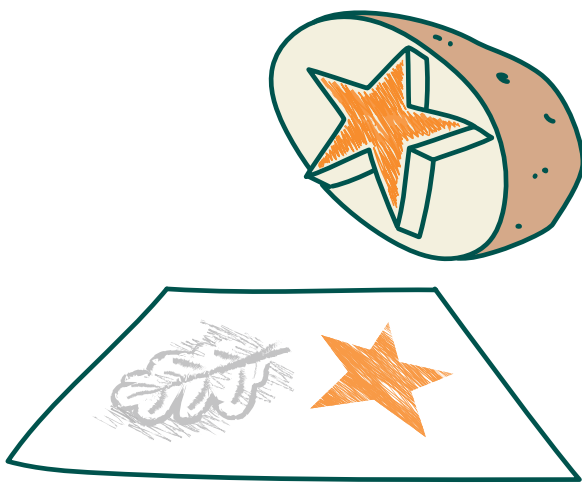
- Transplants of leafy greens, such as lettuce, kale, chard, or spinach (1 for every 2–3 students)
- Seeds for root vegetables, such as carrots, radishes, or beets
- 5 trowels
- 3–5 watering cans
- Plant labels
- Pencils to write on plant labels
- Access to hose for refilling water

### For Leaf Rubbing Station:

- Crayons with paper peeled off
- 1 sheet of paper for each student
- Clipboards

### For Stamping Station:

- 4–5 large potatoes
- Tempera paint or a few different colored stamp pads
- 1 sheet of paper or cardstock for each student
- Newspaper or vinyl tablecloth
- Pencil or permanent marker (for writing names on prints)



## PREPARATION

- › Determine the vegetables you'll be planting based on your region. Depending on your location, you might want to schedule this lesson as early in the fall as possible, so your plants get plenty of light and time to grow before winter.
- › Scout locations to set up the two different craft projects. You might put down newspaper or vinyl tablecloth secured with heavy rocks. Keep in mind you'll need a smooth surface for both crafts so the texture of the table or ground doesn't show up in the print you make, which is why clipboards might come in handy.

- › Peel the paper off the crayons so that students have a broad surface for making leaf rubbings.
- › Slice the potatoes in half. You can use a paring knife to carefully create stamps from the cut sides of your potatoes, such as hearts, stars, and triangles.
- › If using tempera paint, put different paints into small trays (you can reuse the tops of large yogurt containers or other food packaging). Designate one potato stamp for each color.
- › Troubleshoot each craft beforehand to anticipate any snags with materials students might experience.
- › Place all materials for the Stamping Station at one table and those for the Leaf Rubbing Station at the other table. Place all materials for the Planting Station near the bed where you'll be planting and all materials for the tasting near the space where you'll gather the class at the end for the tasting.
- › Wash and prepare the vegetables for tasting, slicing root vegetables into a small piece for each student.

## ACTION STEPS

**1. Engage:** Gather students in a circle, and reread or review the book *Tops and Bottoms*. Ask students *How is Hare able to trick Bear? Ask, If you were Hare, what plants would you plant to trick Bear? Which parts of the plant would you like to keep?* Discuss how there are different parts of every plant that we like to eat. Explain, *Today we'll be planting a *Tops and Bottoms* bed, which means that we'll plant some plants that we eat the tops or the greens of, and we'll plant some plants that we eat the bottoms or the roots of. (5–10 min.)*



**2. Rotations:** Briefly explain the rotations to students, showing them the two plants you'll be planting. Ask them to determine which is grown for the tops and which is grown for the bottoms. Say, *While some students are planting, other students will be making Tops and Bottoms art! We'll make art with leaves from our garden and use potatoes as stamps, and then we'll switch so everyone gets a turn.* Divide the class into three groups, and demonstrate the signal they'll hear to know it's time to switch. **(5 min.)**

**a. Planting:** Gather a small group around the bed you'll be planting in, and demonstrate how to plant your transplants or seeds. Model tool safety, pointing out to students how you keep your tool low and go slow, minding your neighbors. Pass out a start or a handful of seeds to pairs of students or groups of three if you have a large class or small planting space. As students are digging their holes, monitor that they're not planting too close to their neighbors. Once the plants are in the ground, pass out watering cans to planting partners, and make sure plants are thoroughly watered. Help students make a label with the name of what they planted and the date, and stick it in that part of the bed. **(10 min.)**

**b. Leaf Rubbing:** Have students explore the garden to find a couple leaves of which they'd like to make rubbings. If you don't have an extra adult for supervision, you might look for leaves as a class before you break into groups, showing students how to use two hands to harvest a leaf so they don't hurt the rest of the plant. Have students turn the leaf so its underside is face up with its veins in relief. Next have them place paper on top, and rub a crayon on its side across the leaf, pressing until they see

the leaf's impression coming through. Students can exchange leaves once they've made a rubbing with their own. **(10 min.)**

**c. Stamping:** Show students the potato stamps you've created, and explain the importance of keeping the stamps with their "home color" so that we don't mix all the colors. Then have students use halved potato stamps to create prints. They can do this on cardstock to make cards or bookmarks, or use blank paper to create works of art. **(10 min.)**

**3. Hand-Washing Break:** Have students clean up their station and then wash their hands. **(10 min.)**

**4. Tasting:** Have students gather back in a circle. Pass out small samples of your leaf and root vegetables. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- Ask yourself: Was I safe and respectful in the garden today?
- Ask yourself: Did I share and help my classmates?

### Check for understanding

- What parts of the plant are the tops that grow above the ground? What parts of the plant are the bottoms that grow below?
- What interesting plant parts did you find in our garden today?
- How would you teach someone how to plant in a garden?
- When do you think our tops and bottoms will be ready to harvest (or pick)?

## ADAPTATIONS

**Song:** Sing “Roots, Stems, Leaves” by the Banana Slug String Band to review the six plant parts, performing the gestures associated with each plant part.

**Observation Extension:** Return to the garden once a week for students to observe their seedlings’ germination and growth.

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

### **NGSS: LSI.A**

All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.

### **CCSS.ELA-LITERACY.RL.1.2**

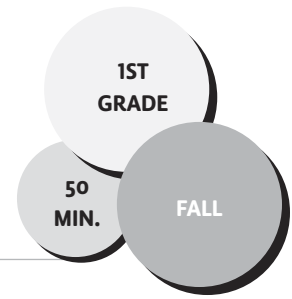
Retell stories, including key details, and demonstrate understanding of their central message or lesson.

### **CCSS.ELA-LITERACY.RL.1.3**

Describe characters, settings, and major events in a story, using key details.

# Plant Part Wraps

**THEME:** PREPARING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*How can we work together to prepare a healthy snack?*

## LEARNING OBJECTIVE

✓ Students will be able to prepare fruits and vegetables for a healthy snack.

## CONCEPTS

nutrients pollinate six plant parts

### *Engaging the Classroom Teacher*

- During Action Step 2, suggest that the teacher circulate through the room to support students as they sort the cards into the different plant parts.
- During Action Step 5, suggest that the teacher support students who need additional help as they create their plant part wraps.
- During Action Step 6, suggest that the teacher make a plant part wrap themselves and taste it with the class.

## LESSON DESCRIPTION

In this lesson, students create plant part wraps to reinforce their knowledge of the six plant parts and discover a healthy snack option. This lesson is designed to be taught in conjunction with lessons Plant Part Mystery, Plant

Part Scavenger Hunt, and Planting a Tops and Bottoms Bed.

## MATERIALS

- 1 Set of Plant Part Sorting Cards for each group of 4–6 students (pp. 159-163)
- Plant Part Mini Posters (p. 164, optional)
- Simple Kid-Friendly Dressing ingredients (optional, see below)
- Plant Part Wraps ingredients (see recipe below)
- 2–3 cutting mats for each group
- Materials for cleanup

## PREPARATION

- › Find a way to display each plant part visual. (optional).
- › Photocopy and cut out a set of Plant Part Sorting Cards for each group of students.
- › Wash the produce, and sort it into amounts sufficient for each table group. Prepare whatever produce you don't have the time, tools, or adult supervision for each student to do on their own (e.g., it makes sense to shred beets beforehand if you don't have the time to show students how to use the tool, don't have enough box graters to go around, or don't have enough adults to watch tiny fingers at work.)
- › If using salad dressing, make it ahead of time and refrigerate.
- › Set up a tray for each group of 4–6 students with one portion of each plant part. For

example, your trays might have the following:

- head of cauliflower
- chard leaves
- 2–3 clementines
- cup shredded carrots
- $\frac{3}{4}$  cup sliced celery
- cup sunflower seeds

## Plant Part Wraps

**Yield:** 30 servings, 1 wrap per student

### Sample Plant Part Wrap Ingredients\*

- 2 heads cauliflower, broken into small florets
- 3 bunches chard (1 large leaf for each person)
- 4 carrots, shredded
- Dozen clementines
- 1 bunch celery, thinly chopped
- 1 cup sunflower seeds

\*Choose ingredients based on your students' culture, seasonality, your region, and what's most readily available. Below you'll find a table with ingredients to spark ideas.

- Lay out one large leaf and add small pinches or amounts of each prepared fruit and vegetable, making sure to not add too much (e.g., a couple small florets of cauliflower, a small pinch of shredded beets, a couple clementines, 3-4 pieces of celery).
- Sprinkle a small pinch of sunflower seeds on top and a little drizzle of dressing, if desired.
- Roll up your leaf if using a long leaf, or fold over each side if using a round leaf.

**NOTE:** The chart below provides some suggestions for the six ingredients to include in plant part wraps. For this age group, anything they can pick, peel, shell, or hull is great (e.g., give each student a clementine to peel, have a table

break down a head of cauliflower into tiny florets, shell peas, etc.)

### Roots

Carrots  
Parsnips  
Beets  
Radishes

### Stems

Celery  
Asparagus  
Scallions

### Leaves

Cabbage  
Kale  
Romaine lettuce

### Flowers

Broccoli  
Cauliflower  
Borage  
Nasturtium  
Violets

### Fruits

Tomatoes  
Apples  
Grapes  
Bell peppers  
Cucumbers  
Berries  
Clementines

### Seeds

Sunflower  
Pumpkin  
Pomegranate

## Simple Kid-Friendly Dressing

- 3 parts olive oil
- 1 part rice vinegar
- $\frac{1}{2}$  part honey
- Salt to taste

Shake ingredients in a lidded jar until dressing is emulsified.

## ACTION STEPS

**1. Engage:** Gather students in a circle and ask them to turn and talk to a neighbor about what they like to eat for breakfast. Then say, *I ate seeds and a twig for breakfast. Can you guess what I ate?* Eventually you can reveal that you ate oatmeal and cinnamon, explaining that our foods can come from different parts of the plant. Tell

students that they'll be making a delicious snack today using all six plant parts. Consider passing around whole versions of each ingredient that'll go into your wrap for students to touch, smell, and observe. **(5 min.)**

**2. Sorting Plant Parts:** Ask students if they remember the six plant parts. If you've made visual posters, reveal each one as students accurately name them. If you've previously taught students the Plant Part Song, reinforce each plant part by having them say the name aloud while they perform the associated gesture. Remind students that different plants are grown because we like to eat different parts of the plant. Give them an example, such as, *People like to eat celery or asparagus because they are tasty stems, but I don't know many people who grow strawberries to eat the stems. What part of the plant do people grow strawberries for?* (The fruit!) Explain that we also get different nutrients from different parts of plants and that with some plants we can eat all the parts, such as beets and radishes. Pass out the Plant Part Sorting Cards for students to sort at each table group. Circulate through the room while they're sorting, asking encouraging questions about why they made certain choices. **(10 min.)**

**3. Model:** Model making a plant part wrap. If you have access to a document camera, use it to project your demonstration for students. Take a lettuce or other large leaf, and fill it with a variety of fruits, vegetables, and seeds before wrapping it up. Tell students that each table group will get all the ingredients they need at their table and that they'll be sharing. Show them one table's set, and to check for understanding, ask them questions about what they see. For example, *If there are five clementines here and*

*five people at my table, how many should I take? (Just one!) If there's a bowl of sunflower seeds, do I get to take the whole bowl? (No) I should take a little spoonful like this and wait and see if there's more after everyone's had some. Should I stick my hand right in the bowl or use a spoon? (Spoon!) Why is that important? (Germs) (5 min.)*

**4. Hand-Washing Break (5 min.)**

**5. Making Plant Part Wraps:** Pass out ingredients to each group and circulate through the room, providing guidance and support and reminding students to take only what they need so everyone has some. **(10 min.)**

**6. Tasting:** Have students wait until every student has their plant part wrap ready before tasting. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What did your team do that worked well when you were trying to share everything?*
- *What do you want to work on for next time?*

### Check for understanding

- *What words describe what you taste?*
- *Which was our stem ingredient? Which was our seed ingredient?*
- *What other fruits would you like to eat in a plant part wrap? What other roots would taste good?*
- *How could you make this at home?*

## ADAPTATIONS

**Age:** This activity works well for all ages by giving older students increased autonomy. For older students who already have familiarity with knife safety and washing vegetables, have groups work together to prepare everything (e.g., while one group is using a box grater to shred beets, another is making bite-sized celery pieces, and yet another is using a salad spinner to wash and prepare a head of lettuce). Older students can also make the optional dressing.

**Salad Variation:** Instead of a wrap, have students make a plant part salad. Each table group can put their veggies into a zip lock bag with dressing and shake the ingredients.

**Garden:** Go on a plant part scavenger hunt in the garden. Look for and harvest the six plant parts together with your students. Once you have all six parts, chop, grate, or process everything together. Hand each student a big lettuce leaf, and have them add the other five parts to make their own wrap.

**Art Extension:** Have students draw each plant part they ate today in their plant part wrap.

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

### **NGSS LS1.A**

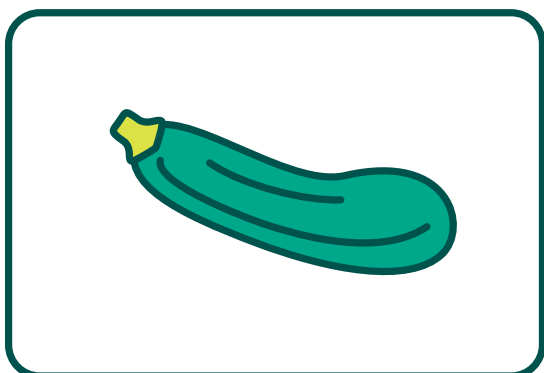
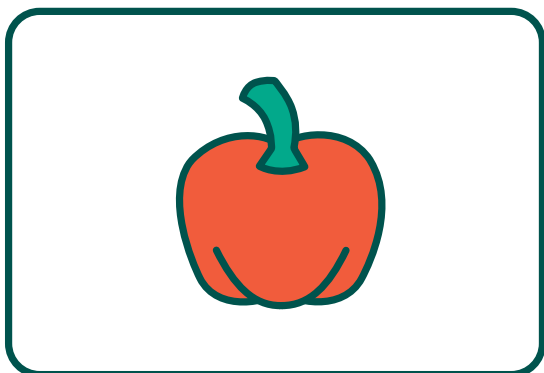
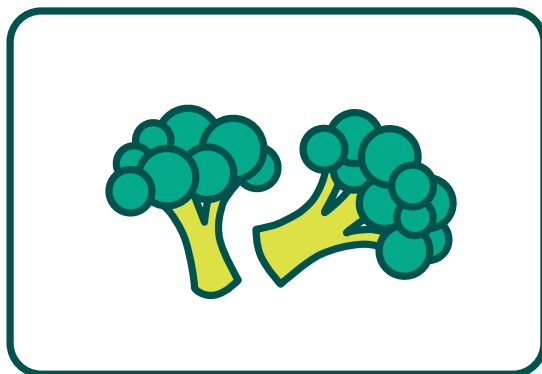
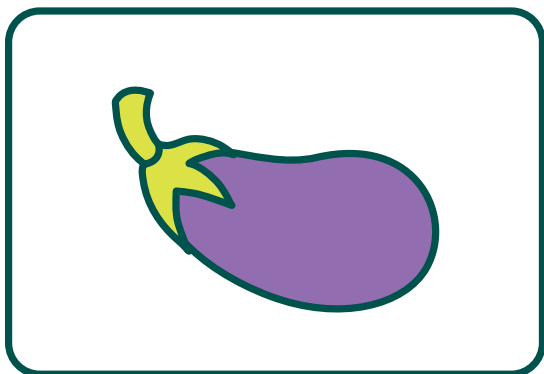
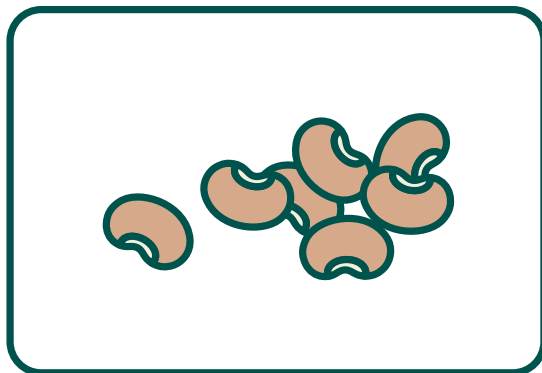
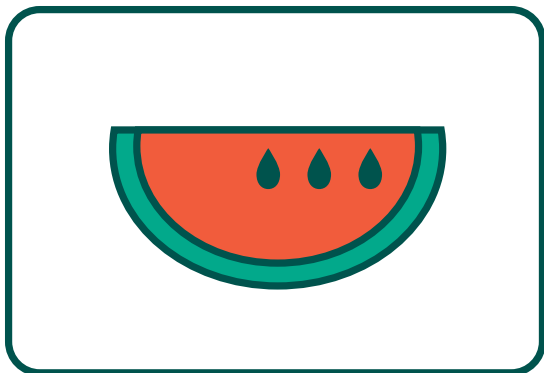
Structure and Function – All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.

English Language Arts Common Core State Standards

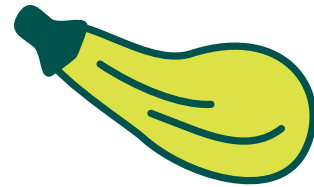
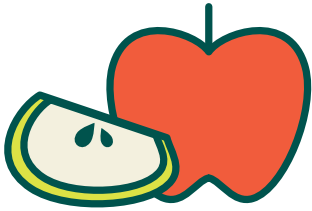
### **CCSS.ELA-LITERACY.SL.1.1**

Participate in collaborative conversations with diverse partners *about grade 1 topics and texts* with peers and adults in small and larger groups.

# Plant Part Sorting Cards

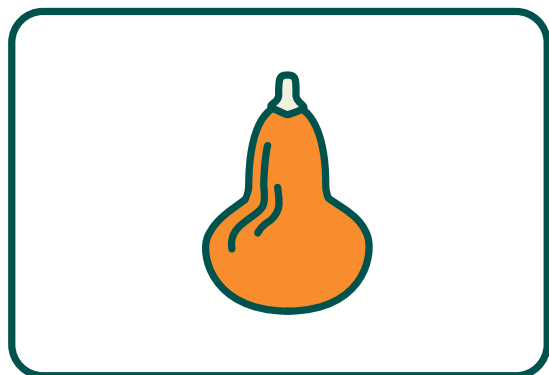
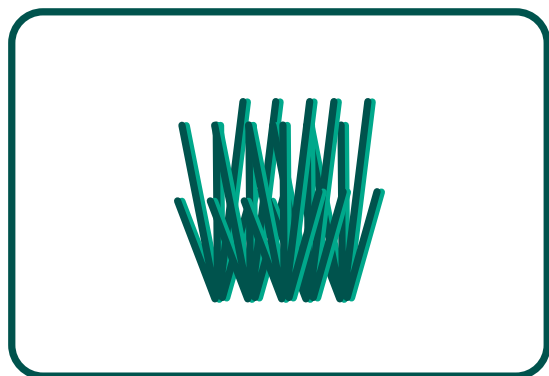
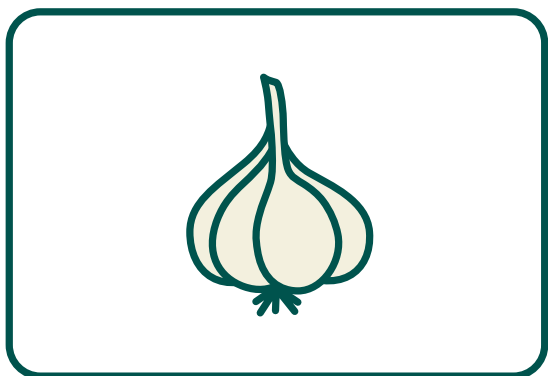


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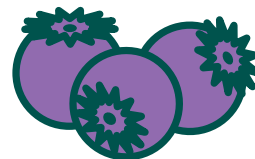
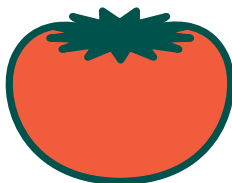
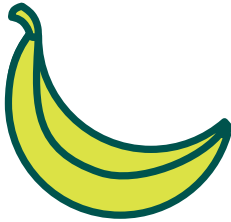




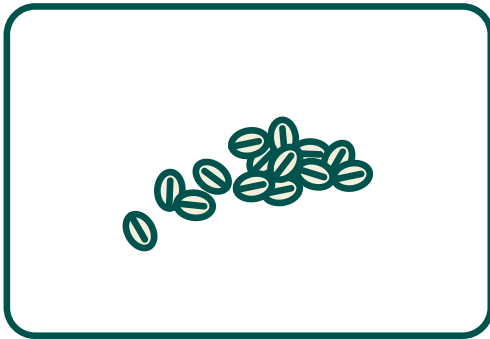
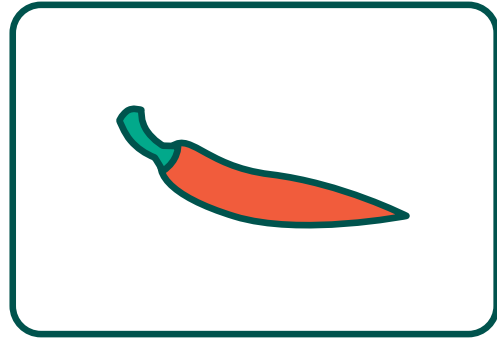
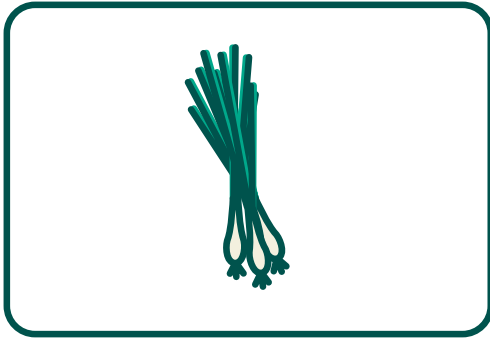
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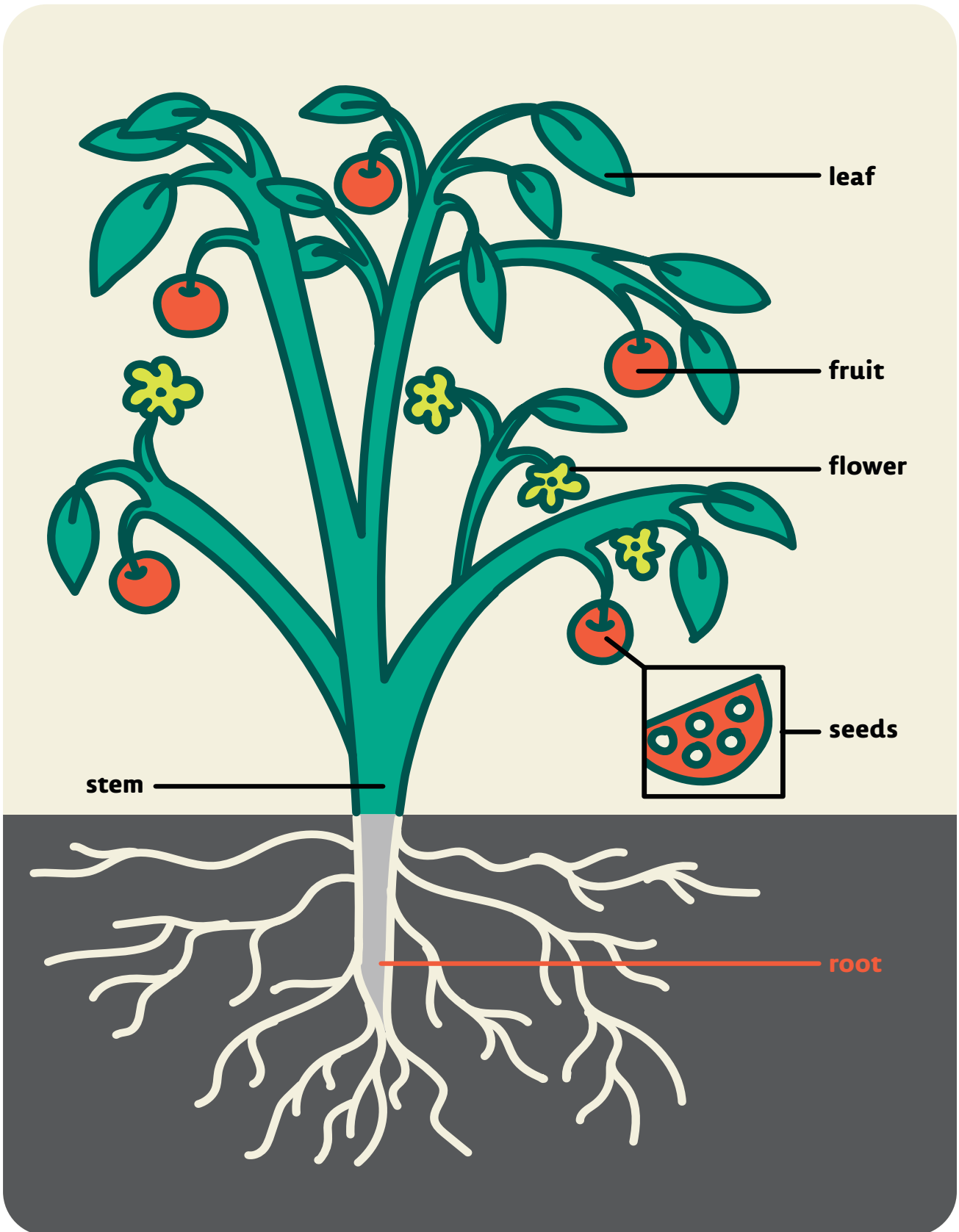
# Plant Part Sorting Cards



# Plant Part Sorting Cards

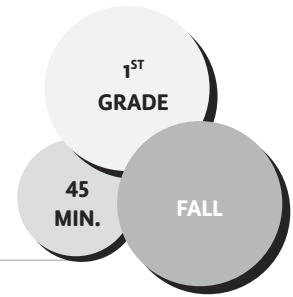


# Plant Part Poster



# Tea Time

**THEME:** CONNECTING FOOD, CULTURE, AND COMMUNITY



## ESSENTIAL QUESTIONS

*How are plants used beyond cooking?  
Why is teatime special in many cultures?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain how plants can be used as medicine.
- ✓ Students will be able to prepare for a tea party.

## CONCEPTS

herbs plants as medicine tea

### *Engaging the Classroom Teacher*

- During Action Step 2, suggest that the teacher circulate through the garden helping students follow expectations as they harvest.
- During Action Step 4, suggest that the teacher help facilitate students getting into groups. Then have the teacher supervise the table-setting group while you supervise the two groups foraging in the garden.
- During Action Step 5, encourage the teacher to sit with the students and sample the homemade herbal tea.

## LESSON DESCRIPTION

In this lesson, students harvest leaves from the garden to make tea and, while it is steeping, prepare for a tea party! In groups, students gather flowers for bouquets, make centerpieces out of found objects, and thoughtfully set the table for their classmates. The class then enjoys their homemade tea together.

## MATERIALS

- Large thermos of hot water
- 2–3 teapots or mason quart jars
- Snack that you make or purchase (see preparation)
- Tablecloths (amount dependent on your number of tables) or picnic blankets if you don't have picnic benches or tables in the garden
- 1 cup for each student (if you use paper cups, you can poke holes in them later and use them as containers in which to start seeds)
- Napkin or plate for each student (can be school paper towels, but you might bring in cloth dinner napkins to make it feel more special)
- 5–7 kid scissors (for cutting flowers and herbs for bouquets with supervision)
- 3–6 vases for flower bouquets (amount dependent on your table setup and preference)
- A couple bus tubs for dirty dishes

## PREPARATION

- › Make or buy a simple snack to serve with your tea. Consider using the Flatbread Crackers (p. 398) or Honey Seed Snacks recipe (p. 121). If not using one of those recipes, you might choose to buy herby flatbread crackers or a cookie with herbs, such as gingersnaps.
- › Select the herbs that are suitable to make tea in your garden. If your group is large, choose a couple different herbs in different spots in the garden to avoid overcrowding.
- › Investigate the medicinal properties of the herb with which you're making tea to share this information with students.

GARDEN HERB	CAN HELP WITH . . .
Chamomile	Sleep and digestion
Feverfew	Headaches
Mint	Digestion
Lemon balm	Stress
Tulsi (holy basil)	Stress, colds, and congestion
Raspberry leaf	Boosting the immune system
Lavender	Relaxation and sleep

## ACTION STEPS

**1. Engage:** Gather students in a circle, and pass around various herbs you've collected from the garden, asking students to smell them. Ask, *Does anyone know any of these plants?* After they've shared, say, *These are all herbs I've collected from the garden. Herbs have a strong scent and taste. You only need a little to taste them in a dish or smell them.* Ask students to say the word "herbs." Explain that people use herbs not only for making food taste good but also for medicine. Give students a chance to share any benefits they know of for certain herbs.

Then share with students the medicinal properties of the herbs you've collected. Explain that today is a special day because they'll be making tea with herbs that they harvest from the garden so the class can have a tea party! Ask students to turn and talk about what they know about tea or a time they've had tea before. **(5 min.)**

**2. Harvesting Herbs:** Go over general garden expectations. Then remind students how to harvest with two hands, and ask that each student harvest just a little, for example five to ten leaves each, because a little goes a long way. Split students into two to three groups for harvesting, explaining how you'll call them back together and where they'll put their herbs once they return. **(5 min.)**

**3. Making Tea:** When students return with their herbs, have each student contribute a little piece of herb into your quart jar or teapot, and then cover with hot water from the thermos, making sure students have stepped back from containers for safety. Reinforce what each herb is for as students add them, for example, by saying, *Mmm lavender, we'll feel so nice and relaxed.* Explain, *The tea needs about fifteen minutes to steep, so in that time we can prepare our table for the tea party.* **(5 min.)**

**4. Preparation Groups:** Explain each role to students, and then divide them evenly among the roles to prepare. Consider allowing students to self-select their role. **(10 min.)**

**a. Setting the Table:** This group will lay out tablecloths, and place a cup and napkin at each table setting.

**b. Making Bouquets:** This group will cut flowers and herbs from the garden to make

bouquets. Be sure to set boundaries for this group, limiting the amount each student can cut.

**c. Making Centerpieces:** This group will gather natural objects from the garden to create centerpieces.

**5. Tea Party:** Have students settle into their places. Say to students, *Teatime is a special time in a lot of different cultures around the world. It's a time to slow down and enjoy the moment and the people you're sharing with.* Explain that we won't eat or drink until everyone has their snack and tea so that we can enjoy it together. Have the classroom teacher or a volunteer pass out a snack to each student while you walk around pouring tea for each student. Encourage students to chat with their neighbors and then discuss the reflection questions as they enjoy their snack and tea. **(10 min.)**

**6. Cleanup:** Show students where to put their dirty dishes to help clear their setting. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What was your favorite part of our time together today?*
- *Ask yourself: How did I work with others today to make sure our tea party went well?*

### Check for understanding

- *Does anyone here drink tea at home? If so, how or why do you drink tea?*
- *How would you describe the flavor of our homemade tea?*

- *If you tried more than one kind of tea, which was your favorite? Why?*
- *How can you share making tea with your family and friends at home?*

## ADAPTATIONS

**Inviting Guests:** Have students invite their families and/or a buddy class to their tea party!

**Sun Tea Variation:** Make sun tea with students. Put ½ cup to 1 cup of dried herbs in ½ gallon jars. Fill each jar with cold water, and put a lid on each one. Set in the sun for three to five hours to steep and warm.

**Tablecloth Variation:** Consider using butcher paper as your tablecloths and having the table setting group draw a flower or other garden-based picture for each table setting.

**Bring-Home Extension:** Students can create family tea bags to share with their family using a paper coffee filter. Have each student add a handful of dried herbs to a coffee filter, and tie it up with cotton cooking twine. You can even attach a label onto the end of the string using a hole puncher and card stock. Have students write the ingredients on their label. Older students can write a favorite quote or words of inspiration if they'd like. This is a "family tea bag" because they can use it to make a whole pot of tea to share with family or friends.

**Compost Tea:** Explain to students that a kind way to take care of the garden plants is by serving them tea, Compost Tea! You can find directions on the internet for how to make compost tea, a nutrient-dense, chemical-free fertilizer from your school garden's compost.

**Teatime Rituals:** With older students, you can emphasize the ritual of tea as a mindfulness practice and/or research teatime rituals from around the world, including Japan’s tea ceremonies, England’s afternoon tea, Argentina’s yerba mate, and India’s chai tea.

## **ACADEMIC CONNECTIONS**

English Language Arts Common Core  
State Standards

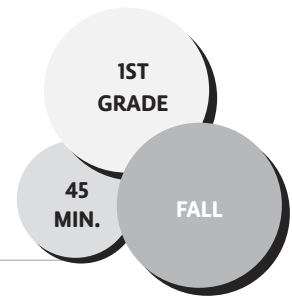
### **CCSS.ELA-LITERACY.SL.1.1**

Participate in collaborative conversations with diverse partners about *grade 1 topics and texts* with peers and adults in small and larger groups.



# The Great Balancing Act

**THEME:** MAKING HEALTHY FOOD CHOICES



## ESSENTIAL QUESTION

*How can we balance food groups to make a healthy snack?*

## LEARNING OBJECTIVES

- ✓ Students will be able to identify foods in the various food groups.
- ✓ Students will be able to demonstrate how to make a healthy snack with one or more food groups.

## CONCEPTS

dairy energy go, grow, glow  
grain protein snack

### *Engaging the Classroom Teacher*

- During Action Steps 2 and 4, suggest that the teacher support students in finding other students to pair with to make a healthy snack. During Action Step 4, the teacher can help students understand the difference between food groups.
- During Action Step 6, suggest that the teacher determine students who can help pass out tasting materials.

## LESSON DESCRIPTION

In this lesson, students practice sorting food into different food groups and learn a healthy snack equation to help them invent food group

combinations. This lesson can be taught with the lesson Go, Grow, Glow and other lessons in the Go, Grow, Glow sequence.

## MATERIALS

- Food Group Sorting Cards (pp. 173-175)
- MyPlate or Oldways food pyramids for each student
- 3 sheets of chart paper
- Plate or paper towel for each student
- 2 tubs of spread such as cream cheese or hummus (or slices of cheese)
- Butter knives for the spread
- Crackers, slices of bread, or pita
- Bowl of sliced fruit or vegetable, such as cucumber, apple, or tomato
- Healthy Snack Worksheet for each student (p. 172)

## PREPARATION

- › Put the food group headings on each piece of chart paper with one sheet for grains, the second split in half for dairy and protein, and the third split in half for fruit and vegetables. Then write the corresponding headers, go, grow, and glow, at the top. Decorate the chart paper borders with images that will help students identify the categories.
- › Photocopy the Healthy Snack Worksheet.
- › Photocopy and cut out the Food Group Sorting Cards. Have two copies of each card, so students can use one copy during Action Step 3 and one during Action Step 4.
- › Slice the fruit or vegetable.

- › Portion spread into bowls for groups of 4–6 students.

### SNACK IDEAS

<b>GROW Protein or Dairy</b>	<b>GO Grain</b>	<b>GLOW Sliced Fruit or Vegetable</b>
Cream cheese	Whole grain cracker	Cucumber
Hummus	Slice of bread	Tomato
Cheese slice	Pita	Apple
Sunflower butter	Rice cracker	Radish

## ACTION STEPS

**1. Engage:** Ask students, *What do you usually have for a snack when you're hungry?* or *What snacks do you and your family share?* Take responses, then explain that having a snack is great for when you need some extra energy between meals, and today they'll learn how to make a healthy snack. **(5 min.)**

**2. Sorting Foods:** Pass out two copies of a food picture to each student, ensuring there's an even distribution of each food group, and ask students to find two other students who have food that they think would make a good snack together with theirs. Tell them they have one minute to find their other people and set a timer. Circulate through the room, and ask students to tell you why they grouped themselves together. Have a couple groups share what their snack is. **(5 min.)**

**3. Explain Food Groups:** Settle students down, and display the chart paper with food group headings you've prepared, pass out copies of MyPlate or Oldways food pyramids, and review each food group as a whole class. Say to students, *Grains are things like rice, cereal, bread, and crackers. These are foods that help give us energy. Raise your card if you think you have*

*a grain.* Then have students tape their card to the poster you've already created. Then explain dairy, saying something such as, *Dairy are all the foods that are made from milk that come from animals like cows and sheep. Butter and cheese are types of dairy.* Continue explaining each food group and having students add their card to the corresponding food group poster. **(5 min.)**

**4. Combining Healthy Snacks:** Explain, *Each food group helps your body, and when you make a snack, it's great to have three different food groups together.* Show them the concept as an equation: Protein or Dairy + Fruit or Veggie + Grain = A Healthy Snack! Review the concept of go, grow, glow foods, explaining that the grain is our go food, the protein or dairy is grow food, and the fruit or veggie is our glow food. Now have students find two more people in class to try make a healthy snack with a go food, a grow food, and a glow food. Circulate through the room, asking questions and checking for understanding. Then have students sit with their healthy snack partners, and call up volunteer groups to stand in front of the class and share what their snack is. Help students if they are missing one of the key food groups by asking someone from the audience to join them, for example say, *Does anyone have beans or cheese who can join this snack!?* **(5 min.)**

**5. Hand-Washing Break (5 min.)**

**6. Making a Healthy Snack:** Explain to students that you're going to create a healthy snack to eat in class, using the healthy snack equation. Assemble a snack in front of students as a model, explaining each step. Spread

cream cheese or hummus onto your cracker or piece of bread and then place a slice of your fruit or vegetable on top. Have a couple students help pass out materials for the snack. Remind students to wait until you tell them to eat their snack. If needed, help students with assembly. **(10 min.)**

**7. Tasting:** Have students try the snack together. As they finish, create more healthy snack ideas together as a class using the equation, and then have students try to recreate another with a partner. Have partners share their new snack ideas with the class. Say, *We can't always combine different food groups when we have snacks. Having a fruit or vegetable or dairy or protein by itself is also a great option.* **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- Ask yourself: Did I share and take turns with my classmates?

### Check for understanding

- What was the grain part of our snack? What was the protein part of our snack?
- What would be another tasty vegetable to use for our snack?
- How would you make a healthy snack for your friends or family? What three things would it include?

## ADAPTATIONS

**Extension:** Have students create and draw an ideal meal incorporating all five food groups. It can be fun to do this on paper plates.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.SL.1.1

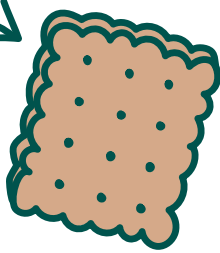
Participate in collaborative conversations with diverse partners *about grade 1 topics and texts* with peers and adults in small and larger groups.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# A Healthy Snack Worksheet

## GO GROW GLOW

Grain



Protein or Dairy



+

Fruit or Vegetable



+

A Healthy Snack

=

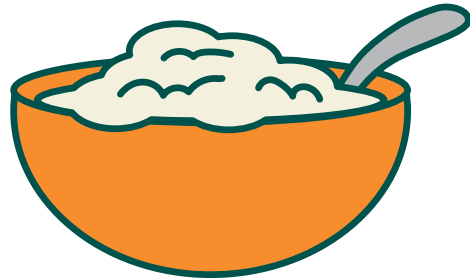
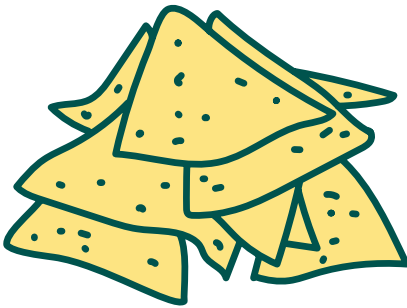
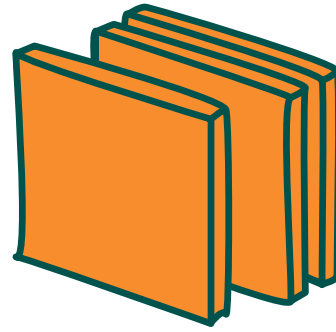
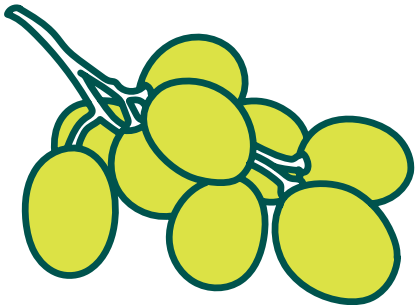
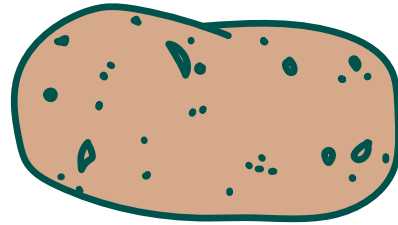
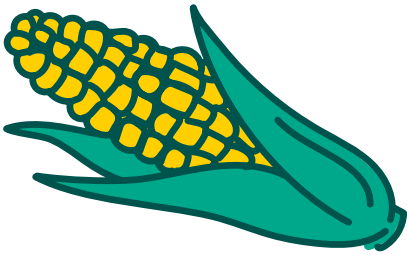


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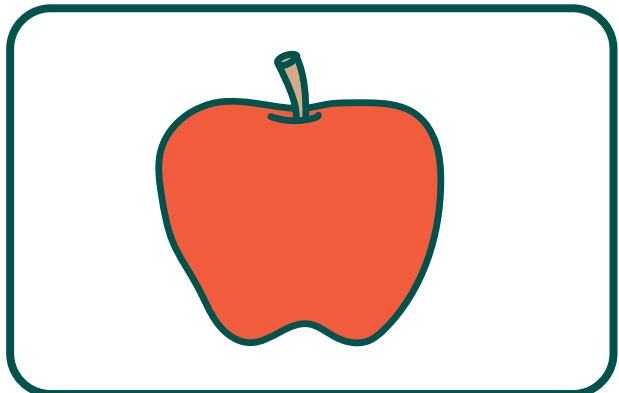
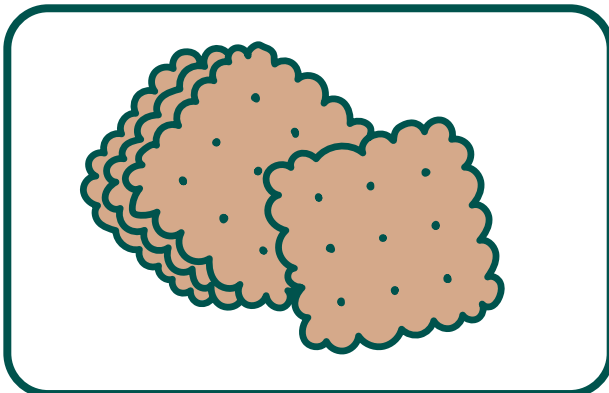
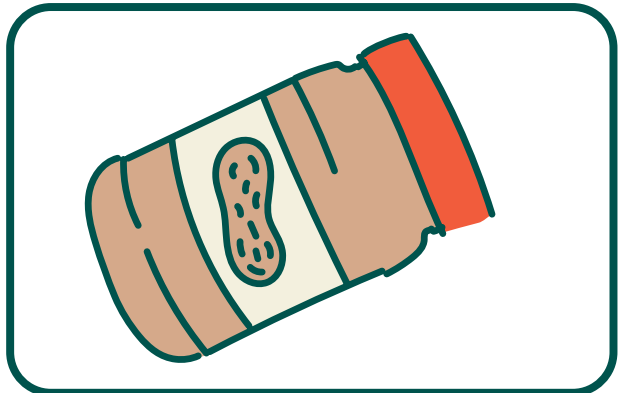
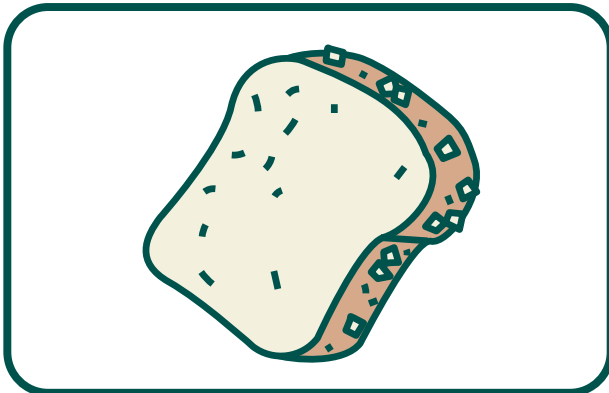
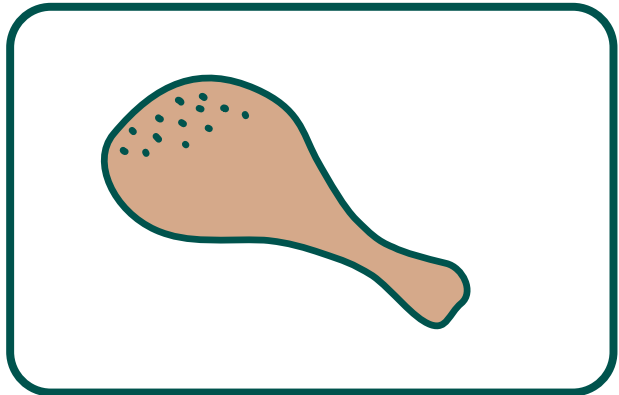
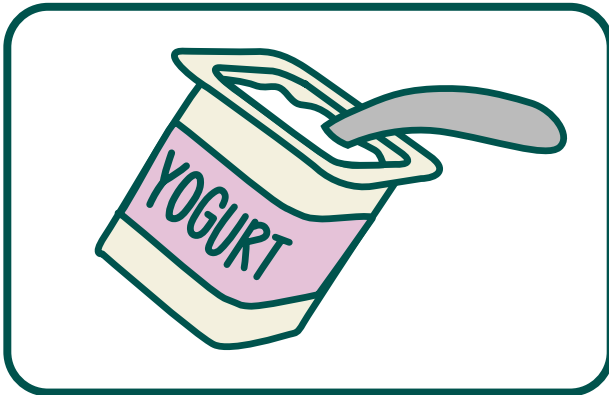
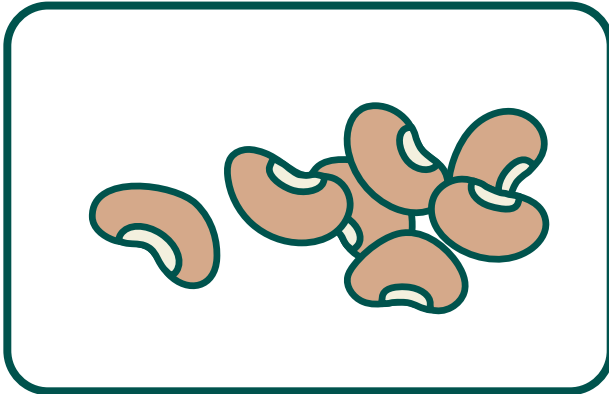
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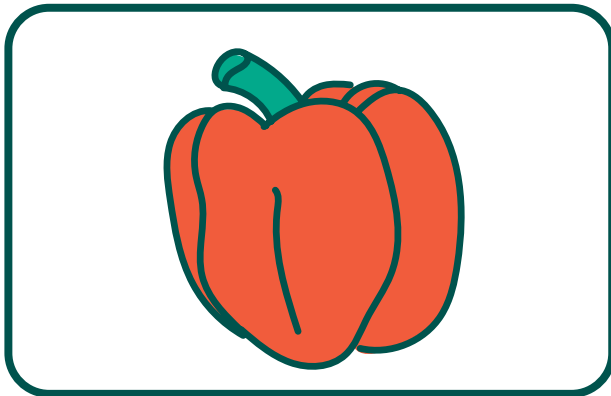
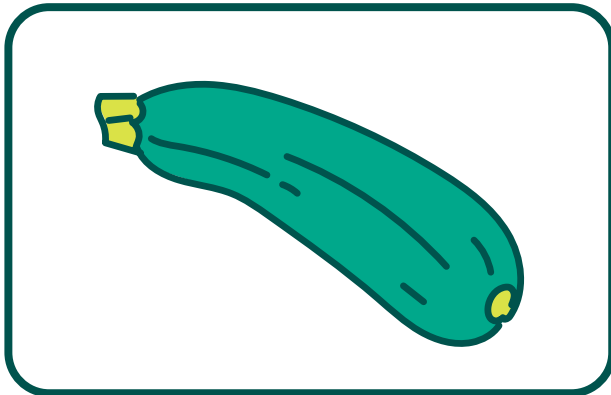
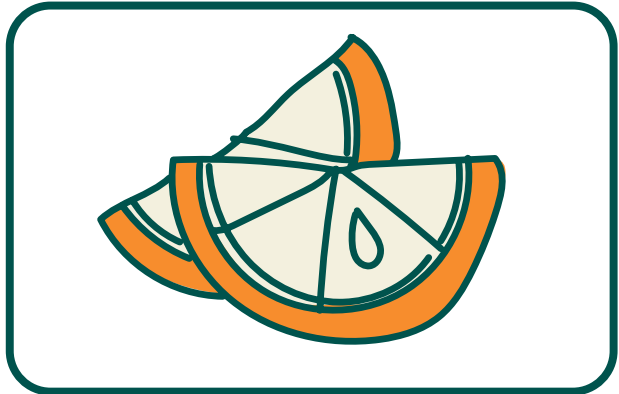
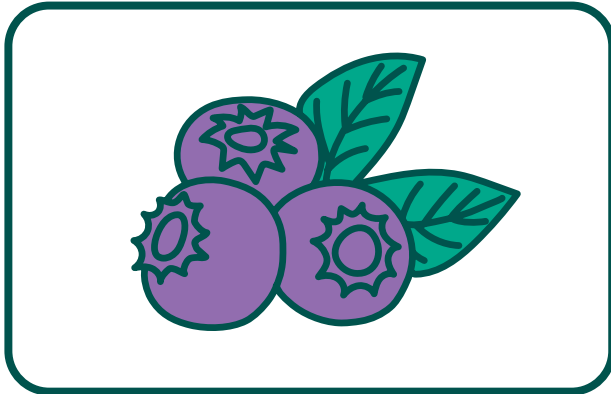
# Food Group Sorting Cards



# Food Group Sorting Cards

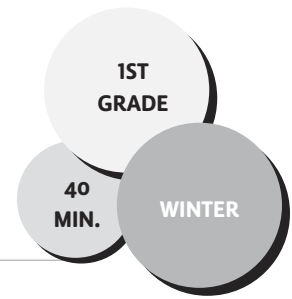


# Food Group Sorting Cards



# Plant Part Mystery

**THEME:** EXPLORING THE ECOLOGY OF FOOD



## ESSENTIAL QUESTION

*Why is each part of the plant important?*

## LEARNING OBJECTIVE

✓ Students will be able to recognize and name the six plant parts.

## CONCEPTS

five senses    six plant parts

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask whether the teacher would be comfortable getting dressed up as a plant by their students. If not, ask if there's another adult or student who might be willing.
- During Action Step 2, suggest that the teacher help students write or draw their guesses during the game.
- During Action Step 4, suggest that the teacher support students while dissecting plants.

## LESSON DESCRIPTION

In this lesson, students explore the six plant parts by dressing up a classmate or teacher as a plant, playing a plant part mystery game, and dissecting a plant to identify as many parts as they can. This lesson is designed to be taught in conjunction with

lessons Imaginary Plants, Plant Part Scavenger Hunt, Plant Part Wraps, and Planting a Tops and Bottoms Bed.

## MATERIALS

- Bag to hold the props

### Materials for dress-up

- Roots: Brown pipe cleaners, yarn, or mop head
- Stems: Green knee socks or scarves or large piece of butcher paper to wrap around person
- Leaves: Large leaves from the garden, such as rhubarb, or cut-out felt leaves
- Flowers: Fake flowers attached to a headband or a cardboard cutout flower
- Fruit: Real or plastic piece of fruit
- Seeds: Cardboard cutouts of seeds, small lidded container of seeds (can be used like a maraca)
- 6 mystery canisters (see Preparation below)
- 6 plant parts sheets (roots, stems, leaves, flowers, fruits, and seeds)
- Pencils
- Plant Part Mystery Game Worksheet for each student (p. 179)

## PREPARATION

- › Collect and create materials for dress-up.
- › Collect coffee tins, shoeboxes, or large tomato cans (without sharp edges); fabric; and rubber bands to create six mystery canisters. Measure and cut squares of fabric to fit over the openings of each container. Create an X-shaped hole in the fabric (for reaching hands through) by folding the square in half and cutting through the middle but not to the edge. Open and fold in half the other



way and repeat so that you have cut an X. Center the fabric over the opening, and secure it with a rubber band. Number or color-code the canisters so that they can be told apart.

- › Place one plant part into each container. Be sure to pick items with interesting textures, smells, and sounds because students won't be able to rely on their sense of sight. For example, dry pea seeds make a fun percussive sound in a can, and it's nice to have a fragrant flower or a lemon that students can scratch and sniff.
- › To provide students with plants to dissect, harvest plants from the garden that exhibit as many plant parts as possible. Alternatively, buy cheap flowers from the grocery store that include some greenery for students to dissect.
- › Photocopy the Plant Part Mystery Game Worksheet for each student.



## ACTION STEPS

**1. Dressing Up:** Gather students to sit in a circle, and ask for a volunteer to play dress-up and stand in the middle of the circle. You can dress up the classroom teacher or another adult. Tell students, *We're going to make this person look like a plant. What does this person need at their feet? What grows from the bottom of the plant? When students suggest roots, ask for ideas of what they could use to make the person look like they have roots.*

When students suggest roots, ask for ideas of what they could use to make the person look like they have roots. Pull the appropriate prop from your bag after hearing their suggestions, and have the volunteer put it on. Repeat this process with each part of the plant until the volunteer is fully dressed. You might choose to sing and act out the song "Roots, Stems, Leaves" here, so students can see the dress-up plant point to each of their parts during the song. **(15 min.)**

**2. Plant Part Mystery Game:** Tell students that you've brought a plant part mystery game. Show them one of your canisters, and explain that you've placed a plant part in each one. Say, *There'll be one of these at six different stations in the room. You'll put your hands inside, and use all your senses except sight and taste to figure out which plant part it is. Maybe you can even name the plant!* Ask students to name the senses they can use. Pass out the Plant Part Mystery Game Worksheet and pencils so that they can keep track of their guesses without blurting them out. Place canisters at six stations around the room, and have groups of students visit one at a time. Ring a bell for when they should switch to the next station. **(10 min.)**

**3. Explain:** Gather students back in a circle. Have a big reveal, taking each plant part out of its canister. For each plant part, ask students, *How did you know it was a root? What clues did you use to know it was a stem?* etc. **(5 min.)**

**4. Dissecting Plants:** Pass out plants to each group of students to dissect at their tables. Provide students with plant part labels, and have them take apart plants and place them

beside the corresponding label. Circulate through the room, observing students' categorizing and asking questions to keep them on track. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- Ask yourself: How did I share and take turns with my classmates today?

### Check for understanding

- Which plant parts are easy for you to find?
- What clues do you look for to find a root? A stem? A leaf?
- Which plant parts do you like to eat?
- Why is each plant part important?

## ADAPTATIONS

**Simpler Materials:** If you have fewer than eight students, you can do the exercise without the mystery canisters. Place a blanket on the ground, and have students lie on their bellies around it with their hands under it. While they close their eyes, hand one object to a student under the blanket. Now everyone can open their eyes and pass the object around, describing it as they hold it. Once it's made it all the way around, they can guess what it was.

**Mystery Box Contestant Variation:** Create a mystery box by making a hole in the top of a shoe box or other cardboard box. Cover the hole in fabric with an X-shaped hole, similar to the canisters. Have one side of the box fully open. Have a student volunteer come

up to be the contestant. Place a plant part in the box, with the open side facing the rest of the class, so they can see the object. Then have the contestant stick their hand in. The rest of the class can give clues if the student can't guess the plant part or what the plant is.

**Song:** Sing "Roots, Stems, Leaves" by the Banana Slug String Band to review the six plant parts, performing the gestures associated with each plant part.

**Dissection Extension:** Pass out plants to each group of students to dissect at their tables. Provide students with a Plant Part Place Mat, and have them take apart plants and place them on top of the corresponding label. Circulate through the room, observing students' categorizing and asking questions to keep them on track.

**Garden Adaptation:** Instead of dissecting plants, you can have students search in the garden and gather examples of each plant part. Have them use photocopies of the Plant Part Place Mat as a guide. Before they head out, establish expectations about what is and isn't okay to pick, particularly when looking for roots!

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

### NGSS LSI.A

Structure and Function—All organisms have external parts . . . Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Plant Part Mystery Game Worksheet

**Directions:** Write your guess for each mystery canister to the right of the number.

Roots	Flowers	Stems	Fruits	Leaves	Seeds
#1			#4		
#2			#5		
#3			#6		

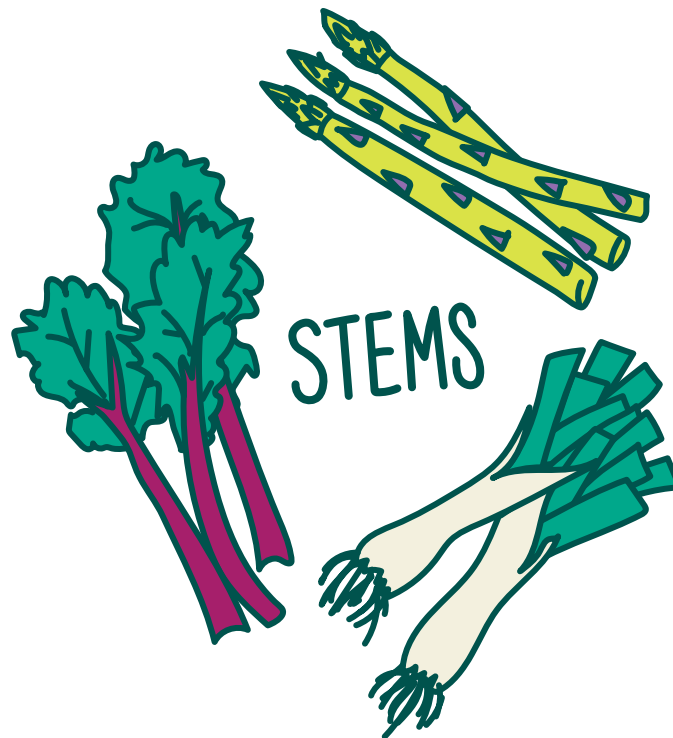
Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Plant Part Mystery Game Worksheet

**Directions:** Write your guess for each mystery canister to the right of the number.

Roots	Flowers	Stems	Fruits	Leaves	Seeds
#1			#4		
#2			#5		
#3			#6		

**Teacher Directions:** Cut out for each group of students to use to label during plant dissection.

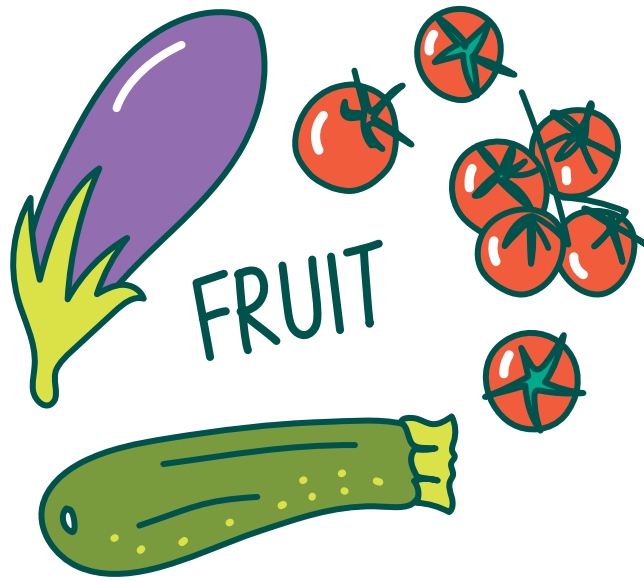




LEAVES

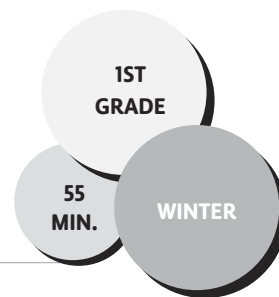


FLOWERS



# Root-View Cups

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*What can we learn by observing roots growing?*

## LEARNING OBJECTIVES

- ✓ Students will be able to sow seeds.
- ✓ Students will be able to make predictions about root growth.

## CONCEPTS

observe root seed sow sprout

### *Engaging the Classroom Teacher*

- Prior to the lesson, coordinate with the teacher about your strategy for caring for the seedlings, whether the class will do it independently or with you in subsequent weeks. See the After Class action step below.
- Discuss whether you will have a follow-up lesson to transplant seedlings, whether they'll eventually be sent home with students, or whether this will be an observation activity.
- During Action Steps 4 and 5, suggest that the teacher support students in sharing materials and drawing their paper shields while you work with small groups to sow seeds.

## LESSON DESCRIPTION

In this lesson, students learn about the function of roots by setting up their own root-view cups to make observations. Consider teaching this lesson about one month prior to when you would be able to transplant the seedlings outdoors in your region. You can then incorporate these transplants into a planting lesson such as Plant a Go, Grow, Glow Bed or Plant a Tops and Bottoms Bed. Otherwise, frame this as an observation activity.

## MATERIALS

- "My Roots Go Down" song by Sarah Pirtle
- 12-quart bag of organic seed starting potting mix in a tub for easy cleanup
- 4–6 spoons or small scoops
- 2–3 spray bottles (or small watering cans, if outdoors)
- Fava bean seed packet
- Rainbow chard seed packet (or other culturally appropriate seeds)
- Cordless drill, or nail and hammer
- Tape
- Tray for demonstration
- Tray to hold finished root-view cups
- Plant Care Schedule (p. 187)

### For each student:

- 18-oz. soft clear plastic cup
- Photocopy of Paper Shield template (more information below in Preparation section)
- Scissors

- 1 sheet of dark-colored drawing paper (e.g., dark blue or green)
- Markers or crayons (and any other art supplies for decorating shields)
- Observation Log (p. 188)



## PREPARATION

- › Moisten your seed starting mix so that it's about as damp as a wrung-out sponge.
- › Draw a template for the paper shield: take one of your clear plastic cups, and cut a straight line from top (lip) to bottom (base). Next, cut out the entire bottom of the cup. Now, unroll the cup, and lay it as flat as possible on a piece of paper. Trace it, adding about one inch to each short end. This is your template for the shield.
- › Photocopy the shield template for each student.
- › Drill three to four holes in the bottoms of the plastic cups for drainage.
- › Create your own root-view cup beforehand to troubleshoot any unforeseen snags and to have a model to show students (see below in Action Step 3 for how to do this).
- › Learn the song, "My Roots Go Down" by

Sarah Pirtle.

- › Set up a tray with supplies you'll need for a demonstration.
- › Set up a station where students will sow their seeds. Have a table with the soil and scoops on one end, then the seeds in the middle, and the spray bottles of water at the other end.

## ACTION STEPS

**1. Engage:** Gather in a circle and ask students, *Do you know the super important part of the plant that stays hidden and works in secret to help the plant?* Once students guess that you're talking about roots, explain, *Today, we're going to make special cups that are going to let us peek at this part of the plant we usually don't get to see!* **(5 min.)**

**2. Singing:** Have students stand. Teach them the song, "My Roots Go Down," using hand gestures for showing roots growing down. Teach them a few verses, then take suggestions from students for new verses and movements. Alternatively, to get out some wiggles before making root-view cups, have students role-play a seed sprouting roots. Ask students if they remember what the job of roots is. Discuss how the roots hold the plant in place and gather nutrients and water from the soil. **(5 min.)**

**3. Model:** Have your tray of supplies on hand, and walk through how to make a root-view cup. Fill your clear cup with soil, showing students the holes and asking why you made them. Take a couple seeds and place them up against the side of the cup, explaining that putting them there will let us see the roots grow. Show students your completed model cup and ask, *If I want my seeds to sprout and*



roots to grow, what do I need to do? Discuss watering and keeping cups in a dark, warm place. Explain that you'll use paper as a shield or curtain that will cover the cup and let the roots grow hidden in the dark. **(5 min.)**

**4. Decorating Paper Shields:** With students back at their desks, provide art supplies for decorating paper shields. You can give students the option of drawing what they think the roots or plants will look like once they grow. You might also want to display the names of the plants for students to practice writing. **(5 min.)**

**5. Sowing Seeds:** As students are decorating their paper shields, call four to six students up at a time to set up their cups with you. Have students show you their pointer fingers and point to their first knuckle and then their second knuckle on that finger. Explain that if they choose to plant the smaller chard seed, they'll push their seed in just as deep as their first knuckle. If they choose the bean seed, they'll push it in a little deeper, to their second knuckle. Encourage students to help each other (i.e., once you've shown one student how to set up their cup, ask them to show someone else how to do it). Guide students in watering so that cups are not oversaturated. **(15 min.)**

**6. Finishing Root-View Cups:** Once all students have set up their cups, have them clean up their spaces. Pass out tape. To build anticipation, have a countdown as a whole class before you tape the shield closed. Say, *We're going to count down from five, and*

*when we get to one we're going to hide away our seeds so they can do their work in secret. Ready? Five, four, three, two, one! (5 min.)*

#### **7. Hand-Washing Break (5 min.)**

**8. Tasting:** Explain, *Some roots of plants we eat. Turn and talk to your neighbor to see if you can name a root that we eat. Here's a hint: What vegetables grow underground?* To have students make the connection between the roots they're observing and edible roots, pass a sample of one or two root vegetables for them to taste, such as sliced carrots, radishes, or cooked beets. **(5 min.)**

**(After Class):** Determine how you will care for the seedlings in the root-view cups as they germinate and grow. Ask the classroom teacher ahead of time if you can set up a care schedule with students, rotating the job of watering them every day with a spray bottle to keep the soil moist (but not soggy). Because you planted two seeds in each cup, many will grow two plants. In those cups, once plants are about four inches tall, cut off the smaller of the two to let the other one grow. They'll need to be transplanted soon after, either as a second session with the class, or by sending them home with students.

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: *(5 min.)*

### Social and emotional learning

- *Ask yourself: How did I help a classmate today?*

### Check for understanding

- *What are the steps we took to make our root-view cups?*
- *In how many days do you predict we'll see roots growing?*
- *What do you predict the bean roots will look like? What do you predict the rainbow chard seeds will look like?*
- *How often should we water our cups?*

## ADAPTATIONS

**Observation Extension:** Have students set up a log where they'll record observations with pictures of the progress of their plants' growth.

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

**NGSS 1.LS1.A** Structure and Function – All organisms have external parts . . . Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.

# PLANT CARE SCHEDULE

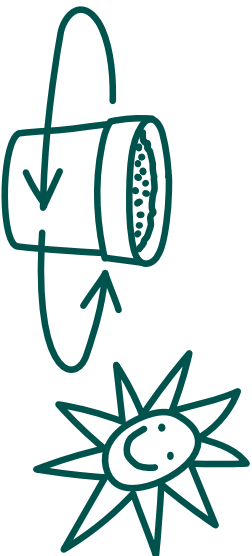
STEP 1: Feel the soil



STEP 2: Spray plants with water



STEP 3: Rotate plants / check they have enough light



Day	Your Name

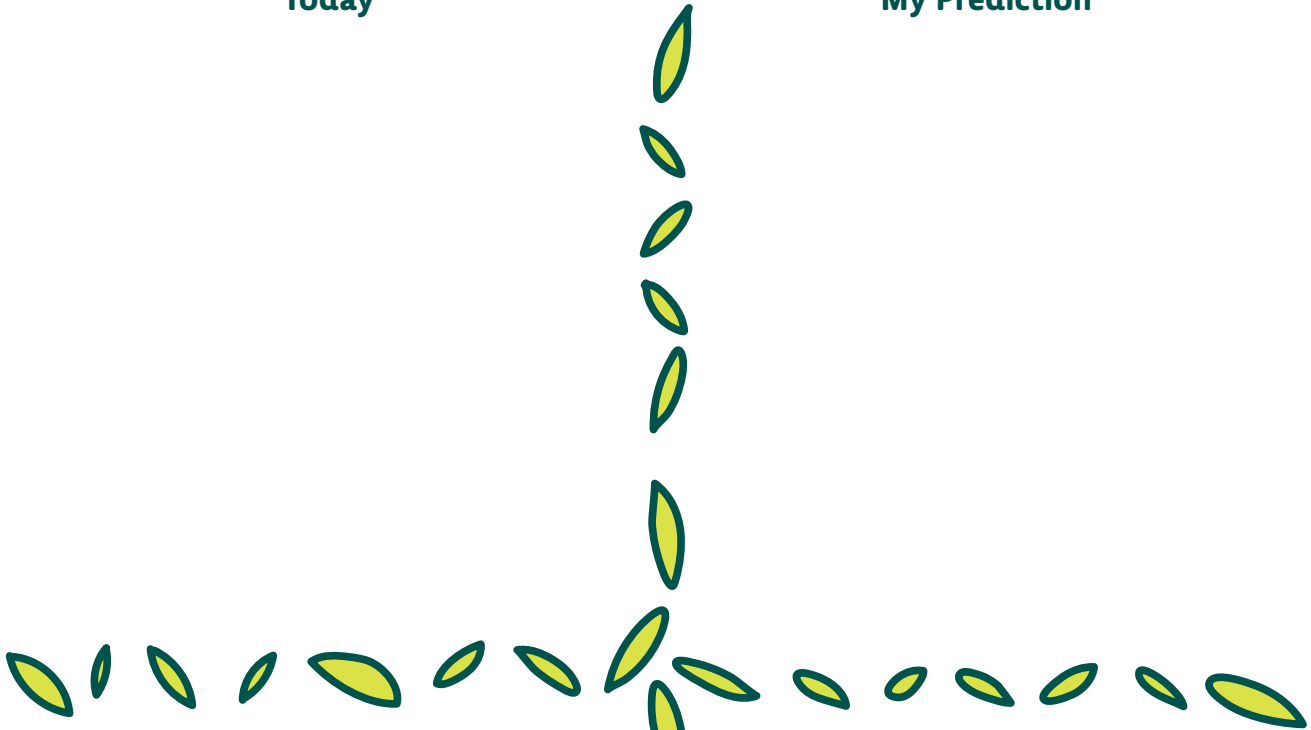
# Observation Log

Name: \_\_\_\_\_

Project: \_\_\_\_\_

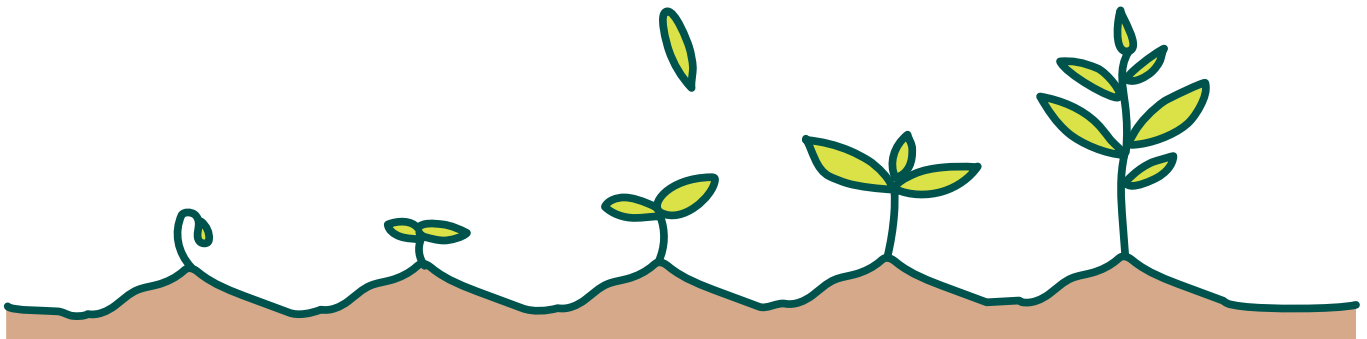
Today

My Prediction



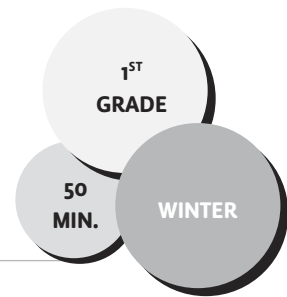
On \_\_\_\_\_  
date

On \_\_\_\_\_  
date



# Go, Grow, Glow Quesadillas

**THEME:** PREPARING HEALTHY FOOD



## ESSENTIAL QUESTION

*How can we prepare a healthy meal?*

## LEARNING OBJECTIVES

- ✓ Students will be able to identify go, grow, and glow foods.
- ✓ Students will be able to articulate the importance of incorporating go, grow, and glow foods into their diets.
- ✓ Students will be able to prepare a balanced meal.

## CONCEPTS

energy go, grow, glow protein vitamins

### *Engaging the Classroom Teacher*

- Prior to the lesson, check whether there is a third adult who can help with the lesson because you'll need to be stationed at the hot plate during Action Steps 5 and 6.
- During Action Step 4, suggest that the teacher help groups of students build their quesadilla.
- During Action Step 5, suggest that the teacher support students brainstorming new go, grow, and glow meals on their worksheet while you're cooking the quesadillas.

## LESSON DESCRIPTION

In this lesson, students read a book and learn how to cooperatively make quesadillas with go, grow, and glow ingredients. They practice combining other go, grow, and glow foods to brainstorm other possible balanced meals. This lesson is in conjunction with other first grade lessons Go, Grow, Glow and Plant a Go, Grow, Glow Bed.

**Note:** If someone in your class has a dairy allergy you can omit the cheese and make fajitas instead with only the beans serving as your grow food.

## MATERIALS

- *Round is a Tortilla* by Roseanne Greenfield Thong
- Go, Grow, Glow Poster (p. 142 from Go, Grow, Glow lesson)
- Hot plate
- Extension cord
- Cheese grater
- Skillet
- Spatula
- Knife or pizza cutter
- Go, Grow, Glow Matching Worksheet (p. 193) for each student
- Crayons
- 1 plate for each student (or paper towel)
- Salsa for serving (optional)
- Materials for cleanup

**Tray with the following for each group of 4–6 students:**

- Two large flour tortillas (1–2 packages total)
- Bowl of  $\frac{3}{4}$  cup shredded Monterey Jack or cheddar cheese (4 cups or 16 ounces total)
- Bowl of 1 cup fresh spinach (1 8-ounce bag spinach)
- Bowl of  $\frac{1}{3}$  cup pinto or black beans (2 cans total)
- Small mixing bowl
- Serving spoon or spatula for mixing ingredients
- Large plate (for assembling quesadilla)

## PREPARATION

**Note:** The total ingredient amounts above are based on a class size of 25 students. Adjust accordingly.

- › Photocopy a Go, Grow, Glow Meal Worksheet for each student.
- › Prepare ingredients for quesadillas by grating the cheese and chopping the greens.
- › Set up a station where you can plug in the hot plate to cook the quesadillas.

### *Go, Grow, Glow Quesadillas*

**Yield:** 6 servings, 1 quesadilla per student group

- $\frac{1}{3}$  cup pinto or black beans
- $\frac{3}{4}$  cup shredded Monterey Jack or cheddar cheese
- 1 cup spinach
- 2 large flour tortillas

- Mix beans and cheese in a bowl. Then tear spinach into bite-sized pieces and stir into mixture.
- Spread about a cup of the mixture onto one quesadilla and then put a second cup on top.
- Cook quesadilla on a dry skillet or hot plate on medium heat, until the underside is browned and cheese has started to melt.
- Flip the quesadilla and continue cooking until the second side is browned, the cheese is fully melted, and the ingredients are warmed through.
- Slice into six wedges and serve immediately.

## ACTION STEPS

**1. Engage:** Gather students in a circle, and read *Round is a Tortilla*. Ask, *What round things do they eat? What things shaped like triangles do they eat?* Once students mention the tortillas and quesadilla, ask, *Who has eaten a quesadilla before? Say, today we're going to be making quesadillas as a class! And we're making a special type of quesadilla—a Go, Grow, Glow quesadilla! (10 min.)*

**2. Model:** Show students the flour tortillas, and place one on your plate. Say, *Remember, go foods like this tortilla give us energy. Show me how you go!* Have students enact the gestures you taught them in the fall lesson, Go, Grow, Glow. Display the Go, Grow, Glow Poster for visual reinforcement. Show students your mixing bowl and say, *Next we'll add beans and cheese. Grow foods like beans and cheese have a lot of protein that helps us get strong. Show me how you grow!* And have students show you their muscles. Place the beans and cheese in your bowl, and mix the ingredients. Then show students the leafy greens you've brought and say, *Next, we'll add spinach. Glow*

foods like spinach help every part of our body from our hair to our heart to our toes stay healthy because glow foods have vitamins and minerals. Show me how you glow! Explain to students that they should tear the greens into even smaller bite-sized pieces before adding them to the mixture in your bowl. Next demonstrate spreading your mixed ingredients onto your tortilla, pointing out how you leave a ½ inch space along the edge. Finally place the second tortilla on top. Explain, *When we put all these go, grow, and glow ingredients together, we have a balanced meal. We have all the things our bodies need! Now it's your turn to make go, grow, and glow quesadillas. (5 min.)*

### 3. Hand-Washing Break (5 min.)

**4. Making the Quesadillas:** Have students return to their tables. Pass out trays of ingredients to groups. Tell students that they'll be making their quesadillas in teams, and explain that each group member will get to add one ingredient. Circulate through the room while groups are mixing ingredients and assembling their quesadillas, ensuring they're sharing and leaving room along the edges. Once quesadillas are built, have one student from each group bring theirs to the station where the hot plate is set up, and have the other students clean up their spaces. (10 min.)

**5. Planning a Go, Grow, Glow Meal:** Pass out the Go, Grow, Glow Meal Worksheet. While you're cooking the quesadillas, have students work together to fill it out. Explain that they'll choose ingredients for their meal by circling them and then draw the meal with all the ingredients at the bottom of the page. Say, *Your meal might be a pizza, a sandwich, a rice bowl, or even a new quesadilla! (10 min.)*

**6. Tasting:** Once the quesadillas are finished, slice them so that there are as many slices as students in each group. Pass out one quesadilla to each group as well as plates or paper towels for students. Enjoy together! Ask students to raise their hands if they are going to try to have a go, grow, and glow meal in the next few days. (5 min.)

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: (5 min.)

### Social and emotional learning

- How did you work together as a team to make the quesadilla for your group?

### Check for understanding

- What ingredients did you put into your quesadilla? Which was the go food? Where were the grow foods? Which were the glow foods?
- Why is it important that we balance go, grow, and glow foods?
- What is a go food you like? What is a grow food you like? What is a glow food you like?
- What go, grow, and glow foods might you eat in the next few days?

## ADAPTATIONS

**Recipe Variation:** Instead of quesadillas, try making Go, Grow, Glow Sticks with students, which is described in the *Sprout Scouts Leaders Handbook*. Have students skewer different components onto wooden skewers.

**Age:** Older students can help prepare the quesadilla ingredients by shredding cheese, chopping vegetables, and making homemade salsa to practice their knife skills.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.SL.1.1**

Participate in collaborative conversations with diverse partners about *grade 1 topics and texts* with peers and adults in small and larger groups.

### **CCSS.ELA-LITERACY.RL.1.1**

Ask and answer questions about key details in a text.



# A Go, Grow, Glow Matching Worksheet

Directions: Match each food to the category it belongs in.

**GO**  
Help give us energy

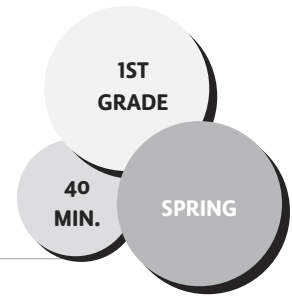
**GROW**  
Help us get strong

**GLOW**  
Help us stay healthy



# Wonders of Water

**THEME:** MAKING HEALTHY FOOD CHOICES



## ESSENTIAL QUESTION

*How can we stay hydrated throughout the day?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain why it is important to drink water.
- ✓ Students will be able to set goals for staying hydrated.

## CONCEPTS

energy   dehydrated   goal   hydrated

### *Engaging the Classroom Teacher*

During Action Step 4, suggest that the teacher support students in setting their goals on the worksheet.

## LESSON DESCRIPTION

In this lesson, students observe plants that have been sufficiently and insufficiently watered to open up a discussion about the importance of hydration. They role-play being a dehydrated plant and then a dehydrated person before setting personal goals for how much water they drink each day.

## MATERIALS

- Potting mix
- 2 medium-sized pots
- 2 plant starts (such as collards)
- 1 cup for each student
- Chart paper and markers or classroom board
- Water Log Worksheet (p. 197) for each student
- Crayons

## PREPARATION

- › A week or so in advance, prepare two different plants to show the effects of watering. For example, you might have two small potted collard plants, one you've been consistently watering and one you haven't.
- › Photocopy the Water Log Worksheet for each student.

## ACTION STEPS

**1. Engage:** Gather students in a circle, and show them the two different plants you've prepared. Ask them to make observations with a neighbor. Say, *These are the same plants, but what do you notice is different about these two plants?* Have students share observations and then discuss the signs of dehydration in plants. If they don't mention it, add in the following: *When plants haven't had enough water, their stems will start to droop, and their leaves will start to wilt. Then they'll turn yellow and eventually dry up. (5 min.)*

**2. Role-Play:** Have students stand up in the circle. Say, *Stand tall like you're a happy, healthy plant that has had plenty of water. Show me your leaves and your flowers. Beautiful! Now pretend it's been a week of really hot days with no rain, and your gardener hasn't come by to water you. What are you going to start to look like?* Have students show their drooping stems and wilting and shriveling leaves. Then have students sit down again and say, *When a living creature hasn't had enough water, we say that the creature is dehydrated.* Make a slumping gesture and sad face while you say the word, and have students repeat the word and mimic your gesture. Then ask students, *What is it like when a person is dehydrated? How is it similar to a plant?* Have students role-play being a person who hasn't had enough water. Then pass out cups of water to each student. Say, *When a creature has had the water they need, we say they are hydrated. Show me how you feel after you drink a glass of water, and you are hydrated.* Have students act out what they think it looks like to be well hydrated. **(5 min.)**

**3. Explain:** Say, *Did you know our bodies are mostly made up of water? It's important to drink water throughout the day for us to do all the fun and important activities we do. Drinking water helps our bodies feel energetic and our brains think better!* Ask students to think back throughout the day to all the times they drank water, and have them share with a partner. Then as a class, brainstorm good times to drink water each day. Your list might include: when you wake up, with breakfast, during a morning break, at lunch, after P.E. or other exercise, during an afternoon break, when you get home from school, with a snack, at dinner, or before bed. **(10 min.)**

**4. Role-Play:** After making your list of good times to drink water, have students pretend to drink water at each point throughout the day. Walk them through waking up and drinking from their (now empty) cup of water. Continue having them enact various parts of the day (e.g., thinking hard during math, jogging during P.E., climbing the monkey bars at recess, kicking a soccer ball after school), including water breaks throughout. **(5 min.)**

**5. Setting Goals:** Pass out the Water Log Worksheet and crayons, and have students set a goal by coloring in the cups when they'll drink water each day. They can bring this worksheet home to share with their caregivers to monitor their progress throughout the week. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How does your body feel when you don't drink enough water?*
- *Ask yourself: When do I drink water? When could I drink more water?*

### Check for understanding

- *How are plants and animals similar? What do they both need?*
- *Why is it important to stay hydrated?*

## ADAPTATIONS

**Tasting Extension:** Make flavor-infused water to share with students. See recipe suggestions in the fifth-grade lesson Sugar Showdown.

**Conservation Extension:** Teach students about efficient watering in the garden. This activity can also be a bridge to discussing how to conserve water at home and in their daily lives.

**At Home:** Have students track the amount of cups of water they have per day (and when) with their families.

## **ACADEMIC CONNECTIONS**

English Language Arts Common Core State Standards

### ***CCSS.ELA-LITERACY.W.1.8***

With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

# Water Log Worksheet

**DIRECTIONS:** Color the glass of water blue for every time you drink water.



**WAKE UP**



**BREAKFAST**



**BRAIN BREAK!**



**LUNCH**



**AFTER SPORTS/ P.E.**



**RECESS**



**PLAY TIME**

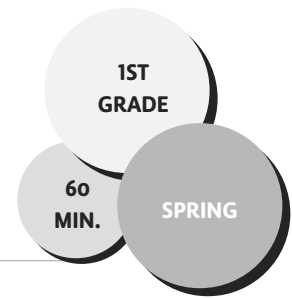


**DINNER TIME**



# Imaginary Plants

**THEME:** EXPLORING THE ECOLOGY OF FOOD



## ESSENTIAL QUESTION

*How can we create our own imaginary plants?*

## LEARNING OBJECTIVES

- ✓ Students will be able to identify the six parts of the plant and their basic functions.
- ✓ Students will be able to apply their knowledge of the six plant parts to create their own imaginary plant.

## CONCEPTS

creativity    imaginary    six plant parts

### *Engaging the Classroom Teacher*

- During Action Step 1, suggest that the teacher help students move from table to table as the timer or signal goes off.
- During Action Step 4, suggest that the teacher support students while making their imaginary plants by encouraging their creativity and ensuring they have all six parts.
- During Action Step 5, suggest that the teacher circulate through the room and help students as you model how to paste the plant part names and functions next to each part.

## LESSON DESCRIPTION

In this lesson, students review the six plant parts by creating their own imaginary plant through drawing and collage. They then label plant parts and their functions and share their creations with partners. This lesson is designed to be taught in conjunction with Plant Part Mystery, Plant Part Scavenger Hunt, Plant Part Wraps, and Planting a Tops and Bottoms Bed.

## MATERIALS

- “Roots, Stems, Leaves” song by the Banana Slug String Band
- About 10 pictures or real-life examples of unusual plants such as Venus fly trap, air plant, blossoming cactus, etc.
- Construction paper
- Plant Part Functions Worksheet (pp. 202-203) for each student
- Materials for collage, such as gardening magazines and seed catalogs
- Glue
- Scissors
- Markers, crayons, and colored pencils
- Library books with photographs of plants to spark inspiration (optional)
- Clock/timer for sharing time

## PREPARATION

- › Collect garden magazines and seed catalogs for students to collage with. It’s helpful to take the extra step of preselecting and cutting out pages so students do not have to wade through magazines.

- › Photocopy the Plant Part Functions Worksheet for each student.
- › Make your own imaginary plant (see Action Step 3 below) as a model for the class.
- › Set up a gallery walk, but instead of hanging pictures on the wall, display sets of pictures of unusual plants at tables around the room. Groups of students can rotate to look at the pictures (or real plants) at each table.
- › Display the Guiding Questions for sharing on the board or on chart paper.

## PLANT PART FUNCTIONS

PLANT PART	WHAT IT DOES
ROOTS	Take water from the soil Hold the plant in place
STEMS	Support the plant Carry water to the leaves
LEAVES	Make food for the plant with sun and air
FLOWERS	Make pollen, seeds, and fruit
FRUITS	Protect the seeds
SEEDS	Grow into new plants

## GUIDING QUESTIONS FOR SHARING

1. What is the name of your plant?
2. What do you like most about this plant?
3. Where in the world does your plant grow?

## ACTION STEPS

**1. Unusual Plants Gallery Walk:** Gather students in a circle and tell them, *Today you'll*

*get to create your very own imaginary plant!*

Explain that you have pictures of some of the unusual plants we find in nature. Have students rotate through viewing each of the unusual plants. Use a timer and a signal, so they know when it's time to switch to a different table. Have students return to the circle, and have them share with a neighbor about their favorite plant they saw and why they liked it. **(10 min.)**

**2. Singing:** Review the parts of the plant by singing "Roots, Stems, Leaves," performing the accompanying gestures to each plant part. Have students crouch down to touch their toes for roots, stand tall with their arms by their sides for stems, hold out their arms to the side and do jazz hands for leaves, frame their faces with their hands for flower, hold their hands in a circle the size of an apple above their heads for fruit, and rain down their fingers all the way to the ground for seeds. Then repeat the song. Start slowly, making sure each student has a chance to say the word and perform the gesture. Then do a few silly rounds sped up, if you'd like. **(5 min.)**

**3. Model:** Tell students, *When you make up your own imaginary plant, you can be creative. To be creative means you can use your imagination to make something extra special that you thought of. There are so many different kinds of leaves, flowers, and fruits. You just have to make sure that your plant has all six plant parts: roots, stems, leaves, flowers, fruits, and seeds. Show students your model, pointing out different features, for example, The root of my plant is like a carrot, and it's very tasty. The stems of my plant are vines that could climb a fence!* Model using your imagination to get students in the spirit. Tell them they can draw

each plant part, cut out images of plant parts from magazines, or do both. **(5 min.)**

**4. Making Plant Collages:** Pass out art supplies and collage materials to students. Circulate through the room, and ask students to show you which plant part they're working on. Offer guidance and encouragement where needed. You may want to set up a library corner with books of botanical drawings and photographs of interesting plants that students can visit for inspiration. **(15 min.)**

**5. Identifying Parts and Functions:** As students are finishing their plant creations, pass out the Plant Part Functions Worksheet. Show them how you used the worksheet to label each plant part, and show what it does on your own imaginary plant model. Have them cut and glue the names and functions next to the appropriate plant part. If your students need more structure and support, do this as a whole class. Using a document camera, if you have one, move step by step through pasting each plant part name and function onto their plants. For example, you would say, *Let's all find the stem of our plant. Now point to the word that says "stem" on our worksheet. Great! Let's cut out the word "stem" and the words that describe what it does—"carry water to the leaves"—and glue that next to the stem.* **(10 min.)**

**6. Sharing:** Have students clean their spaces and get into pairs. Then review the guiding questions they will share with their partner. With a student as your partner, model how to share. Demonstrate answering the questions enthusiastically and in full sentences, and show active listening while your partner shares. Tell

students that you'll set a timer, and they'll each have three minutes to share. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did you decide what kind of plant to make?*
- *What was hard, or a challenge while working on this activity? How did you try to solve it?*

### Check for understanding

- *Which plant part holds the plant in the ground? Which plant part can grow into a whole new plant? Which plant part holds the seeds?*
- *What's one thing you learned about your partner's imaginary plant?*
- *What were some of the most creative plants you saw in class today? Why is creativity important?*

## ADAPTATIONS

**Age:** Older students will enjoy playing Exquisite Corpse, a game in which players make a collective drawing without seeing what the person before them has drawn. Traditionally this was done with three different people drawing the head, torso, and legs of a being. But it works just as well with plants! Fold a piece of paper into equal sections, and have one person draw the roots, extending their lines just past the fold, so the next person can pick up where they left off and create the stem, and so on. After each player has had their turn, unfold to reveal your beautiful hodgepodge of a plant!



**Reading Extension:** Read Paul Fleischman’s *Weslandia*, a book about a boy who plants his own imaginary staple crop in his backyard and builds a civilization around it.

**Sculpture Variation:** Students at any age might enjoy making sculptures of their imaginary plants using recycled materials. You can then decorate your garden with their unusual creations!

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

### **NGSS 1.LS1.A**

Structure and Function – All organisms have external parts . . . Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.SL.1.1**

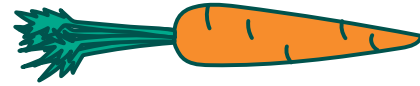
Participate in collaborative conversations with diverse partners about *grade 1 topics and texts* with peers and adults in small and larger groups.

### **CCSS.ELA-LITERACY.SL.1.6**

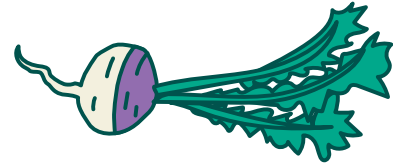
Produce complete sentences when appropriate to task and situation.

# Plant Part Functions

ROOTS



- > Take water from the soil
- > Hold the plant in place



STEMS



- > Support the plant
- > Carry water to the leaves



LEAVES



- > Make food for the plant with sun and air

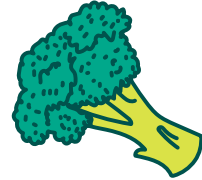


# Plant Part Functions

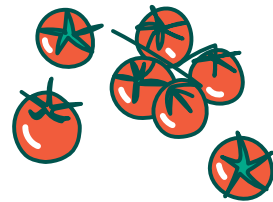
FLOWERS



> Make pollen, seeds,  
and fruit



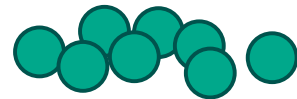
FRUIT



> Protect the seeds



SEEDS

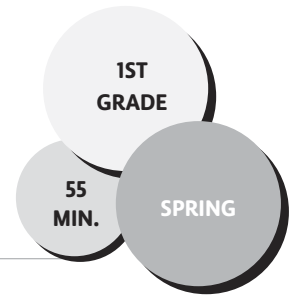


> Grow into new plants



# Plant a Go, Grow, Glow Bed

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTIONS

*How can eating certain foods help our bodies grow strong and stay healthy?*

*Where do go, grow, and glow foods come from?*

## LEARNING OBJECTIVES

✓ Students will be able to recall how different foods help us be active (go), grow strong (grow), and stay healthy (glow).

✓ Students will be able to trace go, grow, and glow foods back to plants and animals that eat plants.

✓ Students will be able to prepare and plant a bed with go, grow, and glow foods.

## LESSON DESCRIPTION

In this lesson, students review go, grow, and glow foods through tasting and dramatically acting out each food's impact on the body. They then plant a go, grow, and glow bed of grains (go food), a protein-rich plant (grow food), and a vitamin-rich fruit or vegetable (glow food). Students also hunt for these foods through a go, grow, and glow scavenger hunt. This lesson is designed to be taught in conjunction with lessons, Go, Grow, Glow and Go, Grow, Glow Quesadillas.

## CONCEPTS

creativity    imaginary    six plant parts

### *Engaging the Classroom Teacher*

Prior to the lesson, check that the teacher feels comfortable leading one of the other rotations while you are planting with students during Action Step 3. Also see if there's another adult who can support the third rotation. If not, consider modifying the lesson to do a whole-class scavenger hunt and planting.

## MATERIALS

- Seeds or transplants to represent each go, grow, and glow category
- Images of animals or protein-rich plants and/or props such as animal figurines (optional, if you don't have protein-rich plants growing in the garden)
- Snack (ideally from the garden) such as a cherry tomato, piece of kale, or berry for each student
- 5 trowels
- 5 watering cans
- Access to hose (to refill watering cans)
- Clipboards
- Colored pencils
- Go, Grow, Glow Scavenger Hunt Worksheet (p. 207)

**GO! WARM-WEATHER GRAINS**

- Spring hard red wheat
- Millet
- Quinoa
- Corn
- Barley
- Buckwheat

**GROW! PROTEIN-RICH PLANTS**

- Sunflowers (for seeds)
- Pumpkins (for seeds)
- Black-eyed peas
- Beans

**GLOW! FRUITS AND LEAFY GREENS**

- Tomatoes
- Peppers
- Zucchini
- Chard
- Spinach
- Kale

## PREPARATION

- › Consult a local planting guide for your region, and determine what you'll be planting.
- › Scout a location in your garden to make your go, grow, and glow bed. You might want to divide a raised bed into three sections.
- › Recruit one or more additional adults (a teacher, parent volunteer, or community member) to support the class during this lesson.
- › Identify a garden chore students can perform as one of the rotations. For example, you might identify a bed that needs weeding, have students harvest a crop for the cafeteria, or set up a wheelbarrow with a screen for students to sift compost. With this age group, most chores will require additional adult supervision.
- › Photocopy the Go, Grow, and Glow Scavenger Hunt Worksheet for all students.

## ACTION STEPS

**1. Engage:** Gather students in a circle and ask, *Where does the food we eat come from?* Discuss how our food comes from plants and animals that eat plants. Say, *Today we're going to be planting go, grow, and glow foods. (5 min.)*

**2. Tasting and Role Play:** To help students recall the go, grow, and glow concept, have them do a dramatic representation of eating each of those foods. Pass out a cracker, explaining, *This is a go food, so it gives us lots of energy.* Have them

leapfrog or hop around the circle back to their spots. Next pass out a couple sunflower seeds to each student and say, *Seeds, nuts, beans, and meat are grow foods. They help us grow bigger and help us build muscle. Let's pretend we have strong muscles and are lifting heavy things above our heads.* Model lifting an imaginary box, exaggerating the heaviness of the box. Again have students "carry" their box around the circle back to their spots. Finally, pass out a cherry tomato, a piece of kale, or a berry to each student. Say, *This, like other fruits and vegetables, is a glow food. They help us be our glowing healthy selves! Show me what you look like when you're feeling good!* Have students strut around the circle back to their spots. **(10 min.)**

**3. Rotations:** Briefly go over each rotation with students, explaining that they'll switch once they hear the signal from you. Divide students into three groups, naming each one Go, Grow, and Glow for easy identification. Have students rotate through each station for ten minutes each. **(30 min, 10 min. for each rotation)**

**a. Planting:** Have each group plant one of the categories of foods, emphasizing and reinforcing which category they're planting by having them perform the associated physical gesture. Go over tool safety with each group, and demonstrate how to transplant the starts or sow the seeds that

the group will be planting. If using starts, you might have pairs plant together. Have students water their seeds.

**b. Scavenger Hunt:** Have students find a representation of go, grow, and glow foods in the garden through using the Go, Grow, Glow Scavenger Hunt Worksheet. If you don't have any protein-rich plants growing, you might scatter animal figurines or images of protein-rich plants throughout the garden for students to find. You might also highlight a walnut or other nut tree growing in your garden with a sign.

**c. Garden Chore:** Have the third rotation of students care for the garden in some way, either through weeding, sifting compost, or harvesting a crop. Before students break into smaller groups, be sure to explain the guidelines for this task.

**4. Closing:** Gather students back together. Have students share with their classmates what they planted, going over which is the go, grow, and glow food to reinforce the concept. *(5 min.)*

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: *(5 min.)*

### Social and emotional learning

- *Ask yourself: Was I safe and respectful in the garden today?*

### Check for understanding

- *What are some go foods you like to eat? What about grow foods? Glow foods?*
- *What go, grow, and glow plants did you find in the garden?*
- *How would you explain what you learned about go, grow, and glow foods to a friend?*

## ADAPTATIONS

**Tasting Extension:** If you have lots growing in your garden, harvest crops to make a go, grow, and glow salad with your group.

**Art Extension:** Create go, grow, and glow plant markers, and have students place them next to corresponding plants in the garden.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

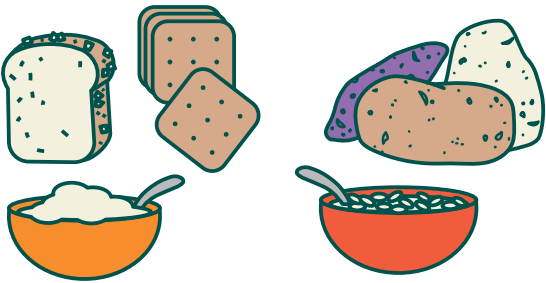
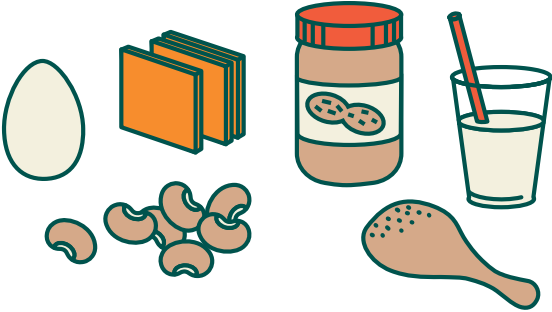

### CCSS.ELA-LITERACY.SL.1.1

Participate in collaborative conversations with diverse partners about *grade 1 topics and texts* with peers and adults in small and larger groups.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

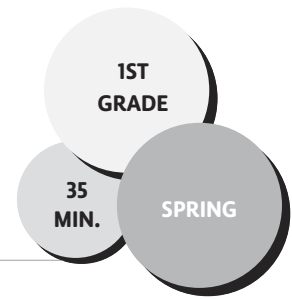
# Go, Grow, Glow Scavenger Hunt Worksheet

**Directions:** Circle the go, grow, and glow foods you find in the garden.  
Then draw a picture of what you find.

GO	
	
GROW	
	
GLOW	
	

# Tops and Bottoms Popsicles

**THEME:** PREPARING HEALTHY FOOD



## ESSENTIAL QUESTION

*How can we create a healthy snack using lots of fruits and vegetables?*

## LEARNING OBJECTIVES

- ✓ Students will be able to identify the different parts of a plant.
- ✓ Students will be able to prepare a healthy snack.

## CONCEPTS

fruit   herbs   leaves   roots

### *Engaging the Classroom Teacher*

- Arrange a time and/or day that you'll return to have your popsicle tasting with the class.
- During Action Step 4, suggest the teacher help students who need extra support picking herbs off the stem.
- During Action Step 5, suggest that the teacher support students in writing their names on their popsicle sticks and working on preparing the ingredients, and then support them in filling out their worksheet.

## LESSON DESCRIPTION

In this lesson, students make Tops and Bottoms popsicles, which include a fruit, root, and leaf part of plants. This lesson is designed to be taught in

conjunction with fall lessons, Plant Part Scavenger Hunt and Planting a Tops and Bottoms Bed.

## MATERIALS

- Access to a freezer
- Blender
- Extension cord
- Popsicle ingredients (see recipes below)
- Whole-food example of each ingredient, if possible

### For each student:

- Popsicle stick
- Small paper cup

### For each group of 4–6 students:

- Bowl of herbs on stem or greens
- Bowl for finished product
- Markers
- Masking tape
- Tops and Bottoms Popsicle Recipe Sheet (p. 211; optional)
- Materials for cleanup

## PREPARATION

- › Check in with school staff to find a place where you can freeze popsicles.
- › Schedule a time with the classroom teacher for you to return, at least three hours after the activity (once popsicles have fully frozen), to taste the popsicles with the class.
- › Boil beets, if using, until you can easily poke a fork through them.
- › Portion your herbs or greens into bowls for each group of students.
- › Set up a station with your blender and other



ingredients close to a power outlet where all students can see you.

## *Tops and Bottoms Popsicles*

**Yield:** 25 servings, ¼ cup

### **Orange Carrot Mint**

- 4 cups orange juice
- 2 cups carrot juice
- ½ cup mint leaves (packed)

### **Strawberry Beet Basil**

- 4½ cups fresh or frozen strawberries
- 1½ cups red beets (cooked, cooled, and cut into pieces)
- 2¼ cups apple juice
- ¾ cup basil leaves (packed)

**Note:** Increase the “tops” with 1 cup of spinach or kale!

- In a blender, add greens and liquid ingredients first, and blend until greens are just small flecks. Then add the rest of the ingredients and blend until smooth.
- Pour into popsicle molds or cups with popsicle sticks, and freeze for at least three hours or until solid.

## **ACTION STEPS**

**1. Engage:** Gather students in a circle and ask, *What are your favorite flavors of popsicles?* When students respond with types of fruit, say, *Did you know that strawberry, orange, and grape are all the fruit part of plants? Today we're going to make our own popsicles that include even more parts of the plant. The tops and the bottoms!* Ask students to recall the story *Tops and Bottoms* and other activities they've done on this topic. Remind students that the tops of the plant are the leaves, and the bottoms are the roots. **(5 min.)**

**2. Identifying Plant Parts:** Show students the whole-food ingredients for your popsicles and

ask, *Is this a top, bottom, or fruit?* As students answer, arrange the produce so it's categorized by plant part. Continue with each ingredient. **(5 min.)**

### **3. Hand-Washing Break (5 min.)**

**4. Preparing Herbs:** Model for students how to pick herbs off the stem, or tear greens into smaller pieces, and then pass out herbs or greens and bowls to groups. If you're using two different recipes, each group will have a different herb or green. Circulate through the room, ensuring each student is getting an opportunity to contribute. **(5 min.)**

**5. Making the Popsicles:** Direct students' attention to where you've set up the blender. As you add each ingredient to the blender, ask, *What part of the plant is this ingredient?* Have a student volunteer pass out popsicle sticks and cups, and have students write their name on one end of their stick with a marker. If there is extra time, or students finish early, you might also have students decorate their cups or color the *Tops and Bottoms Popsicle Recipe Sheet*. Once you've blended the ingredients, walk around the room, pouring the popsicle mixture into each student's cup. If you've made two recipes, ask students which they think they'll prefer. **(5 min.)**

**6. Tasting:** Return the popsicles to the class at the time you've arranged with the teacher. **(5 min.)**

## **REFLECTION**

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### **Social and emotional learning**

- *How did you help make our popsicles today?*

### Check for understanding

- What parts of the plant can you taste in our popsicles?
- What words would you use to describe the flavors of our popsicles?
- Why do you think it's healthy to have three different parts of the plant in our popsicles?
- What other ideas do you have for ingredients to put in *Tops and Bottoms* popsicles?

## ADAPTATIONS

**Garden Setting:** Harvest from your *Tops and Bottoms* bed for your popsicle ingredients.

**Song:** Sing “Roots, Stems, Leaves” by the Banana Slug String Band.

**Cooking Variation:** Make a *Tops and Bottoms* salad. Have students discuss the plant part of each food they are putting in their salad and what dressing ingredients make sense to bring out the flavors in their plant part salad. Encourage students to think about the parts of plants they eat during their meals and snacks.

**Sharing:** Work with your students to prepare a presentation for another class. Then make a double batch of popsicles, and invite your students to arrange a time to deliver the popsicles to another class. At that time, you can read *Tops and Bottoms* to the other class, and your students can act it out.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.SL.1.1**

Participate in collaborative conversations with diverse partners about *grade 1 topics and texts* with peers and adults in small and larger groups.

### **CCSS.ELA-LITERACY.RL.1.2**

Retell stories, including key details, and demonstrate understanding of their central message or lesson.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

# Tops and Bottoms Popsicles

Our fruit is: \_\_\_\_\_

Our tops ingredient is: \_\_\_\_\_



Our bottoms ingredient is: \_\_\_\_\_

## STRAWBERRY BEET BASIL

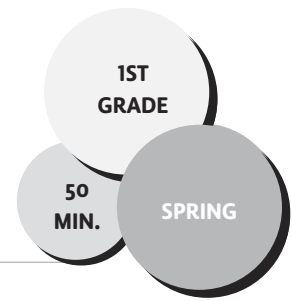
- 4 1/2 cups fresh or frozen strawberries
- 1 1/2 cup red beets (cooked, cooled, and cut into pieces)
- 2 1/4 cups apple juice
- 3/4 cup basil leaves (packed)

In a blender, add greens and liquid ingredients first and blend until greens are just small flecks. Then add the rest of ingredients and blend until smooth.

Pour into popsicle molds or cups with popsicle sticks and freeze for at least three hours or until solid.

# Our Food Traditions

**THEME:** CONNECTING FOOD, CULTURE, AND COMMUNITY



## ESSENTIAL QUESTION

*Why do we celebrate important moments with food?*

## LEARNING OBJECTIVES

- ✓ Students will be able to identify food groups.
- ✓ Students will be able to illustrate a celebratory food tradition.

## CONCEPTS

celebration    community    tradition

### *Engaging the Classroom Teacher*

- During Action Step 1, encourage the teacher to share about their own celebrations and food traditions.
- During Action Steps 2 and 4, suggest that the teacher support students in thinking of ideas about what celebration and food to draw.

## LESSON DESCRIPTION

In this lesson, students learn about one another's food traditions by using a paper plate to draw a special meal they've eaten and "sharing" their meal by passing plates with their classmates.

## MATERIALS

For each student

- White paper plate
- 1 fork (optional)
- Crayons and colored pencils

## PREPARATION

- › On a paper plate, create your own drawing of a special food memory to serve as a model for students. Label the different food groups.
- › Prepare a slideshow of different food celebrations around the world to help students connect and remember their own food traditions.

## ACTION STEPS

**1. Engage:** Explain to students that eating food together is a special way to share time with people you care about. Ask, *What does it mean to celebrate?* Discuss different reasons and times during the year to celebrate. Tell students that today they're going to think about the food they have eaten when they celebrated something, and they'll share that with their classmates. Show them the slideshow of different food celebrations you've prepared. Explain, A tradition is something that a certain group of people have been doing for a long time. Ask, *Are any of the food traditions we saw in the slideshow familiar to you?* Say, *Think of a time you shared a special meal with your friends and family or your*

community when you were celebrating something. Try to think of something that feels like a tradition, meaning you eat this same food for a special reason again and again. Have students turn and talk to a neighbor to share about the special time and something they ate. **(5 min.)**

**2. Drawing a Celebration:** Pass out paper plates and crayons or colored pencils. On the back, have students draw pictures of their special event. Encourage them to draw pictures of the people who were there and the activities they did. **(10 min.)**

**3. Model:** Tell students the story of your special meal, and show them the paper plate drawing of your meal. For example, say, *My special meal included macaroni and cheese. This is something my grandpa always makes when my family is together for someone's birthday.* After you've gone over different ideas for their special meal, tell students that they're going to be drawing their meal on the front of their paper plate just like you did. **(5 min.)**

**4. Drawing Paper Plate Meal:** On the front side of the paper plates, have students draw the meal they ate at their special event. Give students a three-minute warning to finish their drawing, but also let them know it's okay if they're not done because they can add more later. **(10 min.)**

**5. Sharing with Partners:** Tell students, *Now you're really lucky because you're going to swap meals with a partner, and use your imaginations to enjoy your partner's tasty dish!* Model the process: Ask a student to trade plates with you, and ask the student to describe the meal that you drew. Then ask the student to describe their meal to you. Enthusiastically pretend to

eat the student's meal, commenting on what you're tasting. As students do this, you can pass out forks to enhance the experience of pretending with a prop. **(5 min.)**

**6. Passing Plates Whole Class:** Have students gather in a circle with their paper plate meals to share. Build anticipation by saying something like, *Have you ever eaten thirty meals at the same time? Well, get ready because that's what we're about to do.* Explain that they're going to pass plates around the circle so that every student will get to experience everyone else's meal. Tell students the signal you'll use when it's time to pass plates, such as saying, *Lettuce switch!* Have students observe their classmates' plates, and then pretend to eat the meal portrayed. Encourage students to think of something they'd like to ask their classmates to learn more about the meal. Before you begin, discuss ways of showing respect and appreciation for another person's work, such as making *yum* or *mmm* sounds while they're pretending to eat, and by handling one another's paper plates with care. Start the activity, and give students about ten seconds with each plate before giving the signal to switch again. Pass meals in one direction, at the same steady pace, until all students have their meal returned to them. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What's something you learned about one of your classmates by doing this activity?*
- *When we were learning about one another's*

*culture and traditions, what were some ways we showed respect and appreciation for one another?*

**Check for understanding**

- *What were some example foods from each of the food groups? Go through them one by one.*
- *What were some things you learned about food?*

## ADAPTATIONS

**Reviewing Go, Grow, Glow Extension:** To reinforce their understanding of food groups, have students label each part of their meal as a go, grow, or glow food.

**Language:** Ask students to share the names of their meals if they know them. If the name is unfamiliar to students, have the class practice saying it together.

**At Home:** Have students bring a paper plate home to illustrate together with a caregiver while discussing a special meal.

**Reading:** Read *The Sandwich Swap* by Queen Rania Al Abdullah and Katie DiPucchio about two girls who trade sandwiches at lunch time after initially being wary of each other's food.

**Tasting Extension:** Consider preparing your traditional dish for the class to try.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

**CCSS.ELA-LITERACY.SL.1.1**

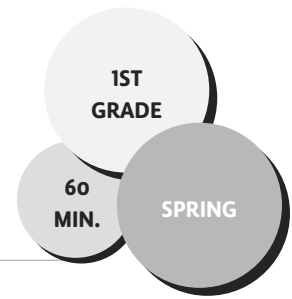
Participate in collaborative conversations with diverse partners *about grade 1 topics and texts* with peers and adults in small and larger groups.

**CCSS.ELA-LITERACY.SL.1.4** Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.

# Looking Closely at Leaves

**THEME:** EXPLORING THE ECOLOGY OF FOOD

Inspired by California Academy of Sciences' "Introduction to Scientific Sketching" lesson



## ESSENTIAL QUESTION

*Why are careful observation and accurate recording important in science?*

## LEARNING OBJECTIVES

- ✓ Students will be able to use close observation skills.
- ✓ Students will be able to create scientific sketches.

## CONCEPTS

accurate   details   illustration  
observe   scientific

### *Engaging the Classroom Teacher*

- Ask the teacher whether they have established groups of 5–6 students.
- During Action Step 1, suggest that the teacher pass out a leaf to each student.
- During Action Step 5, suggest that the teacher circulate through the room, checking that students are taking turns in their groups.
- During Action Step 6, suggest that the teacher check on students out in the garden who might need further support.

## LESSON DESCRIPTION

In this lesson, students learn the foundations of scientific illustrations. They closely observe a leaf specimen, drawing it with enough detail that a classmate can find it in a group of leaves from the same plant. They then draw a plant from the garden, practicing the “ABCs of scientific illustration.”

## MATERIALS

**For each student:**

- Leaf (all students receive leaves from the same tree or plant)
- Looking Closely at Leaves Worksheet (219)
- Clipboard
- Pencil
- Colored pencils
- Whiteboard
- Dry-erase markers of various colors
- ABCs of Scientific Illustration Poster (p. 218)

## PREPARATION

- › Gather leaves for your students to sort and draw. Leaves should be from the same tree or plant but have enough variation for students to notice when drawing and sorting.
- › If you don't have a whiteboard, you can prepare accurate and inaccurate illustrations of your object for Action Step 3 ahead of time.
- › Photocopy a Looking Closely at Leaves Worksheet for each student.

## ABCs of Scientific Illustration

**Accurate  
Big  
Colorful**

### ACTION STEPS

**1. Engage:** Gather students in a circle and say, Today you're going to be scientists and artists! Ask students to think about the difference between a scientist and an artist. Then perhaps ask what they have in common. Get to the idea that both scientists and artists have to pay careful attention to what they're studying. Meanwhile, have the teacher pass out a leaf to each student. Tell them to observe everything they can about it while being very careful not to damage the leaf. You may want to prompt students by asking questions such as, *Does it have speckles? Does it have smooth edges?* Tell students to remember what their leaf looks like because soon they'll have to tell which is theirs from a pile of leaves. **(5 min.)**

**2. Finding Your Leaf:** Put students into groups of five or six, and instruct them to gently put their leaves in the middle of their group. Come around and jumble each group's leaves, and challenge students when you give a signal such as "go," to find their leaf again. Ask, *Who was able to find their leaf again? What made it helpful to find your leaf?* Reinforce the idea of paying careful attention and noticing the details of their leaf. **(5 min.)**

**3. Explain Scientific Illustrations:** Explain to students, *Today, we're going to make scien-*

*tific illustrations. This is different from art. In art, we might be drawing to make something beautiful or creative. In scientific illustration, we're going to draw to share information.* Show students an object such as a flower, and then draw an inaccurate, cartoon-like version of the flower quickly, perhaps not even looking at the object. Ask students, *Does my drawing look like the flower?* Explain that it might be a beautiful or exciting piece of art, but for this to be a scientific illustration, it needs to look a lot like the real flower. Ask, *How could my drawing look more like my flower? What should I do?* (slow down and notice all the small things). Then ask students to turn and talk to the person on their right. Take suggestions from students, and then draw the flower as accurately as you can. Ask, *Does this drawing look like my flower? How do you know?* Explain to students that your second drawing is more accurate than your first. Have them repeat the word "accurate." Continue by saying, *This drawing is more accurate. What do you think I might mean by "accurate"?* Have them share in pairs. Then say, *Accurate means it looks close to how it looks in real life, instead of what I imagine in my mind.* Show students the ABCs of Scientific Illustration Poster, explaining, *When scientists are out in nature, they often need to record what they see, and it's important for their drawings to be accurate, so they can share what they saw with others or maybe remember details later on. Being big and colorful helps too! When your drawing is big, you can see all the details, and when your drawing is colorful, it looks more like real life.* **(10 min.)**

**4. Drawing Our Leaves:** Pass out the Looking Closely at Leaves Worksheet. Have students



draw the leaf they originally studied at the beginning of the lesson, practicing the ABCs. **(10 min.)**

**5. Group Guessing Game:** Have students return to their original group. Say, *Put all your leaves in the middle again, and now place your illustrations around the leaves in a circle. Now each person in the group can take a turn to see if they can make a match. If someone in the group matches the right leaf with your illustration, you can tell them yes or no.* Have students play until everyone has had a chance to guess (which may mean stopping before the group guesses all correctly). **(10 min.)**

**6. Drawing a Living Plant:** If you have time, give students the chance to further practice the skill of scientific illustration. If you're not already in the garden, take students there now. Say, *OK scientists, I'll give you one minute to find a plant to draw. Once that minute is up, you have to stay with your plant, and draw the plant using the ABCs. Ready?* Have students walk around the garden to select a plant to draw a full scientific drawing of. Circulate through the garden once students have settled with their plant, encouraging students to add more detail or pointing out interesting aspects of their plant to add to their drawing. **(15 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *Ask yourself: Did I share, take turns, and help others learn in my group today?*

## Check for understanding

- *What was helpful about a drawing when you were trying to find the matching leaf?*
- *What makes a drawing accurate?*
- *Why do you think scientists try to draw accurate pictures of what they're observing?*

## ADAPTATIONS

**Age:** For older students, you can introduce the ABCDEs with the requirements “detailed” and “explained” added.

**Upper Grade Classroom Extension:** Create a book with class illustrations of your school garden's plants! Bring in botanical illustrations for students to observe. Then assign each student to a plant in your garden, and have them study and draw their plant over multiple sessions. Their final/best drawing can then be included in the compiled class book.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.L.1.4.A

Use sentence-level context as a clue to the meaning of a word or phrase.

Next Generation Science Standards, Life Science Disciplinary Core Idea

### NGSS LS3.B: Variation of Traits

Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. (1-LS3-1)

# ABCs of Scientific Illustration

---

**ACCURATE**

**BIG**

**COLORFUL**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Looking Closely at Leaves Worksheet

**Directions:** Draw your leaf in the space below.

A large, empty rounded rectangular box with a thin black border, intended for drawing a leaf. The box is centered on the page and occupies most of the lower half of the worksheet.

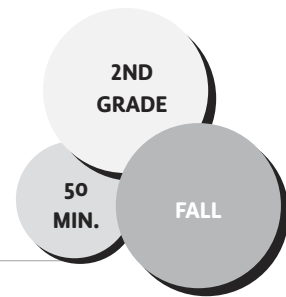
The background of the page is a light gray color with a repeating pattern of various fruits and vegetables. The items include watermelon slices, lemons, carrots, broccoli, grapes, and other produce, all rendered in a simple, line-art style. A large white circle is centered on the page, containing the main title.

# Second Grade

**LESSONS**

# If Our Class Were a Soup . . .

**THEME:** LIVING UP TO OUR FULL POTENTIAL



## ESSENTIAL QUESTION

*How does sharing help a community?*

## LEARNING OBJECTIVE

✓ Students will be able to identify and describe what they contribute to their class community.

## CONCEPTS

community   characteristic   sharing

### *Engaging the Classroom Teacher*

- Before the lesson, discuss what the final product of the lesson will look like (the pot of vegetables), and ask the teacher whether there is space on a classroom bulletin board or in the hallway where it can be displayed.
- During Action Step 4, suggest that the teacher support students in thinking of how to draw their favorite vegetable the appropriate size.
- During Action Step 5, encourage the teacher to help students think of their special characteristics and to contribute a special characteristic of their own!

## LESSON DESCRIPTION

In this lesson, students consider the importance of sharing within a community through reading *Stone Soup* and creating a classroom poster of a soup cauldron to which they'll each contribute their favorite vegetable as an ingredient. This lesson can be taught in conjunction with the lesson *Stone Soup* and can serve as an opening lesson with a new group of students.

## MATERIALS

- *Stone Soup* (The 2003 version by Jon J. Muth emphasizes community and sharing)
- Large piece of butcher paper
- Construction paper or other drawing paper for all students
- Markers or crayons
- Scissors
- Big ladle or wooden spoon
- Large pot as a prop (optional)
- Seed catalogs or other vegetable images (optional)
- Tape, glue, tacks, or stapler for affixing vegetable pictures to poster

## PREPARATION

- › Using butcher paper, create a large poster of a big soup pot or cauldron that will represent the classroom soup pot, leaving room to attach each student's vegetable drawing.
- › Create a model vegetable the ideal size for students' drawings.

- › Find a space on a classroom bulletin board or wall where you'll display your cauldron poster after the lesson.
- › If students are in table groups, you may want to create sets of crayons, markers, paper, and scissors for groups to share.

## ACTION STEPS

**1. Engage:** Begin by having a discussion about sharing with students. Ask, *Think of a time you shared food, a toy, or something else with a friend. What is difficult about sharing? What are some good things about sharing? Have students turn and talk with a neighbor before sharing as a class. (5 min.)*

**2. Reading:** Gather students in a circle to read *Stone Soup*. If you don't have the text but have access to a computer and projector, find a video on YouTube. As you're reading, ask some questions about the plot and character's feelings to check for understanding. For example, ask, *How did the villagers treat the strangers at first? Why? What happened when the villagers saw their neighbors contributing to the soup? What else did the villagers do at the banquet in addition to just eating? What helped them treat the strangers differently? (10 min.)*

**3. Discussing:** Discuss the themes present in the book, asking questions such as, *What is a community? How do people rely on one another in a community? Get to the idea that we enjoy everything more when everyone contributes a little of what they have. Tell students, We'll be creating our own stone soup as a class by drawing pictures of our favorite vegetables and putting them into this classroom soup pot so that everyone contributes something.*

Show your cauldron, vegetable model, and the supplies you have for them to use. Tell students that their vegetable should be the same size as yours. Say, *You can add any vegetable to our soup that you think is tasty, and be sure to write your name on your vegetable so we know who contributed that ingredient. (5 min.)*

**4. Drawing:** Have students return to their desks and draw, color, and cut out their vegetables. You may want to have seed catalogs or other vegetable visuals around to help generate ideas. Give students a five-minute warning before it's time to clean up and have their contributions ready. Early finishers can add a second vegetable. **(10 min.)**

**5. Gathering:** Make sure students have cleaned up their areas and put supplies back before asking them back to the circle with their ingredients in hand. Sit in a circle with your soup pot poster in the center. Alternatively, use a real pot in the middle of the circle. Explain, *When we eat foods with all these different vegetables that are different colors and different parts of the plant, we're giving our bodies what they need. Our class is like a soup! Each person has their own special characteristics that add something to the class community. Think about what you bring to the class. Maybe you bring jokes to make people laugh. Maybe you bring a helpful attitude. Take a minute to think of something positive, or good, you add to this class. If you need help thinking of something, you can ask me, your teacher, or a friend. One at a time, have each student place their vegetable into the soup pot and share what positive characteristic they add to the class. Use the ladle or spoon as a talking stick, and have each student pretend they're stirring their ingredient*

into the pot as they speak. Consider mentally taking note of their responses, so you can add the words to your soup pot poster afterward. (15 min.)



**(After Class)** Affix the veggies onto the soup pot poster, and hang it in the classroom. You might title it something like “Vegetable Soup Builds Community.”

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: (5 min.)

### Social and emotional learning

- Ask yourself: How did I share with someone in my class community today?

### Check for understanding

- How do you think sharing helps a community?
- We all add different things to the class community. How can we support one another’s differences?
- What are some ways we can be like the villagers at the end of the story in our own classroom community? What are ways that

we can share? What are other nice things we can do for our classmates?

## ADAPTATIONS

**Garden Setting:** If doing this activity outdoors, instead of students drawing a vegetable to contribute, you can create a collective piece of art. Have students hunt through the garden for a special object such as a flower, leaf, stone, or twig to add to the class artwork.

**Partner Variation:** Instead of having students name their own contributions to the class, you can pair students, and have partners identify for each other what each brings to the class community. You can model this using the classroom teacher as your partner.

**Cooking Extension:** Make real stone soup with your students, inviting different groups to prepare and add various ingredients. (See 5th grade lesson Stone Soup.)

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.RL.2.7

Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.

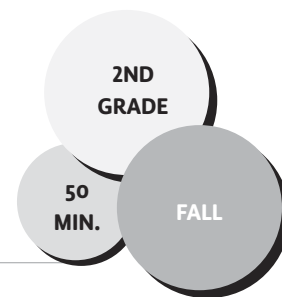
### CCSS.ELA-LITERACY.SL.2.1

Participate in collaborative conversations with diverse partners about *grade 2 topics and texts* with peers and adults in small and larger groups.

# Eat a Rainbow

Adapted from Life Lab's *The Growing Classroom*

**THEME:** MAKING HEALTHY FOOD CHOICES



## ESSENTIAL QUESTION

*Why is eating a rainbow of fruits and vegetables important?*

## LEARNING OBJECTIVE

✓ Students will be able to explain the benefit of eating a variety of fruits and vegetables.

## CONCEPTS

healthy phytonutrients vitamins

### *Engaging the Classroom Teacher*

- Before the lesson, discuss what the final product of the lesson will look like (the rainbow human), and ask the teacher whether there is space on a classroom bulletin board or in the hallway where it can be displayed.
- During Action Step 3, suggest that the teacher support groups as they prepare to share the information with the rest of the class, whether verbally or with a poster.
- During Action Step 4, suggest that the teacher circulate through the room, supporting students in listening and drawing on their own worksheet as you create the larger rainbow human.

## LESSON DESCRIPTION

In this lesson, students learn about the benefits of eating a variety of phytonutrients by matching various fruits and vegetables to a color information card. They then prepare an explanation for why their group's color is vital to health, and create a large poster of a body to represent the different colors' benefits. This lesson is designed to be taught in conjunction with lessons Plant a Rainbow and A Rainbow at the Salad Bar.

## MATERIALS

- About 5 feet of light-colored butcher paper
- Permanent marker
- Markers
- Rainbow Cards (p. 227)
- Fruit and Vegetable Cards (pp. 228-231)
- Eat a Rainbow Worksheet for each student (p. 232)

## PREPARATION

- › Photocopy and cut out the Rainbow Cards.
- › Photocopy and cut out the Fruit and Vegetable Cards, or better yet, make your own! Use seed catalogs to cut out different colored fruits and vegetables and paste them onto index cards. Make enough for each student
- › Photocopy an Eat a Rainbow Worksheet for each student.
- › Place butcher paper on the floor, and draw a life-size outline of a body in a fun pose.



› Display the following sentence frame for students' presentations:  
\_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ are \_\_\_\_\_ - colored fruits and vegetables. They help our bodies \_\_\_\_\_.

## ACTION STEPS

**1. Engage:** Gather students in a circle, and ask them what their favorite color is. Once they think of their favorite color, ask them to think with a partner of as many fruits and vegetables that are that color. After they've shared say, *Fruits and vegetables have different vitamins and nutrients that help our bodies stay healthy. The more colorful the foods we eat the better, and different colored fruits and vegetables help us in different ways.* You might choose to further explain, *Colorful fruits and vegetables have what we call phytonutrients that help us "fight" off being sick,* punching the air as you say the term and having students mimic you as they repeat the word. Say, *Plants create these phytonutrients to protect themselves, but when we eat them, they protect us too!* **(5 min.)**

**2. Sorting into Groups:** Show students the outline of the body, and explain that today they're going to learn about how the different colors of the foods we eat help our bodies. Say, *By the end of class, the body will be filled in with all the new things you learn.* Place one Rainbow Card on each table in the classroom, and give each student a Fruit and Vegetable Card. Explain, *Each table has a different color. If you have a red fruit or vegetable, you're going to find all the people with red fruits and vegetables,* and sit at the red table. Have students circulate through the room, finding their matches. Make sure they sit at the right table. **(5 min.)**

**3. Preparing Explanations:** Once students have sorted themselves into groups, explain that they'll teach the rest of the class why eating fruits and vegetables of their color is important for all-around health. Make sure they know to find the information on the health benefits of each color on their Rainbow Cards. Display the sentence frame, and read it together as a class before their work period, so they can feel confident sharing with the class. Circulate through the room, helping students make the connection between the color and the parts of the body the color benefits. Consider having each group make a poster on which they draw or paste examples of fruits and vegetables of their color, and write what they learned from the Rainbow Card. **(10-15 min.)**

**4. Presenting:** Pass out an Eat a Rainbow Worksheet to each student, explaining that they'll draw on the body on their worksheet as we learn information from their classmates. Have each group present to the class why their color is important. After each group presents, summarize for students why the color is beneficial for our bodies, and color the associated parts of the body on butcher paper with that color marker. For example, you might draw teeth in green or a heart in red. Solicit ideas from students for how to represent the information. For example, to represent the idea that blue or purple foods are good for the brain, you might draw blue or purple thought bubbles. Have students draw the same or similar images on their worksheet for each color. **(15 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: (5 min.)

### Social and emotional learning

- Ask yourself: How did I help my classmates learn today?

### Check for understanding

- Why is it important to eat a variety of colorful fruits and vegetables?
- What fruits or vegetables have you eaten today? What colors are they?
- What colorful fruit or vegetable would you like to eat next and why?

## ADAPTATIONS

**Garden:** Pass out the Rainbow Cards to students, but instead of matching them to pictures of fruits and vegetables, have them find fruits and vegetables in the garden to represent each color.

**Cooking Extension:** Make a rainbow dish with students, such as rainbow salsa, or use the recipes from the lessons Rainbow Smoothie or Rainbow Grain Salad.

**Age:** If doing this lesson with older students, you can go more in depth about the adaptive quality of phytonutrients in plants, and help students learn in more detail how phytonutrients aid our health. Have groups independently research the benefits of their color (or read materials you've culled for them), and have them create informational posters mentioned in Action Step 3.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.SL.2.6

Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

### CCSS.ELA-LITERACY.RI.2.9

Compare and contrast the most important points presented by two texts on the same topic.

# Rainbow Cards

**RED**

Can keep your heart strong  
and give you healthy skin



**ORANGE/  
DEEP YELLOW**

Can help you see well,  
especially in the dark



**YELLOW/  
BROWN/WHITE**

Can help your memory and  
help you stay healthy as you  
get older




**GREEN**

Can make your bones  
and teeth strong



**BLUE/PURPLE**

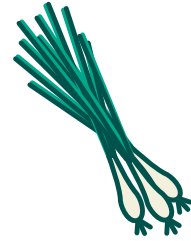
Can improve memory  
and healthy aging



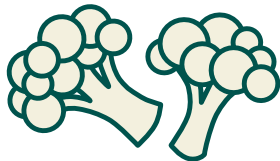
# Fruit and Vegetable Cards



**Nasturtium**



**Scallions**



**Cauliflower**



**Parsley**



**Celery**



**Sunflower Seeds**

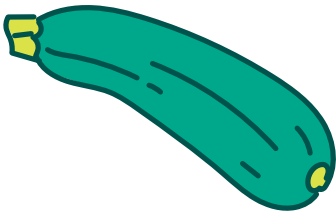


**Rhubarb**

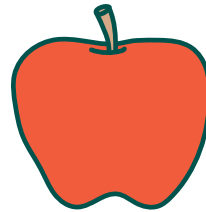


**Pumpkin Seeds**

# Fruit and Vegetable Cards



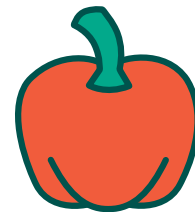
**Zucchini**



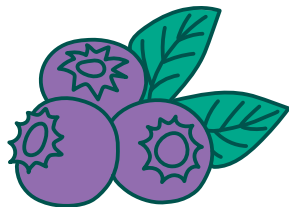
**Apple**



**Banana**



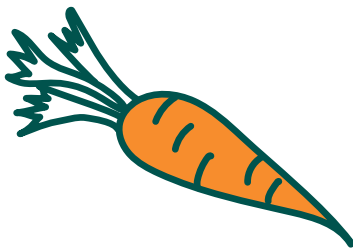
**Bell Pepper**



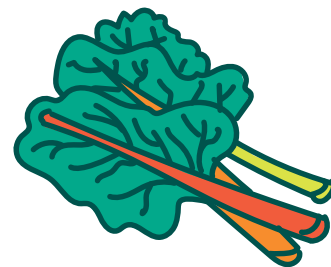
**Blueberries**



**Bok Choy**

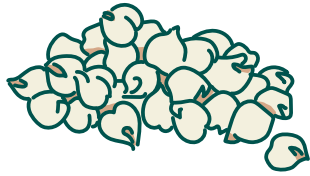


**Carrot**

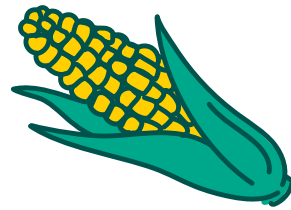


**Chard**

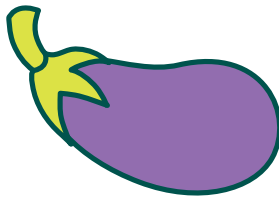
# Fruit and Vegetable Cards



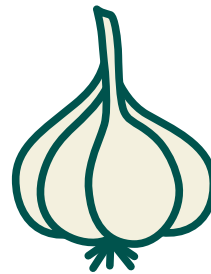
**Chickpeas**



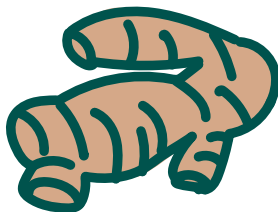
**Corn**



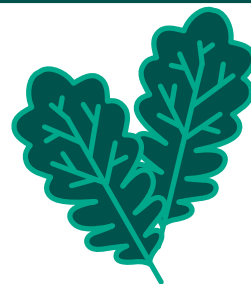
**Eggplant**



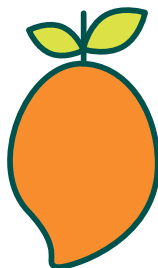
**Garlic**



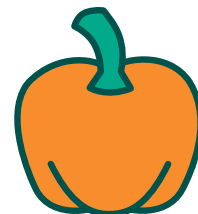
**Ginger**



**Kale**

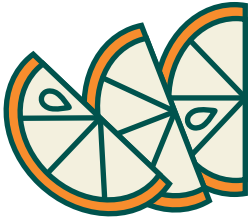


**Mango**

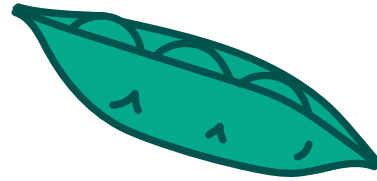


**Orange Bell Pepper**

# Fruit and Vegetable Cards



**Orange Slices**



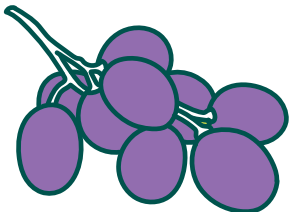
**Pea Pod**



**Pumpkin**



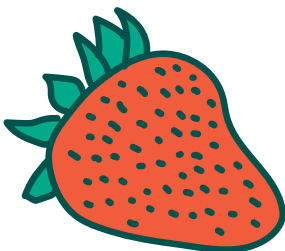
**Purple Cabbage**



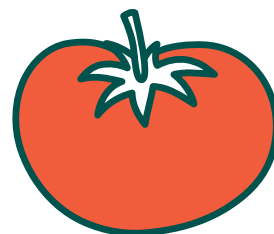
**Purple Grapes**



**Purple Kohlrabi**



**Strawberry**

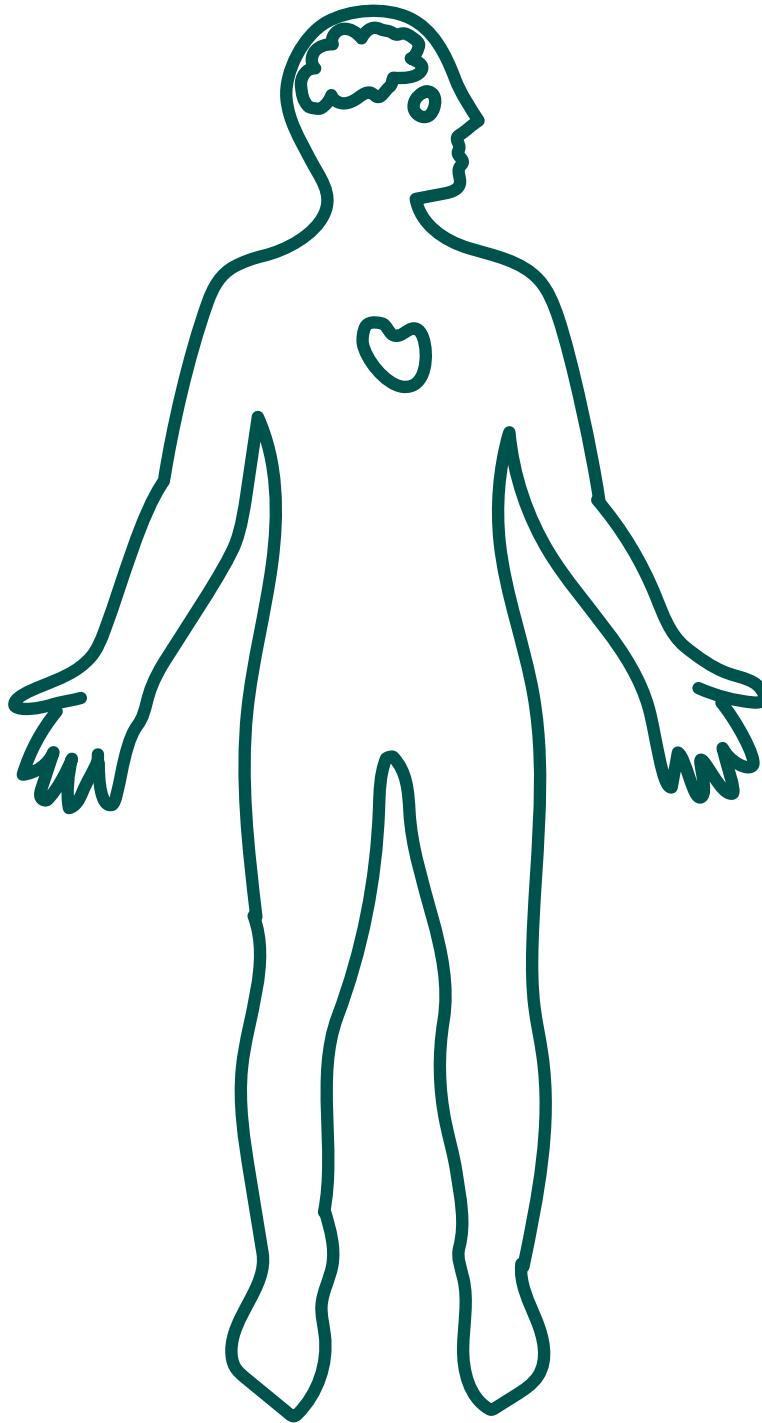


**Tomato**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Eat a Rainbow Worksheet

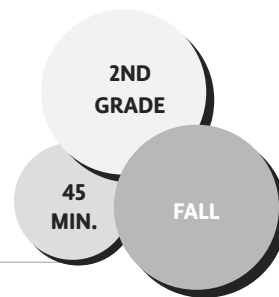
**Directions:** Color each body part with the color of food it is helped by.  
Draw pictures as you learn new information from your classmates.





# Biodiversity in the Garden

**THEME:** EXPLORING THE ECOLOGY OF FOOD



## ESSENTIAL QUESTION

*Why is diversity in the garden important?*

## LEARNING OBJECTIVES

- ✓ Students will be able to describe the diversity they find in the garden.
- ✓ Students will be able to sow seeds.

## CONCEPTS

companion planting   diversity   sow  
tool safety   transplant

### *Engaging the Classroom Teacher*

- During Action Step 2, suggest that the teacher circulate through the garden, encouraging students to use their keen observation skills while looking in their circle.
- During Action Step 5, suggest that the teacher help pairs or groups of students follow the instructions for planting their seed or transplant.

## LESSON DESCRIPTION

In this lesson, students consider the importance of biodiversity by observing and drawing all the life in one square of their garden. They then learn about companion planting, and they sow or transplant “plant friends” in the garden.

## MATERIALS

- Yarn or string
- Scissors
- Seeds or transplants appropriate for your growing region

### For each pair of students:

- Magnifying lens
- Diversity in the Garden Worksheet (p. 236)
- Clipboard
- Pencils
- Watering can

## PREPARATION

- › Research what plants grow well in your climate in the fall.
- › Measure and cut a 48-inch piece of yarn for each pair of students.
- › Prepare a bed for planting.

## ACTION STEPS

**1. Engage:** In the garden, gather students in a circle and explain, *Today we’re going to be thinking about all the different types of plants and animals that we find in nature and in our garden.* Demonstrate for students how to take a piece of string and tie the two ends together to make a circle. Then lay your string in a square shape on the ground where students can see. Ask students, *From where you’re standing, how many different living things can you see in this circle? How many living things do you think we’d find if we looked closer?* Explain that you’ll give pairs of

students a piece of string that they'll lay on the ground somewhere in the garden and then look closely with magnifying lenses to observe all the living things they can find. **(5 min.)**

**2. Life in a Square Foot:** Explain that pairs will draw a picture together of each different plant or animal they find in their square, and they should label the living creatures if they think they know their name. Note that some of the creatures might be in the soil. Say, *You'll have to get really close and be really still to see all the living creatures!* Review the expectations for being in the garden, such as students staying where you can see them and not disturbing freshly planted seeds. Pass out string, magnifiers, pencils, and clipboards with the Diversity in the Garden Worksheet to pairs of students. Circulate through the garden, encouraging students to look closely and try to identify all the life they discover. **(10 min.)**

**3. Discussing Benefits of Diversity:** Call students back together, and have them share what they found. Go around the circle and have each pair share one living thing they observed that hasn't already been said. Explain that having all these different types of living things is called diversity. Have students repeat the word diversity, and then ask, *Why do you think it's good to have diversity in our garden? How does having diversity in our garden help the plants and animals who live here? How does it help the people who harvest food from there?* Have pairs turn and talk to each other. Get to the idea of diversity in the garden meaning diversity on our plate. **(5 min.)**

**4. Learning about Companion Plants:** Explain to students that certain plants help other plants in

the garden. Say, *These are plant friends. Like a friend, certain plants can help other plants grow strong and be healthy. For example, the marigold plant, which has beautiful flowers, can attract bees and other pollinators, so a plant will grow fruit, but it can also keep away pests that would hurt the plant. Or a sunflower can help give plants, like beans or cucumbers, a place to climb because that's what they like.* Explain that they'll be planting some plant friends in the garden today. Then describe how the plants you have for students to plant support each other. **(5 min.)**

**5. Planting:** In the fall, you might have pairs of students plant carrots and radishes because the radishes will help break up the soil for the carrot taproots. Or consider planting nitrogen-fixing fava beans with nitrogen-loving lettuce. Or plant garlic next to a brassica such as cabbage, kale, or broccoli to help deter aphids. Model for students how each crop needs to be planted, noting the difference between seed depth or spacing. Remind students about tool safety, and then give each pair (or small group of students) two plant "friends." As students are watering their plants, you might have them say encouraging words to their plants such as, "Be good friends and help each other grow!" **(15 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- Ask yourself: Was I safe and respectful in the garden today?
- How are you a good friend?

### Check for understanding

- *What were you surprised to find inside your circle?*
- *How did we help the plants in our garden today?*
- *Why is diversity in our garden important?*
- *Why is diversity in the foods we eat important?*
- *Why is diversity in our community important?*

## ADAPTATIONS

**Literacy Extension:** To further the discussion about diversity to how humans are different and unique, read Sonia Sotomayor's *Just Ask: Be Different, Be Brave, Be You*, which uses garden imagery and metaphors to convey the book's theme.

**Science Inquiry:** Have students create a control garden bed in which you don't plant a companion crop. Over the season, students can make observations about the health and growth of the crop with a nearby plant ally, versus the crop growing alone.

**Compost Study:** Have students investigate the biodiversity in the worm bin or compost pile at your school. Explain that plants grow well with a diversity of life in the soil, just like we grow well when we eat many different plants.

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

### **NGSS.LS4.D**

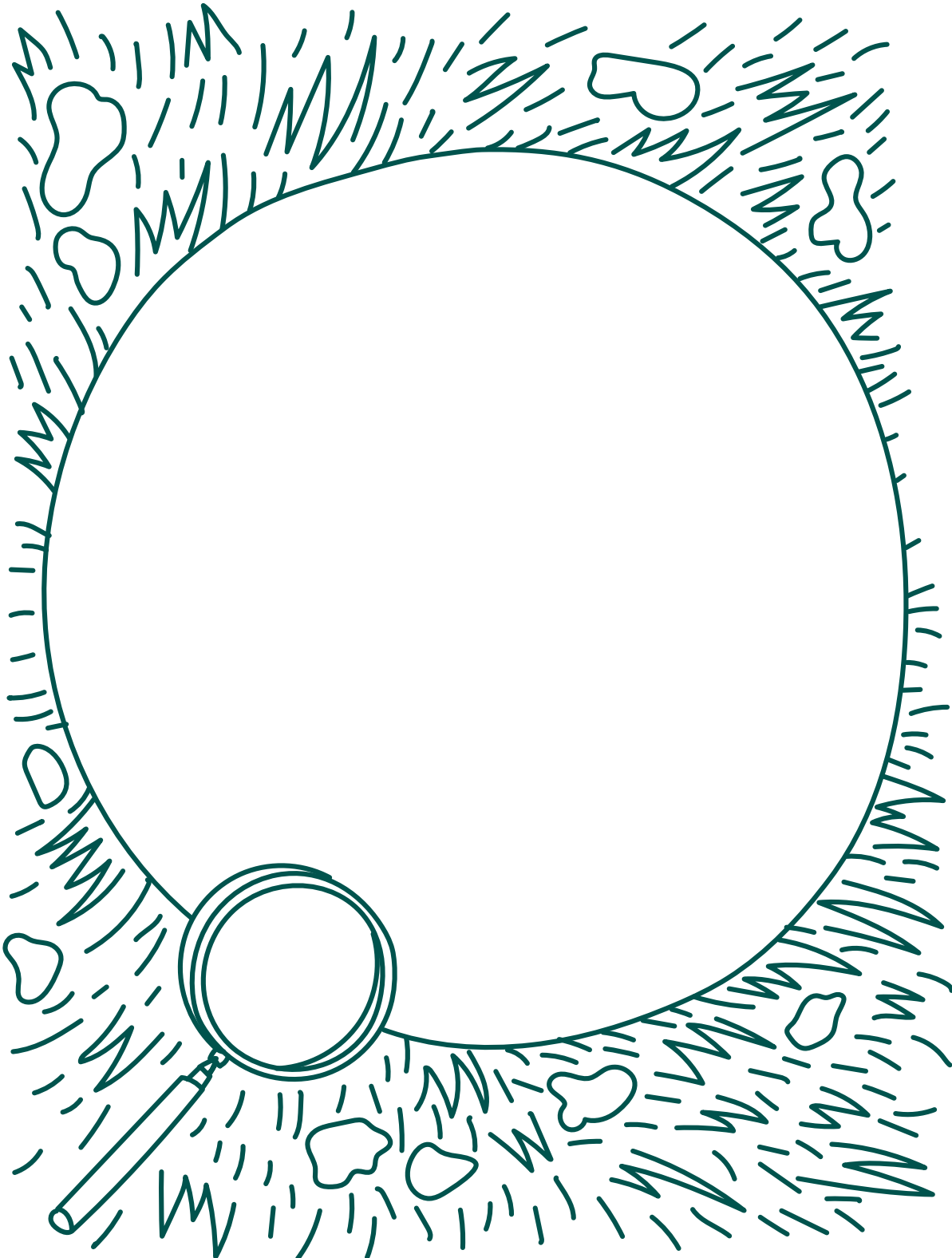
Biodiversity and Humans

There are many different kinds of living things in any area, and they exist in different places on land and in water.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

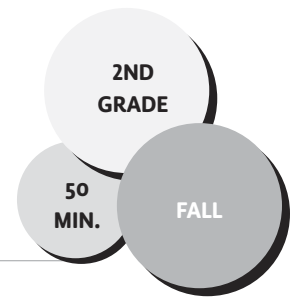
# Diversity in the Garden Worksheet

**Directions:** Draw everything big and small you see!



# Plant a Rainbow

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*Why are the foods we eat and the diversity in our garden important?*

## LEARNING OBJECTIVE

✓ Students will be able to sow and transplant crops.

### CONCEPTS

healthy nutrients tool safety  
variety vitamins

### *Engaging the Classroom Teacher*

- Before the lesson, discuss what the final product of the lesson will look like (the rainbow spectrum), and ask the teacher whether there is space on a classroom bulletin board, in the hallway, or in the cafeteria where it can be displayed.
- During Action Step 4, ask the teacher to supervise the class as they're making the collage while you call up groups of students to plant.

## LESSON DESCRIPTION

In this lesson, students hunt for the full spectrum of colors in the garden, create a fruit and veggie rainbow collage, and plant (in color groups) a rainbow garden bed to overwinter. Split the lesson into two sessions: do the rainbow hunt one day and the collage and planting the next, if needed. This lesson is designed to be taught in conjunction with lessons Eat a Rainbow and Rainbow at the Salad Bar.

## MATERIALS

- Colored chalk
- Dot stickers of each rainbow color (optional)
- Paint sample color strips (such as those found in a hardware store that sells paint), one for each student, with an equal distribution of red, orange, yellow, green, blue, and purple
- Basket or bucket to hold paint chips (for random selection)
- Butcher paper
- Black permanent marker
- Gardening magazines/seed catalogs
- Glue
- Scissors
- Plant markers
- Seeds or transplants to represent each color
- Pictures of each of the plants, fully grown (optional)
- 5 garden trowels
- 5 watering cans
- Hose (to refill watering cans)

## RAINBOW CROP SAMPLES

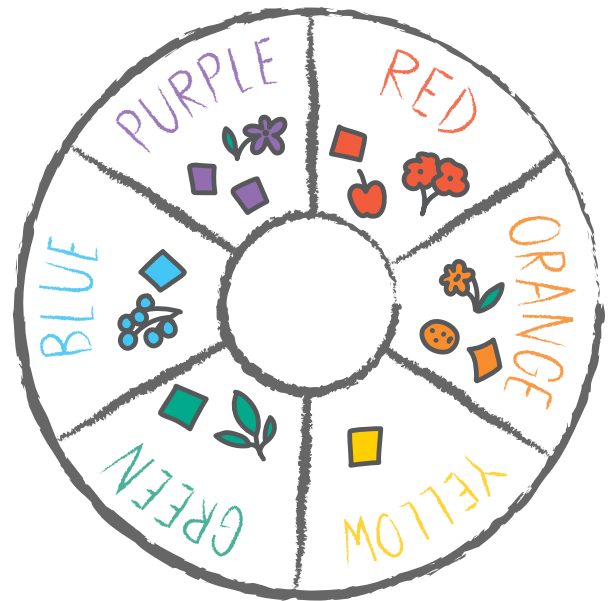
- **Red:** ruby red chard, red beets
- **Orange:** carrots, orange calendula flowers
- **Yellow:** golden beets, yellow calendula flowers
- **Green:** lettuce, cabbage, broccoli, kale, peas
- **Blue/Purple:** purple kohlrabi, borage flowers

## PREPARATION

- › Acquire paint samples from the hardware store.
- › Consult a local planting guide for your region, and determine what you'll be planting. In the fall, they'll either need a quick germination and maturity rate or be overwintering. Also, be sure your plants have similar growing requirements because they'll be planted close together.
- › Scout out a location in your garden to make your rainbow bed. You might want to pre-divide a raised bed into six sections, so it's a spectrum, or you might choose to make a rainbow arc. Either way, use labeled plant markers to make it clear to students where certain colors are meant to go.
- › Set up a station within sight of the garden bed in which students will work on a collage. If you have a shade structure, you might consider having students make their collage there.
- › Prepare a large piece of butcher paper with the outline of a rainbow in which students will create their collage during the lesson. Write the name of the color in each arc, using that same colored marker, so students will know which color images should go where.
- › Using chalk, draw a rainbow spectrum in a circle outside on the pavement where you will gather your class. If you don't have any paved space, make a sign for each color to set out on the ground. This is how you'll ultimately divide students into groups.

## ACTION STEPS

**1. Rainbow Hunt:** Gather students in a circle and explain, *Today we'll be planting a rainbow in the garden, but first we're going to see how many different colors of the rainbow we can find already in our garden.* Show students your array of paint samples, and explain that each student will pick one at random and then try to find an exact match of that color from a plant in the garden. Demonstrate how to use two hands to pick the leaf, flower, or fruit that they find, and remind them to either ask before picking, or set a rule that they can only pick if there are least ten others growing. Share the callback strategy you'll use, and remind students to stay where you can see them. Have each student pick one paint sample at random, and let them know they'll have five minutes to hunt for a color match and bring it back to the circle. **(10 min.)**



**2. Sharing:** Call students back together, and have them place their plant on top of their paint sample in the space with their color on the ground. Once they're standing with their color group, explain, *This will be your group for the rest of the activity.* You might want to pass out dot stickers with their colors so students remember throughout the lesson, and you can easily keep track of who's in each group. Have students rotate clockwise around the circle to observe and admire each of the plant and paint sample matches their fellow classmates found. Ask, *What does this tell us about our garden?* **(10 min.)**

**3. Explain the Activity:** Say, *When we eat all different kinds and colors of fruits and vegetables, it's really good for us. It's a way to make sure we're getting all the different vitamins we need. It's also really good for our garden if we plant a variety of vegetables.* Show students the seeds or transplants you've brought for them to plant. If the colors are not obvious, display or pass around pictures of the fully mature plants so they can see the full spectrum of color. Then be sure to review tool safety. **(5 min.)**

**4. Making a Rainbow Collage:** Explain that each group will take a turn to come up and plant, but while they're waiting for their turn, they'll be creating a rainbow collage of fruits and veggies. Show students the butcher paper you've prepared for their collage. Have students work on the collage according to their color group. Give students the option of drawing and writing the names of fruits and vegetables as well. **(30 min.)**

**5. Planting by Color:** Call up students by color. Demonstrate how to transplant the starts or sow the seeds that the group will be planting.

Remind students to stay in the designated spot for their color and to be mindful of newly planted seeds and starts. Have students water their seed or plant and then send them back to work on the collage. Once all groups have gone, gather them back for a closing circle.

**(5 min. for each group)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- Ask yourself: How did I stay safe when using tools and planting in the garden?
- Ask yourself: How well did I work with the classmates in my group today?

### Check for understanding

- What vegetables did we plant in our garden today?
- Why is it important to have a rainbow of colors in our garden? How about in our diets?
- Which vegetables or flowers are you most excited to harvest?

## ADAPTATIONS

**Literacy Extension:** Read *Planting a Rainbow* by Lois Ehlert, and have students create their own book about the plants they planted in the activity.

**Tasting Extension:** Make a rainbow salad from plants you can currently harvest in the garden, supplementing with other fruits and vegetables to complete the spectrum, if necessary. See lessons Rainbow Smoothie and Rainbow Grain Salad for other colorful recipe suggestions!

## **ACADEMIC CONNECTIONS**

Next Generation Science Standards, Life

Science Disciplinary Core Idea

### ***NGSS.LS4.D***

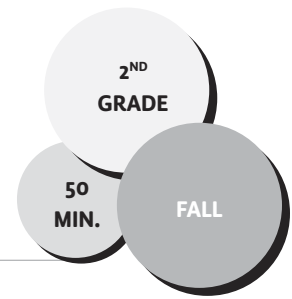
Biodiversity and Humans

There are many different kinds of living things in any area, and they exist in different places on land and in water.



# Fun with Fruit Salad

**THEME:** PREPARING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*How can we prepare a healthy snack?*

## LEARNING OBJECTIVE

✓ Students will be able to use multiplication to assemble a fruit salad.

### CONCEPTS

healthy snack	ingredients
multiplication	sharing

### *Engaging the Classroom Teacher*

- Prior to the lesson, determine with the teacher what math questions are appropriate for the class and adjust your plan accordingly. With younger students, you may do addition and subtraction questions, whereas with older students you can tackle division questions.
- Discuss whether the teacher would be comfortable leading or co-teaching Action Step 2.
- Suggest that the teacher help you ensure there is an even number of students at each table group.
- During Action Step 4, suggest that the teacher circulate through the room to check that each table group is sharing and following directions.

## LESSON DESCRIPTION

In this lesson, students collaboratively create a fruit salad in small groups using multiplication. If you choose a fruit from each color of the rainbow, you can reinforce concepts from lessons Eat a Rainbow and A Rainbow at the Salad Bar.

### MATERIALS

- A variety of colorful fruit salad ingredients such as grapes, berries, bananas, kiwi, apples, clementines, or pears (see Fruit Salad ingredients below)
- Mint leaves, particularly if you have them growing in the garden (optional)
- Pair of tongs for each group
- 1 tray with fruits in separate bowls for each group of 4–6 students

#### For each student:

- Bowl
- Cutting mat for counting and sorting
- Fruit Salad Recipe Worksheet (p. 244)

### *Fruit Salad*

**Yield:** 30 servings,  $\frac{1}{4}$  cup

- 1  $\frac{1}{2}$  bunches grapes
- 3 bananas, sliced into  $\frac{1}{4}$  inch rounds
- 2 large apples, cored and cut into  $\frac{1}{2}$  inch cubes
- Small handful of fresh mint, torn (about  $\frac{1}{4}$  cup)
- Juice of half a lime (optional)

- Cook selected grain. Cool grain spread on a baking sheet and set aside.
- Meanwhile, prepare and chop fruits and vegetables into attractive, bite-sized pieces.
- Mix grain with assorted fruits and vegetables and toss with dressing. Taste and add just salt, or add more dressing if needed.
- Prepare each fruit individually, slicing apples and bananas and leaving small fruit like berries and grapes whole.
- Add fruits in a more or less even ratio and toss together.
- Add torn mint leaves and a squeeze of lime juice right before serving, if desired, and toss once more.

## PREPARATION

- › Wash and slice bananas, apples, or any other fruit that needs slicing.
- › Portion equal amounts of each fruit into bowls on a tray for each group. Create one extra bowl with some extra fruit to replace anything that might spill.
- › Photocopy the Fruit Salad Recipe Worksheet.

## ACTION STEPS

**1. Engage:** Gather students in a circle, and ask, *What are your favorite fruits to eat?* Explain that today they will be making a fruit salad. Ask students to turn and talk to their neighbors about what they think a fruit salad is. Ask, *What makes something a salad? Explain that fruit salads are fun to eat because there's a variety of different colorful fruit. (5 min.)*

**2. Model:** Explain that you have bowls of delicious ingredients to add to the salad. Give an example. Say, *If I have four people at my table, and each person added three grapes, how many grapes did we put in? (12) How did you figure that out? Did anyone figure it out*

*in a different way?* Discuss strategies. Draw on the board, or use a document camera to show the math. **(5 min.)**

### 3. Hand-Washing Break (5 min.)

**4. Making Fruit Salad:** Remind students, *We do not want to share germs, so remember not to lick your fingers or taste anything that is going into the group fruit salad bowl. We'll eat everything together at the end.* Give each table group their tray of fruit salad ingredients, and explain that you'll be adding one fruit at a time after instructions are given. Give them math challenges for each fruit appropriate to their skill level, such as, *Everyone put in two slices of banana. Now, how many slices of banana are in there total? Or, We need 12 apple slices total. How many slices should each person put in? How did you figure that out? Did anyone figure it out in a different way?* Discuss strategies. Continue until every piece of fruit has gone in. **(10 min.)**

**5. Tasting:** Once the fruit salads are made, have students take turns tossing everything together and then serving into smaller bowls. Challenge them to make it as fair as possible. Have students wait until everyone at their table group has their own bowl of fruit salad before beginning to eat. **(10 min.)**

**6. Recipe:** Show students the Fruit Salad Recipe Worksheet, and give them time to make their own recipe to take home. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: (5 min.)

### Social and Emotional Learning

- *What did you enjoy about today's activity?*
- *How did you work together to make fruit salad?*
- *What can you work on in the future to have strong teamwork?*

### Check for understanding

- *How would you make a fruit salad at home? Would you add any spices, herbs, or other fruits?*
- *If you added two pieces of three different types of fruit, how many pieces of fruit would you have in your fruit salad?*

each of their group members. These roles should help students stay organized and feel they're getting a chance to contribute.

## ACADEMIC CONNECTIONS

Math Common Core State Standards

### CCSS.MATH.CONTENT.2.OA.C.3

Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

## ADAPTATIONS

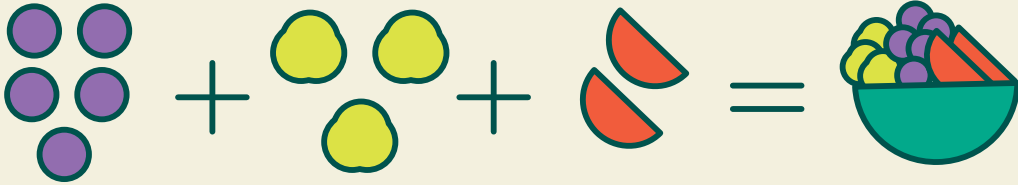
**Garden Setting:** Add edible flowers, mint, or other items from your garden into the fruit salad. Grow berries or other fruit in your garden.

**Food-Prep Variation:** If you have sufficient time with students in class and would like to have less prep work yourself, select fruits for students to do easy prep work with. For example, they can peel clementines, take grapes off stems, peel and slice bananas with plastic knives, and stem strawberries.

**Group-Roles Variation:** Give each student in each group the following roles: the "counters" who add the fruit to their bowl, the "tossers" who take turns mixing the salad with tongs, and the "servers" who portion the salad into cups for

# Fruit Salad Recipe Worksheet

5      3      2      10



grapes   banana slices   apple slices   yum!

## OUR FRUIT SALAD

Follow the example above to create your own illustrated equation based on the fruit salad you made.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

+

+

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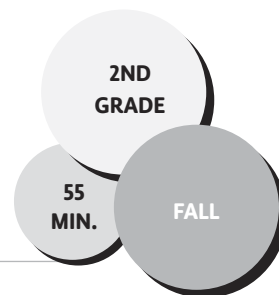
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# Saving Seeds

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*Why is it important for people to save seeds?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain the benefits of saving seeds from the garden.
- ✓ Students will be able to harvest seeds for saving.

### CONCEPTS

harvest	seed saving
threshing	winnowing

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher whether there is a third adult who can help supervise one of the garden stations. If not, discuss dividing the class in half, rather than thirds, for Action Step 2 if that seems more manageable.
- Ask the teacher whether they have an easy way of breaking the class into three groups.
- During Action Step 2, suggest that the teacher supervise the seed-saving stations as you take the third group on the seed tour in the garden.
- During Action Step 3, suggest that the teacher help students who might need additional support make their origami packets.

## LESSON DESCRIPTION

In this lesson, students collect seeds and take a tour of all the seeds in the garden before making origami seed packets and selecting the vigorous seeds they'd like to save for next season. This lesson can be taught in conjunction with lessons How Seeds Travel and Seed Tape.

### MATERIALS

- Plants from which to harvest seeds
- 2–4 medium bowls for harvesting seeds
- Box fan for winnowing seeds (optional)
- Origami paper or Seed Packet Template cut into 8.5" x 8.5" squares, 2 for each student (p. 253)
- Colored pencils
- Chart paper
- Markers

## PREPARATION

- Scout the garden for seeds to harvest. Make sure any seeds you want to harvest are ready (e.g., bean pods should be dry and brown). Decide which seeds you'll show small groups on their garden seed tour.
- Practice making the origami seed packet (see illustration below), so you feel comfortable teaching it to students.
- If you anticipate students may struggle following directions for the origami seed packet, photocopy the template, and cut out a square for each student. Or you might choose to cut out just a few to have on hand

for students who might need them.

- › Prepare a model origami seed packet that has seed information clearly written and perhaps is colorfully decorated.
- › Set up two stations for seed saving, each with a different plant and a different method for harvesting seeds, if possible. For example, have students threshing beans at one station and picking sunflower seeds at another. Place two bowls at each station for students to collectively put seeds in.
- › On chart paper, write key information for each seed type, such as the name and when to plant the seeds.

#### Seed-Saving Methods

**Deadheading:** Cutting dead flowers off of plants and taking dry seeds out of them; use this method with flowers such as calendula, sunflowers, and nasturtium.

**Threshing:** Rubbing or beating seeds to separate them from other plant material; used for separating seeds from pods or husks. You can rub seedpods between your hands, gently beat them with a rolling pin, place them in a paper bag and shake, or place them in a sack and bang them against the ground. Use this method for peas and beans.

**Winnowing:** Separating the seed from the other plant material by blowing on them; holding them up to a box fan; pouring them from one bucket into another, back and forth, to let the wind carry away the chaff; or holding them up to the wind. Use this method for grains such as wheat or flax. Example: For lettuce, place the flower stalk in a paper bag, and shake to separate seed from the chaff. Then take a handful of seed and chaff, and blow off the chaff.



**Wet processing:** Crush fruits such as tomato or tomatillo in a container, and allow seeds to sit in pulp for several days. The crushed fruit and seeds ferment, which helps the preservation process. Rinse seeds in fresh water, and then lay out on cookie sheets to dry in the sun. Use this method for pulpy fruits.

## ACTION STEPS

**1. Engage:** Gather students in a circle, showing them your sunflower and sunflower seeds (or whatever plant and seed you're using) and ask, *Which came first, the sunflower or the sunflower seeds?* Have students think-pair-share with their neighbor and then have a couple pairs share with the class. Say, *Did you know that when we grow food we get seeds for free? Instead of buying new seeds every year, gardeners and farmers can save seeds from their plants to plant the next season.* Explain that today they'll be resourceful just like farmers, and save the seeds that are in their school garden right now. **(5 min.)**

**2. Stations:** Briefly explain each station to students, modeling how to harvest the two different seeds they'll work with. Tell students how they'll know it's time to switch, and split them into three groups, showing them at which station they'll start. Have students rotate through each station for five minutes each.

**(25 min. total)**

**a. Seed-Saving Method #1:** Have students work independently, harvesting seeds from one plant and placing them in bowls at this station.

**b. Seed-Saving Method #2:** Have students work independently, harvesting seeds from a different plant, ideally using a different method than at the first station and placing them in bowls at this station.

**c. Seed Tour:** Guide students on a tour of all the plants going to seed in the garden. Try to show them a variety of food plants, including a bean, fleshy fruit, flower, and plant we eat for the leaves. For example, you might show them a bolted cilantro plant, nasturtium seeds, bolted kale or chard plant, and peas. You might also show them a sliced tomato or pumpkin to demonstrate seeds that are on the inside of fruit. Encourage students to pick and taste any edible seeds on your tour.

**3. Making Origami Seed Packets:** Gather students back in a circle, and show them your model seed packet, saying, *Now that we've harvested all our seeds, we're going to make origami seed packets so we can take home seeds to save for next season.* Pass out origami paper to each student or the seed packet template with folding lines you've already prepared. Explain that you're going to show them how to make their seed packets step by step. Say, *Once you've finished the step we're on, hold it up so I can see that you're ready to move on. If you need help, ask a neighbor who has finished that step.* Pause after each step to show students your process and check for understanding, while encouraging students to help each other. **(10 min.)**

**4. Selecting Vigorous Seeds:** Send a couple students to bring over the bowls from the seed-saving stations. Show students two beans, for example, very different in size, and ask, *Which of these do you think I should save to plant next year?* Then ask them to explain their thinking. Say, *For thousands of years people have been saving the seeds from the biggest, nicest, most healthy looking plants so that when they plant they have a good chance of getting other big, nice plants! When you're picking seeds to put into your seed packet, pick the ones you think will grow best in the future.* Based on how many seeds students have processed, give students a maximum amount they can take to use up all your seeds, for example three beans and five sunflower seeds. **(5 min.)**

**5. Decorating and Labeling Packets:** Show students the chart paper where you've written the key information for each seed. Perhaps do a choral reading where you and the whole class read aloud the words you've written. Pass out colored pencils and extra origami papers to students so that they can make two packets, one for each type of seed. As they work, circulate through the room, helping students who need support with writing. If there's time, or if some students finish early, they can draw what the plant needs (sun, soil, water, and air) on their packets too. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- Ask yourself: Did I share, take turns, and help others learn in my group today?

### Check for understanding

- *What seeds did you see today that you'd never seen before?*
- *What are the benefits of saving seeds from your garden?*
- *Where will you store your seed packets?*
- *Where might you plant your seeds when it's time?*

## ADAPTATIONS

**Ensuring Seeds Are Planted:** If you're concerned that your students won't necessarily hold onto their seeds until spring and then remember to plant them, you can save seeds for crops that they can plant right away at home after this activity. For example, in some areas, fava beans can be harvested and planted in the fall. Alternatively, you can collect and store the seed packets, and then distribute them in the spring for planting at home or planting in the school garden.

**Tomato Seed Extension:** If you have more time with students and/or extra adult support, you might want to harvest seeds contained in wet fleshy fruit, such as tomatoes or tomatillos using the wet processing method.

**Corn Braiding Demonstration:** If you grew three or more ears of corn, demonstrate to students how you braid the ears of corn and hang to dry and store seeds.

**Planting:** If you have seeds you've saved from another season (that would be appropriate for planting in the fall), you can tell students the story of where those seeds came from, and plant the seeds in small groups.

**Literacy:** Read *A Seed Is Sleepy* by Dianna Hutts Aston to learn more about seeds' life cycles and methods of dispersal.

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

### NGSS LS2.A

Interdependent Relationships in Ecosystems

Plants depend on water and light to grow.

(2-LS2-1) Plants depend on animals for pollination or to move their seeds around. (2-LS2-2)

3rd Grade NGSS

### NGSS LS3.A LS3.A

Inheritance of Traits

Many characteristics of organisms are inherited from their parents. (3-LS3-1)

Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. (3-LS3-2)

### NGSS LS3.B LS3.B

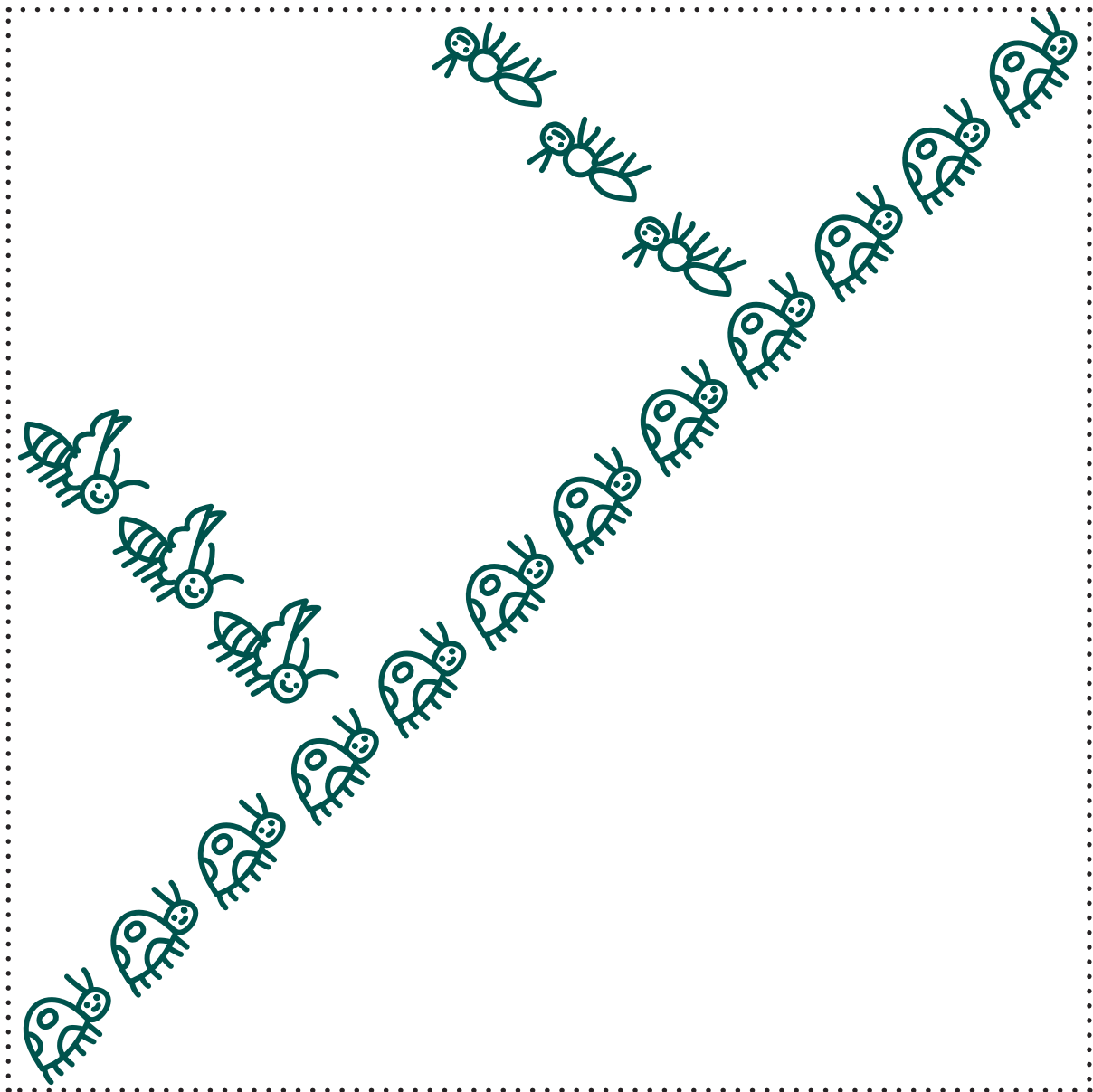
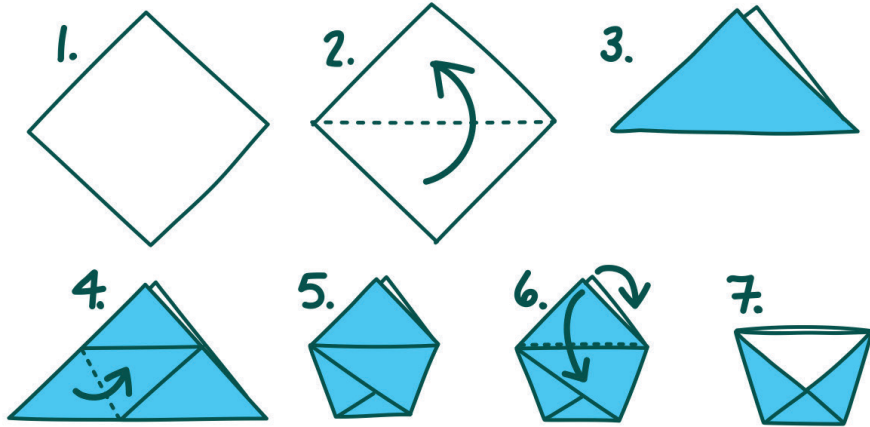
Variation of Traits

Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1)

The environment also affects the traits that an organism develops. (3-LS3-2)



# Seed Packet Template



# What the World Eats

**THEME:** GROWING AND ACCESSING HEALTHY FOOD

2ND  
GRADE

55  
MIN.

WINTER

## ESSENTIAL QUESTION

*How do the foods of different people around the world vary?*

## LEARNING OBJECTIVES

- ✓ Students will be able to compare and contrast diets from different countries.
- ✓ Students will be able to summarize what they learned and teach their classmates.

## CONCEPTS

continent   diet   food pyramid

### *Engaging the Classroom Teacher*

During Action Step 5, suggest that the teacher help students read the food pyramid and answer the questions on their worksheet. Ask the teacher for support when it's time for students to rotate to the next station.

## LESSON DESCRIPTION

In this lesson, students view images of families' food from countries throughout the world and create balanced meals incorporating foods found in traditional diets.

## MATERIALS

- *Hungry Planet: What the World Eats* by Peter Menzel and Faith D'Aluisio
- Copies of Oldways Traditional Diet Pyramids (can be found online)
  - African
  - Asian
  - Latin American
  - Mediterranean
- Pencils
- Markers and colored pencils
- What the World Eats Worksheet (pp. 253–254)

## PREPARATION

- › Photocopy the Oldways Traditional Diet Pyramids.
- › If you have access to a computer and projector in the classroom, consider creating a slideshow of photographs from Peter Menzel and Faith D'Aluisio's *Hungry Planet* photography project.
- › Photocopy the What the World Eats Worksheet for each student.
- › Set up four stations in the room where students can view the four food pyramids. Try to include a map of the region, so students are able to see the countries that comprise Africa, for example.

## ACTION STEPS

**1. Engage:** Explain that today you'll be considering how different groups of people around the world eat. If using the *Hungry Planet* images, explain to students that the photographers traveled the world and asked families to show what they eat in a given week. Show students the slideshow, and ask them to make observations about what is similar and what is different about the different families' diets. For example, ask students, *What's different about this picture from the other one? What kind of food do they eat the most of? Do you recognize any foods that you eat at home?* Remind students to be respectful of food customs that may be different from what they're used to. Additionally you might say, *Our class has a diversity of students who may be from, or have family from, the cultures we are learning about.* In other words, remind students, "Don't yuck my yum!" **(15 min.)**

**2. Discussion:** Ask, *What foods would we include in the slideshow to highlight the foods we like to eat in our community?* Have students discuss with partners and then share as a class. Make a list of the foods students suggest under a heading such as *Foods in the US Diet*. Be prepared to accept all responses. You'll perhaps discuss how the US is made up of different immigrant cultures, and that's why the list of foods eaten in the US can be diverse, or you may end up having a conversation about fast food or treat food. Consider showing students a *Hungry Planet* image from the US as a way to ground the discussion. You might show students *MyPlate*, explaining that this is what school lunch in the US is based on. **(10 min.)**

**3. Reading a Food Pyramid:** Display one of the food pyramids to review together as a class. Go through each layer of the pyramid, showing students how at the bottom are all the foods that grow from plants—fruits, vegetables, and grains. Explain, *Because it's at the bottom, the biggest part of the pyramid, it's what is eaten the most.* Then explain, *The very top are foods that are eaten just a little perhaps because they're expensive or a treat.* **(5 min.)**

**4. Explain the Activity:** Explain to students that they'll go around the room to different stations where they will study the diet of a different part of the world. Say, *I'm going to divide the class into four groups that will each take turns at each station answering questions. As a group, you'll research what a balanced meal looks like, and draw a picture of it on your paper plate.* Go over the questions students will answer. Give students the option to draw if writing would be too challenging for them. **(5 min.)**

**5. Food Pyramid Stations:** Split the class into groups of four, and start each group at one station. Give students five minutes at each station, and then use a bell or other signal to have them switch. Circulate throughout the room, ensuring students understand their task and asking probing questions. **(20 min.)**

**6. Sharing:** Gather students at the carpet and have them share their observations from viewing the food pyramids. Ask students to share their answers to the questions on the *What the World Eats Worksheet* and ask questions to help them compare the foods across regions. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: *(5 min.)*

### Social and emotional learning

- *Which foods would you be most excited to eat? Why?*
- *How did it feel to see the foods other people eat around the world?*

### Check for understanding

- *What did you notice the different regions' diets had in common? What was different?*
- *How does what we eat in our community compare to the other foods you learned about today?*

## ADAPTATIONS

**Cooking Extension:** Have students vote on which region's cuisine they'd most like to explore further. Then research recipes from particular countries in that region. This would be a great opportunity to invite in caregivers or other volunteers from the community who know how to cook foods from cultures outside the US.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.RI.3.5**

Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# What the World Eats Worksheet

**Directions:** For each Food Pyramid station, answer these questions.

page 1 of 2

**#1** What is a food you have had?

What is a food you haven't had?

Which is a food you'd like to try?

**#2** What is a food you have had?

What is a food you haven't had?

Which is a food you'd like to try?

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# What the World Eats Worksheet

**Directions:** For each Food Pyramid station, answer these questions.

page 2 of 2

**#3** What is a food you have had?

What is a food you haven't had?

Which is a food you'd like to try?

**#4** What is a food you have had?

What is a food you haven't had?

Which is a food you'd like to try?

# How Seeds Travel

Adapted from Life Lab's *The Growing Classroom*

**THEME:** EXPLORING THE ECOLOGY OF FOOD

2ND  
GRADE

45  
MIN.

WINTER

## ESSENTIAL QUESTION

*How do seeds travel?*

## LEARNING OBJECTIVE

✓ Students will be able to explain how seeds are transported through various methods.

### CONCEPTS

edible explosive seeds transportation

### *Engaging the Classroom Teacher*

During Action Step 3, suggest that the teacher support students as they're sorting, and ask open-ended probing questions.

## LESSON DESCRIPTION

In this lesson, students observe a variety of seeds and use their observations to hypothesize about how the seeds travel. Students then read a book about seed dispersal, and taste pomegranate seeds to reinforce the idea that sweet fruits are adapted to attract animals to eat them. This lesson can be taught in conjunction with lessons Seed Tape, Saving Seeds, and Bean Buddies.

## MATERIALS

- *A Fruit is a Suitcase for Seeds* by Jean Richards
- Seed Travel Sorting Cards (pp. 259–260)  
OR envelope of a variety of seeds  
for each group of 4–6 students
- Video of explosive seed dispersal on Youtube (optional)
- Chart paper or class board
- Tape (optional)
- 2 pomegranates
- Knife
- Bowl of water
- Colander
- Cutting board
- Bowl to hold pomegranate seeds
- Paper towels

## PREPARATION

- › Begin a seed collection well in advance of this lesson to use instead of the sorting cards. Hunt for velcro-like seeds such as burs, helicopter seeds such as maple tree seeds, edible seeds such as pumpkin seeds, and seeds that float such as a coconut. If you aren't able to collect enough for students to sort in small groups, you can display them for students to observe.
- › Photocopy and cut out the Seed Travel Sorting Cards for each group of students, if using.
- › Create a chart with the following categories for travel: wind, water, edible fruit, explosive, or velcro (or sticky) to share with students for sorting during Action Step 2.



- › To efficiently cut your pomegranate, score the bottom into six sections. To score, run your knife along the bottom of the fruit just deep enough to pierce the skin. Submerge the pomegranate in a bowl of cold, clean water and break apart, using your hands to peel away the skin and loosen the seeds underwater. The pith will float on top of the water, and the seeds will settle, while keeping the juices from making a mess. During the lesson, you'll score and loosely break apart the second pomegranate in the same fashion, but keep it intact as a model for students at the beginning of the lesson.
- › Cue up your video of explosive seed dispersal, if using.

METHODS OF SEED DISPERSAL				
Velcro-Like Seed	Edible Seed (Fruit)	Wind-Dispersed Seed	Water-Dispersed Seed	Explosive (Self-Propelled) Seed
<ul style="list-style-type: none"> <li>• Burdock</li> <li>• Cleavers (bedstraw)</li> </ul>	<ul style="list-style-type: none"> <li>• Grape</li> <li>• Tomato</li> <li>• Raspberry</li> <li>• Acorn</li> </ul>	<ul style="list-style-type: none"> <li>• Dandelion</li> <li>• Thistle</li> <li>• Maple tree</li> </ul>	<ul style="list-style-type: none"> <li>• Coconut</li> </ul>	<ul style="list-style-type: none"> <li>• Pea pod</li> <li>• Wisteria</li> <li>• Jewelweed</li> </ul>

## ACTION STEPS

**1. Reading:** Gather students in a circle, and explain that today they'll be exploring seeds. Introduce the book *A Fruit is a Suitcase for Seeds*. Ask students to turn and talk to their neighbor about what they think the title means. After reading, ask, *Why are fruits so appealing to eat?* (because they're sweet, juicy, and tasty!) Say, *A sweet fruit can help a seed travel. When an animal eats a fruit, it walks, swims, or flies somewhere else and poops out the seeds. Have you ever seen a bird fly overhead and poop? Have you ever thought, "Hey! That bird just planted a blackberry bush!" This is how sweet fruits help seeds travel. (10 min.)*

**2. How do Seeds Travel?:** Ask students, *But why does a seed want to travel anyway?* Have them turn and talk to their neighbor to think of reasons and then share a couple responses with the class. Ask students, *What's inside a seed?* (a tiny baby plant). Say, *To thrive, a baby plant must travel away from the parent plant to find a spot of its own in which to grow.* Explain that you've brought seeds (or pictures of seeds, if using) for them to look at and figure out how the seeds travel. Go over each method of seed dispersal on your chart paper, pantomiming each method. Consider showing students a video of an exploding seed to help them conceptualize. Say, *With your group, sort the pictures based on how you think they travel. For example, you might think, "This seed is shaped kind of like a boat, so I think it floats on water." Maybe a couple different seeds look similar, so you think they get around the same way. (5 min.)*



**3. Sorting:** Pass out the Seed Travel Sorting Cards (or envelopes with sets of real seeds) to groups of students, and give them time to sort. Circulate through the room, observing students' sorting and asking questions. **(5 min.)**

**4. Sharing:** Have groups share their groupings and observations. Ask, *What made you put all those seeds together? What do they have in common? How do you think they get around?* When a group has correctly identified the travel method, consider passing out tape and having students affix different examples under the appropriate category. Say, *As we can see, seeds rely on wind, water, and animals to travel and spread their seeds. How do humans help seeds travel?* Briefly discuss how, for years, people have been saving seeds from plants and traveling with them and planting them in new places. Say, *Farmers are really important for planting the seeds for the foods we eat!* **(10 min.)**

**5. Hand-Washing Break (5 min.)**

**6. Tasting:** Explain that you've brought a special fruit for them to try today. Show students your intact pomegranate. Ask, *Can you guess what is inside?* Take responses and then demonstrate cutting open the pomegranate. Show students the inside contents. Have student volunteers pass out paper towels. Walk around and give each student a small palmful of pomegranate seeds. Ask students to describe the flavor and texture of the seeds. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- Ask yourself: *Was I helpful and taking turns with my classmates today?*

### Check for understanding

- Which was the most interesting seed that you saw today? How does that seed travel?
- Why are fruits so tasty and appetizing?
- How is a fruit like a suitcase for seeds?
- How do seeds rely on animals to get around?
- How do seeds rely on wind and water to get around?

## ADAPTATIONS

**Physical Activity:** Play a seed dispersal relay race outdoors. First, introduce a movement to represent each method of seed transport. For example, have the whole class spin like a helicopter for wind transport; have them do the breaststroke with their arms for water transport; have them walk on all fours like a mammal for animal transport; and have them take leap-frog jumps for self-propelled transport. Once students have the various movements and methods committed to memory, have groups of students split in half on either end of the field space. Give a ball representing a seed to each team member starting the relay race. Call out, *On your mark, get set, wind!* and have students travel to their team by spinning like a helicopter to pass off the ball, and so forth.

**Garden Setting:** Have students look around the garden for seeds, and bring them back to add to the sort.

**Math Extension:** Pass out a sixth of the pomegranate to small groups of students, and have them estimate how many seeds are in their chunk. They can then practice counting by 2s to check their answer and to determine if they had an odd or even number of seeds.

**Literature:** If doing this lesson with older students, introduce the Greek myth of Persephone and her mother Demeter, the Goddess of the Harvest, which features pomegranate seeds at the center of the story to explain why we have seasons.

**Engineering Extension:** Provide students with a variety of building materials, such as pipe cleaners, aluminum foil, empty coffee filters, modeling clay, and the like, and challenge them to build model seeds that can travel by soaring on the wind, floating on water, latching onto fur, or by other means.

Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

### **NGSS.LS2.A**

Interdependent Relationships in Ecosystems

- Plants depend on water and light to grow.
- Plants depend on animals for pollination or to move their seeds around.

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.RI.2.1**

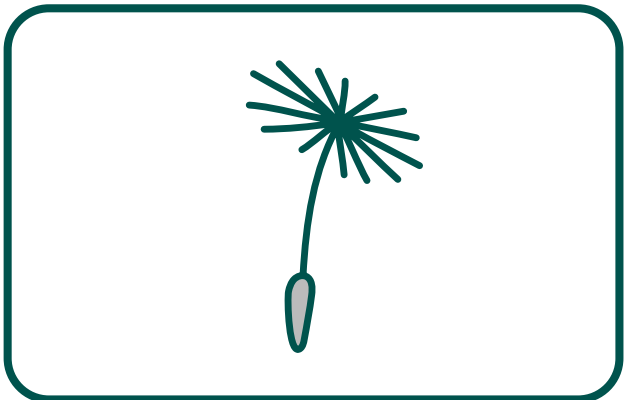
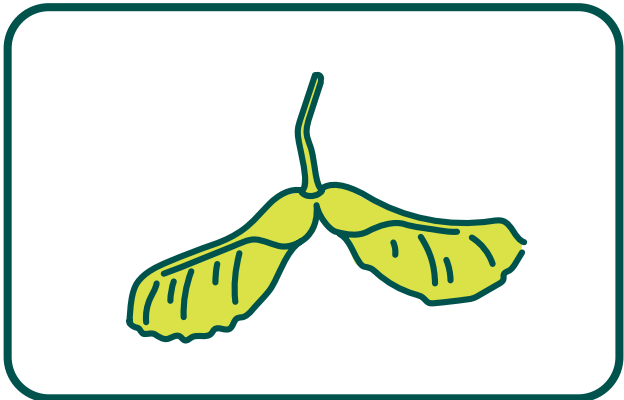
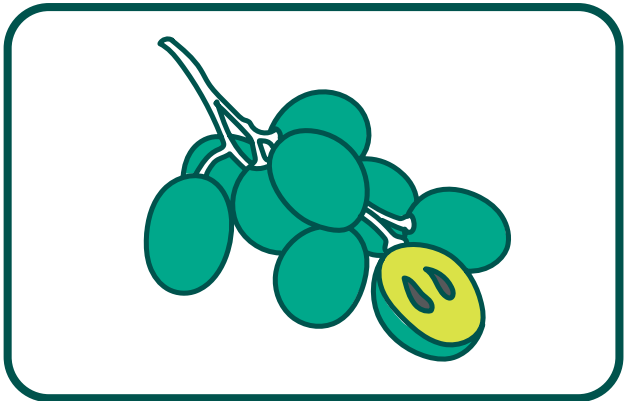
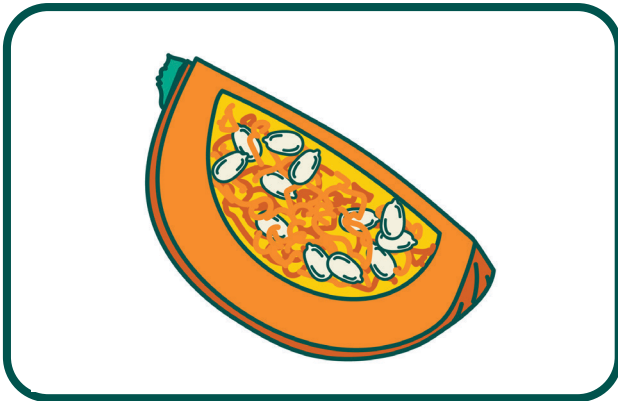
Ask and answer such questions as *who*, *what*, *where*, *when*, *why*, and *how* to demonstrate understanding of key details in a text.

(For the Math Extension)

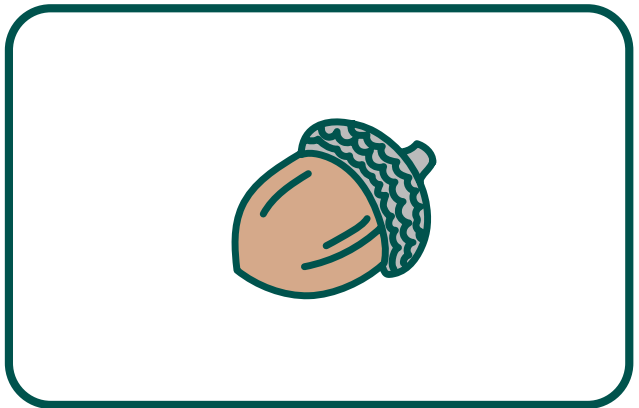
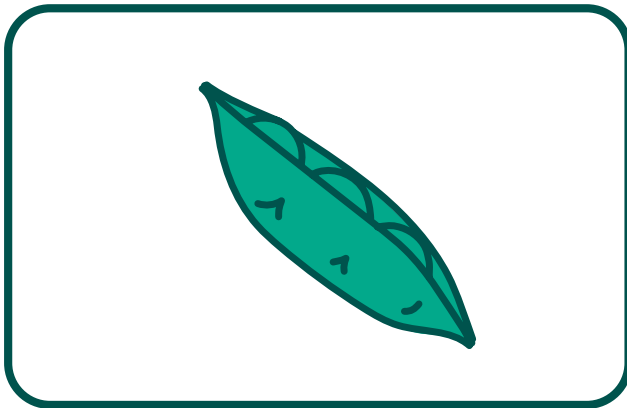
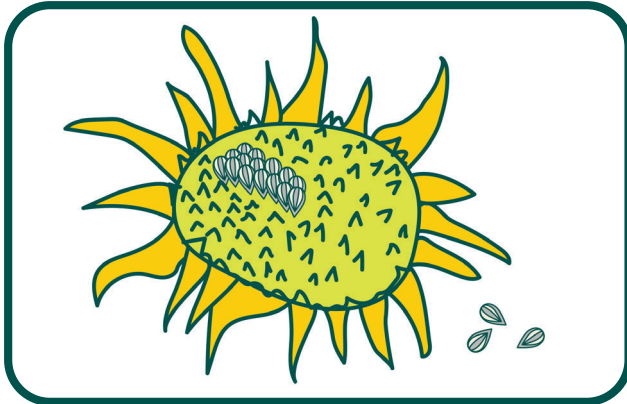
Math Common Core State Standards

### **CCSS.MATH.CONTENT.2.OA.C.3**

# Seed Travel Sorting Cards

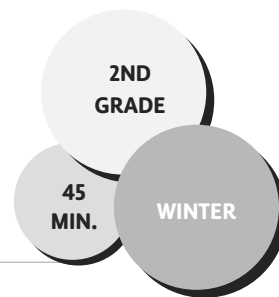


# Seed Travel Sorting Cards



# Seed Tape

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*How do we plan our planting for success?*

## LEARNING OBJECTIVE

✓ Students will be able to measure and evenly space seeds.

### CONCEPTS

decomposition    inches  
spacing    thinning plants

### *Engaging the Classroom Teacher*

- Prior to the lesson, discuss with the teacher what measurement and other math standards students are working on, for example, whether they can skip-count by 2s.
- Show the teacher the lesson, and ask whether they would like to add any further math connections during Action Step 4.
- Establish a place in the classroom where the seed tape can dry, explaining when you'll collect them (they'll dry quickly, so you can collect them by end of day).
- Set a follow-up date with the teacher in the spring when you can lead students in planting their seed tape outside. Otherwise, coordinate with the teacher to send students home with seed tape.

- During Action Step 5, suggest that the teacher help students make their seed tape.

## LESSON DESCRIPTION

In this lesson, students consider the importance of spacing seeds by pretending to be crowded seeds and measuring and creating seed tape. This lesson can be taught in conjunction with lessons Saving Seeds and How Seeds Travel.

## MATERIALS

- Biodegradable paper, such as brown paper towel, toilet paper, tissue paper, or newspaper
- Paper cutter or scissors
- Packet of radish seeds
- Packet of carrot seeds
- 2 clear jars with lids
- 2 cups all-purpose flour
- 2 cups water
- Newspaper or vinyl tablecloths to cover tables
- Seed Tape Steps Poster (p.265)

### For each group of 4–6 students:

- Small dish or jar of paste
- Dish of radish seeds
- Dish of carrot seeds
- Paintbrushes, toothpicks, cotton swabs, or straws
- Rulers
- Pencils

## PREPARATION

- › Cover tables with newspaper or vinyl tablecloths.
- › Create a paste by combining equal parts water and flour (2 cups water to 2 cups flour should be sufficient for a class of 30). You should then have a thick paste. You'll want to add a little more water if the paste begins to dry out.
- › Cut your brown paper towels (or other material) into strips 1.5–2 inches wide and 12 inches long. (Or determine the length based on how much seed you have.)
- › Create a sample seed tape to test paste and have a model for students.
- › Pour a few radish seeds into one clear jar with a lid and a few carrot seeds into the other. Distribute the rest of the seeds into dishes for each group.
- › Check with the classroom teacher, and establish a place for seed tapes to dry once students are finished.
- › Photocopy the Seed Tape Steps Poster for each table group, if using.

## ACTION STEPS

**1. Role-Playing Seed Spacing:** Gather students in a circle. Say, *Now take two scoots in closer to the circle so we're all really close together.* Then ask students to lift their arms and stretch out carefully. Ask, *Are you able to stretch as much as you'd like? Why not? Say, Plants are just like us. They can't grow as big and healthy and happy as they'd like to if they don't have enough space apart from their neighbors (including plants we didn't plant, which is why we weed!).* Explain that gardeners often "thin" plants after they've sprouted to make room

for them to grow. Have a student walk around the circle, tapping every other student on the shoulder and having that student step out of the circle, as if they've been thinned. Say, *Sometimes we eat plants that we've thinned, but other times they just end up in the compost pile.* Ask students for an alternative solution to thinning. Get to the idea of spacing the seeds farther apart. Have the thinned plants return to the group, and now ask everyone to take three scoots back and try to stretch and grow, pretending they're a plant again. Ask, *Does that feel better? (5 min.)*

**2. Explain the Activity:** Show students your seed tape sample and say, *Today we're going to make seed tape, which gardeners sometimes use to make it easier to give their seeds space right from the start. We'll measure how far apart our seeds should be, and we'll paste the seeds onto our paper. In the spring, when it's time to plant outdoors, we'll put our seed tape in the ground, for perfectly spaced root vegetables!* Pass jars of radish and carrot seeds around the circle, and have students turn and talk to a neighbor once they've seen the seeds, making observations, comparing and contrasting them. Then say, *But wait a minute, can we really plant paper in the ground? What will happen to it?* Take a couple of responses from students, discussing how paper is made from trees that were once alive, so they will break down or decompose with the help of the living things in the soil. **(5 min.)**

**3. Model:** Have students return to their desks. Using the board and some magnets or a document camera, demonstrate how to use a ruler to mark their strip of paper

with a pencil every two inches in the middle of the width of the strip. Next show them how to put a dot of paste on each mark, and add one or two carrot seeds on each spot. Explain that it's sometimes okay to put two seeds because not every seed sprouts every time, but if we put more than that, it defeats the idea of making our seed tape. Then show them how to fold the paper in half over the seed. Say, *It's like we're putting our seeds to bed until it's time for them to wake up in the ground in the spring!* **(5 min.)**

**4. Measuring:** Pass out a paper strip, as well as rulers and pencils, to each student. Let students decide whether to make radish or carrot seed tape, or assign pairs or tables to make a certain kind. Have students make a mark every inch for the radish and every two inches for the carrots. Incorporate some math. Ask students, *How many carrot seeds will fit onto our strip if they're spaced two inches apart? How many radish seeds fit on the same length? So how many more radish seeds than carrot seeds are we able to plant in the same space?* **(10 min.)**

**5. Making Seed Tape:** Have groups of students share dishes of paste and dishes of seeds. Remind students to share and only take what they need. Circulate through the room, checking in with students and providing guidance where needed. Remind students to fold the paper over and gently press to secure it and put their seeds to bed. Have students write their names on their seed tape, and show them where to put them to dry. If you intend to plant in the school garden in the spring with these students, let the seed tape dry, and store it in a sealed container. Otherwise,

you may want to send students home with their seed tape. If you covered your tables with newspaper, and you have a worm bin, gather and shred the paper to add to your worm bin during cleanup. **(15 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did it feel when you were all crowded together?*
- *Why is it important to give people their own space?*

### Check for understanding

- *Why is it important to pay attention to how we space our seeds?*
- *How will our seed tape help us in the spring?*
- *What worked well while making our seed tape? What was challenging?*
- *What do you think it'd be like to plant those tiny seeds outdoors by hand?*

## ADAPTATIONS

**Follow-Up:** In the spring, have students plant their seed tape in the garden. Have students dig a two-inch deep furrow, lay the seed tape down, and gently cover it with soil and water.

**Science Inquiry Extension:** If you're able to plant in the spring, have students create a control—a seed tape on which the seeds are too close together. Students then have the opportunity to make predictions and observe the different plantings' growth and health over time.

**Tasting Extension:** With extra time, have students taste-test different varieties of carrots or radishes. You can also try tasting radishes with and without salt, which affects the spiciness of the radish.

## **ACADEMIC CONNECTIONS**

Math Common Core State Standards

### ***CCSS.MATH.CONTENT.2.MD.A.1***

Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

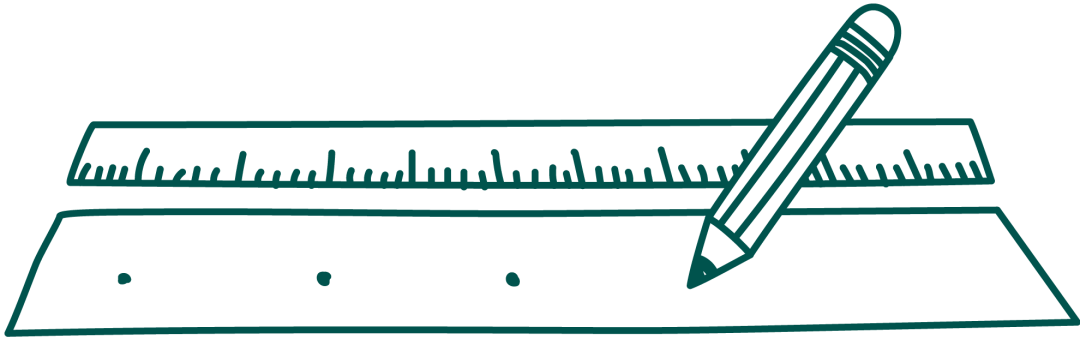
### ***CCSS.MATH.CONTENT.2.OA.C.3***

Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

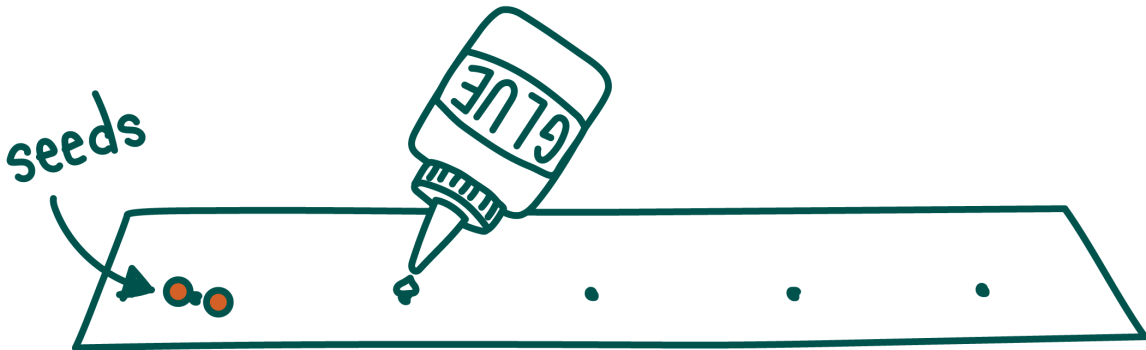


# SEED TAPE STEPS

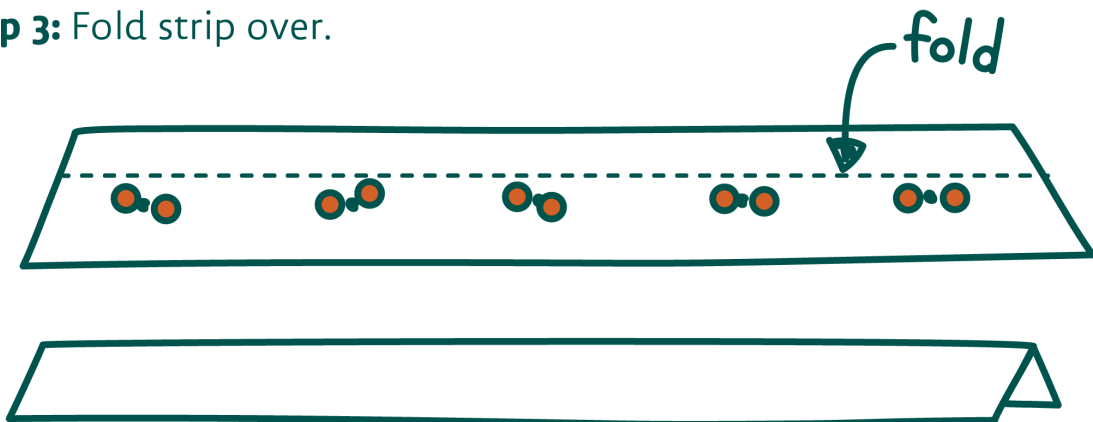
**Step 1:** Mark a dot every two inches on paper strip.



**Step 2:** Use glue to paste 1-2 seeds on mark.

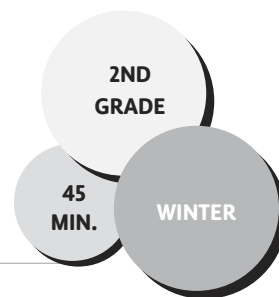


**Step 3:** Fold strip over.



# Sauté

**THEME:** PREPARING HEALTHY FOOD



## ESSENTIAL QUESTION

*How can we prepare a healthy dish featuring a variety of vegetables?*

## LEARNING OBJECTIVES

- ✓ Students will be able to prepare vegetables for a healthy dish.
- ✓ Students will be able to determine the ingredients they prefer using a sauté cooking technique.

## CONCEPTS

cooking technique sauté

### *Engaging the Classroom Teacher*

- Prior to the lesson, see whether the teacher is comfortable leading one of the stations during Action Step 5. Adjust your lesson and plan accordingly.
- During Action Step 4, suggest that the teacher guide students in writing their recipes as you finish cooking the dish.

## LESSON DESCRIPTION

In this lesson, students try raw veggies before learning about the sauté method of cooking. They then help prepare vegetables and decide what they'd enjoy in a sauté before tasting the class version of the dish.

## MATERIALS

- Induction burner
- Extension cord
- Veggie Sauté Ingredients (see recipe and table below)
- Bowl of raw vegetables for sampling
- Materials for cleanup

### For each student:

- Fork
- Tasting cup
- Sauté Worksheet (p. 270)
- Pencil

### Tray of the following for each group of 4–6 students:

- 2–3 cutting mats
- Bowls for vegetables
- Container for compost
- Small cups of toppings

## PREPARATION

- › Explore if there are any family or community members who might be interested in joining the lesson to share their cultural cooking technique similar to sautéing.
- › Replicate the illustration of the Sauté process as a poster (optional).
- › Photocopy Sauté Worksheet for each student.
- › Set up a Sauté Station in the classroom with the induction burner, where students can see you cooking.
- › Prepare a sauce. If you have a small enough group, you can prepare the sauce with your students, allowing a different student to measure each ingredient and stir it in.
- › Prepare vegetables that require chopping,

such as mincing garlic and slicing carrots.

- › Set aside a small sample of the raw vegetables so each student can try.
- › Set up trays by portioning vegetables students will be preparing, such as chard or broccoli, into bowls and distributing prepared toppings into small cups. Give each group a different vegetable to prepare.

## Veggie Sauté

**Yield:** About 25 servings, ¼ cup

This sauce that follows is inspired by a stir-fry sauce in Chinese-American culture. You can sauté just about any vegetables. See the table below for some possibilities, but also feel free to use whatever you have available in your region at the time. It is ideal to have at least one aromatic and as many vegetables as you like. Toppings are optional.

### Sauce

- 4 ½ tablespoons soy sauce
- 1 ½ tablespoons rice vinegar
- 1 ½ tablespoons brown sugar
- ¾ cup vegetable broth or water
- 2 ¼ tablespoons cornstarch

### Sauté

- 6–7 tablespoons high-heat oil (avocado or canola)
- 4–6 tablespoons aromatics (see table below)
- 12–15 cups vegetables (see table below)

- Combine sauce ingredients and adjust flavors as needed. Set aside.
- Wash and prepare the vegetables, chopping into roughly the same size.
- Begin by cooking the aromatics with oil on medium high heat, stirring often. Add additional oil as needed. After one to two minutes, when the aromatics begin to soften and release their aroma, add prepared vegetables, starting with the vegetables that will take

longest to cook. Cook uncovered, stirring often, until all the vegetables are tender but retain a crunch, likely no more than five minutes. Add sauce and stir just to incorporate, then promptly remove from heat, stirring to further incorporate sauce if needed. Top with toppings of your choice and serve immediately.

### POSSIBLE INGREDIENTS

AROMATICS (4–6 tablespoons)	VEGETABLES (12–15 cups)	TOPPINGS (optional)
• Ginger	• Carrots	• Squeeze of lemon or lime
• Garlic	• Broccoli	• Cilantro
• Shallots	• Cauliflower	• Basil
• Scallions	• Kale	• Sesame seeds
• Onions	• Rainbow chard	• Chopped nuts (check class allergies)
	• Cabbage	
	• Bok choy	
	• Spinach	

## ACTION STEPS

**1. Engage:** Gather students in a circle, and explain, *Today, we're going to make a dish where we cook vegetables in a sauce.* Pass around samples of the raw vegetables (but not aromatics) that they might be using in sautéing. Review the difference between “raw” versus “cooked” vegetables. Have students taste the vegetables, and, after each one, ask: *How would you describe how it tastes?* Explain, *The way we'll cook our vegetables is called sautéing.* Sautéing is a way of cooking vegetables that uses a small amount of oil in a pan over high heat. Explain, *The word “sauté” is French, and it means to jump or bounce! Why do you think cooking this way is called that? (because you toss the vegetables in the air!)* Ask, *Are there any cooking techniques that your family or culture uses where you cook vegetables over high heat,*

similar to sautéing? Take student responses, and then say, *In Chinese culture a similar way of cooking is called stir-fry. We're going to put our vegetables in a skillet with very high heat and cook them really quickly and add a flavorful sauce toward the end. You can cook pretty much any vegetable from the garden this way. Ask, How do you think our vegetables will taste differently after we cook them? (10 min.)*

## 2. Hand-Washing Break (5 min.)

**3. Demonstrate Vegetable Prep:** Model for students how to prepare the vegetables you've brought for them. For example, show them how to break broccoli florets or tear chard or kale into small pieces over a cutting mat. Show them any parts of the vegetable that won't be going into the sauté, and explain that they should put those parts into the compost container. (5 min.)

**4. Preparing Sauté:** Show students the Sauté Worksheet and explain, *You'll create a recipe for sautéing vegetables by circling the ingredients you'd like to include, giving your Sauté a name, and writing some directions for cooking this unique dish.* Pass out trays to each group with vegetables to prepare, reminding students to share with their group. Have a student or the teacher pass out worksheets as groups finish preparing their vegetable. As students are working on their worksheets, begin cooking the aromatics on high heat. After one to two minutes, when the aromatics begin to soften and release their aroma, call up one group at a time to add their prepared vegetables, starting with the vegetables that will take the longest to cook. Cook all the vegetables uncovered until

they're tender but retain a crunch. This should take no more than five minutes. Add the sauce, stir to incorporate, and then promptly remove from the heat. (15 min.)

**5. Tasting:** Once the sautéed vegetables are ready, pass out tasting cups to students, and have them decorate the top of their portion, with the toppings at their table. Remind them to share the ingredients with the rest of their group and to wait until everyone has their sample before trying. Ask students to describe the flavors. Ask, *How does the flavor compare to how the vegetables tasted before they were cooked? (5 min.)*

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: (5 min.)

### Social and emotional learning

- Ask yourself: Did I share with my classmates and help make the dish?

### Check for understanding

- Why is sautéing a good way to cook garden vegetables?
- Would you prefer to eat these sautéed vegetables with rice or noodles?
- What vegetables did you add to your sautéed dish?
- How would you tell your friend or family how to make sautéed vegetables?

## ADAPTATIONS

**Create-Your-Own Version:** Instead of making one sautéed dish for the whole class, have small groups work together to choose which vegetables they want to include in their own dish. Then cook them separately, having each group name and present their unique creation.

**Older Students:** Making a sautéed dish is a perfect opportunity for older students to practice their knife skills. Instead of preparing vegetables to be chopped yourself, demonstrate for students how to chop or slice each vegetable, talking through proper knife safety, and then allowing them to work with knives.

**Garden Setting:** Have students harvest vegetables from the garden, especially if you did the fall lesson, Plant a Rainbow.

**At Home:** Have students bring home their Sauté Worksheet to share with caregivers.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.SL.2.1**

Participate in collaborative conversations with diverse partners about *grade 2 topics and texts* with peers and adults in small and larger groups.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Sauté Worksheet

**Directions:** Circle the ingredients you'd like to put in your Sauté!

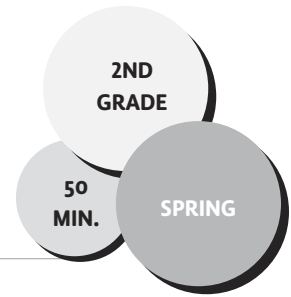
**Name Your Sauté:**

\_\_\_\_\_



# A Rainbow at the Salad Bar

**THEME:** MAKING HEALTHY FOOD CHOICES



## ESSENTIAL QUESTION

*Why is eating a rainbow of fruits and vegetables important?*

## LEARNING OBJECTIVE

✓ Students will be able to assemble a salad that includes a rainbow of colors.

## CONCEPTS

healthy phytonutrients salad bar variety

### *Engaging the Classroom Teacher*

- Prior to the lesson, explain to the teacher that the ideal setting for this lesson is in the cafeteria at the salad bar. Ask the teacher for support in figuring out the logistics of this.
- During Action Steps 2 and 4, suggest that the teacher help students navigate the salad bar.
- During Action Step 4, suggest that the teacher make a salad themselves to model for students.

## LESSON DESCRIPTION

In this lesson, students hunt for every color of the rainbow in the cafeteria salad bar, review why eating a variety of colorful fruits and vegetables is a healthy choice, and assemble their own rainbow salad from the salad bar. This lesson is designed

to be taught in conjunction with fall lessons Eat a Rainbow and Plant a Rainbow.

## MATERIALS

**For each student:**

- Rainbow at the Salad Bar Worksheet (p. 274)
- Clipboard
- Eating a Rainbow at Home Worksheet (p. 275) (optional)
- Colored pencils (multiples of each color of the rainbow)
- Poster created by the class from the fall lesson Eat a Rainbow

## PREPARATION

- › Coordinate with cafeteria staff for a date and time to host this activity in the cafeteria.
- › Photocopy the Rainbow at the Salad Bar Worksheet for each student.

## ACTION STEPS

**1. Engage:** Gather students in a circle in the cafeteria, and explain that today they're going to go on a hunt to find a rainbow in the salad bar. Say, *Turn and talk to a neighbor, and tell him or her your favorite color of food to eat and why. (5 min.)*

**2. Rainbow Hunt:** Pass out worksheet, clipboards, and colored pencils, and have students circle each color word with the correct color. Then gather around the salad bar. Have them hunt for a fruit or vegetable to represent each color of

the rainbow. To help with the flow of students, you might encourage them to sit and draw their produce once they've viewed the salad bar.

**(10 min.)**

**3. Explain:** If you created a poster with the class in the fall, display it now for students to see.

Say, *Remember each color helps our body in a*

**5. Tasting:** Have students sit down before eating. Ask them to admire their neighbor's rainbow salad bar creations, saying, *Eating all the colors of the rainbow is good for us and makes our plates beautiful!* Have students begin eating their rainbow salads together.

**(10 min.)**

### BACKGROUND

Different fruits and vegetables have different phytonutrients that support our health in different ways. These phytonutrients give fruits and vegetables their diverse colors. Therefore, by eating fruits and vegetables of different colors, we are also consuming a variety of phytonutrients that can help us stay healthy. The table below shows some of the ways different colors can support our health.

	RED	ORANGE / DEEP YELLOW	YELLOW / BROWN / WHITE	GREEN	BLUE / PURPLE
BENEFITS	Can keep your heart strong and give you healthy skin.	Can help you see well, especially in the dark.	Can make your blood healthy.	Can make your bones and teeth strong.	Can help your memory and help you stay healthy as you get older.

*different way.* As you go over each color, teach students a gesture to go along with each color associated with its benefit. For example, for orange and yellow use your hands to make binoculars around your eyes. Review with students the idea that eating a rainbow of colors from fresh fruits and vegetables supports overall health. Once you review the poster, play a short game. Say a color, and students have to quickly make the gesture you taught them. **(10 min.)**

**4. Making a Rainbow Salad:** Explain that now they'll go through the salad bar to make a rainbow salad for themselves. Say, *Your challenge is to get as many different colors in your salad as you can.* Have students line up and walk through the salad bar. **(10 min.)**

### REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

#### Social and emotional learning

- *What is your favorite part of your rainbow salad?*
- *What is something new you're trying today?*
- *Ask yourself: Did I take turns and help my classmates at the salad bar?*

#### Check for understanding

- *What did you include in your rainbow salad?*
- *Based on the poster we made, what part of your body is \_\_\_\_\_ good for?*



## ADAPTATIONS

**Classroom Setting:** If you don't have access to the cafeteria, you can project a large picture of a salad bar for students to perform the rainbow hunt. Then you can simulate a salad bar in the classroom by bringing in prepped fresh produce and setting it up as a buffet for students to select from.

**Garden:** If you planted a rainbow garden in the fall, have students harvest a rainbow of fruits and vegetables either for the cafeteria or for the in-class adaptation.

**At Home:** Have students bring home the Eating a Rainbow at Home Worksheet and fill it out with their caregivers.

**Reading:** Read *Rainbow Stew* by Cathryn Falwell about kids and their grandfather harvesting vegetables to make a colorful stew.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.SL.2.1**

Participate in collaborative conversations with diverse partners about *grade 2 topics and texts* with peers and adults in small and larger groups.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Rainbow at the Salad Bar Worksheet

Directions: Circle each color word using the correct colored pencil. Then find all the fruits and vegetables in the salad bar that match each color, and draw them in the blank space.

<b>RED</b>	
<b>ORANGE</b>	
<b>YELLOW/WHITE</b>	
<b>GREEN</b>	
<b>BLUE</b>	
<b>PURPLE</b>	

# Eating a Rainbow At Home

I ate a rainbow for

Breakfast \_\_\_\_\_ Lunch \_\_\_\_\_ Dinner \_\_\_\_\_

The dish is called \_\_\_\_\_

I person I ate with was \_\_\_\_\_

These were the rainbow ingredients in my meal:

Red \_\_\_\_\_

Orange \_\_\_\_\_

Yellow \_\_\_\_\_

Green \_\_\_\_\_

Blue \_\_\_\_\_

Purple \_\_\_\_\_

White \_\_\_\_\_

# Be a Bee!

**THEME:** EXPLORING THE ECOLOGY OF FOOD

2ND  
GRADE

55  
MIN.

SPRING

## ESSENTIAL QUESTION

*How do living creatures play a role in the food we eat?*

## LEARNING OBJECTIVE

✓ Students will be able to dramatize the process of pollination.

### CONCEPTS

attract flower fruit  
nectar pollen pollination

### *Engaging the Classroom Teacher*

- Prior to the lesson, discuss whether you'll be leading the lesson indoors or outdoors.
- Ask the teacher what prior knowledge students might have about pollination.
- During Action Step 3, suggest that the teacher help students attach yarn or string to their flower and bee necklaces with a hole puncher.
- During Action Step 4, suggest that the teacher support students while dissecting plants.

## LESSON DESCRIPTION

In this lesson, students act out a pollination role-play to understand the important role of pollinators in our food supply. This lesson is designed to be taught in conjunction with the lesson Planting for Beneficial Insects.

### MATERIALS

- 2 stems of local spring flowers
- *The Thing About Bees: A Love Letter* by Shabazz Larkin
- 1 sliced or prepared small piece of fruit for each student (e.g., a pineapple chunk, pear slice, or berry)
- Poster board or other thick, large paper to make flower and bee necklaces
- Markers, crayons, and colored pencils
- Fruit and Vegetable Sorting Cards (p. 228–231)
- Cotton balls
- Masking tape
- How Pollination Happens Poster (p. 280)
- Bee and Flower Coloring Pages (pp. 281–282)

#### Optional:

- Yarn or string
- Hole puncher
- Books with colorful pictures of flowers and/or insect wings

## PREPARATION

- › Identify a wide-open space where you can play this game, such as outdoors or in a multipurpose room.
- › Photocopy a Bee Coloring Page for half your students.

- › Photocopy a Flower Coloring Page for the other half of your students.
- › Photocopy and cut out an assortment of fruit cards from the Fruit and Vegetable sorting cards for “flower” students to choose from.
- › Color your own set of wings and a flower as models for students. Use a hole puncher and yarn to turn the pictures into necklaces for the pollination game. Affix a cotton ball with tape onto the center of the flower.
- › Determine how to display How Pollination Happens Poster (i.e., print a color copy to display on a document camera, or recreate your own on chart paper).

## ACTION STEPS

**1. Engage:** Gather students in a circle, and pass around flowers for students to smell and admire. Ask students, *Why do you think flowers are so beautiful and smell so good?* Field answers, coming around to the idea that flowers have adapted to be attractive and enticing to pollinators. Say, *They also make a delicious sugary food that bees like—do you know what it is?* (Nectar!) Explain, *Pollinators are insects, birds, and other animals that move pollen among flowers, which allows the plants to produce fruits, seeds and, eventually, new baby plants!* Ask students to name the pollinators they know of (honeybee, hummingbird, bat, beetle, moth, fly). **(5 min.)**

**2. Reading:** Watch a video or read a book about pollinators and their impact on our food supply, such as Shabazz Larkin’s, *The Thing About Bees*. After reading, ask, *How do we depend on bees and other pollinators for what we eat?* Explain to students that in some places we don’t see bees as much as we used to. Ask, *What would the*

*world be like without bees?* **(10 min.)**

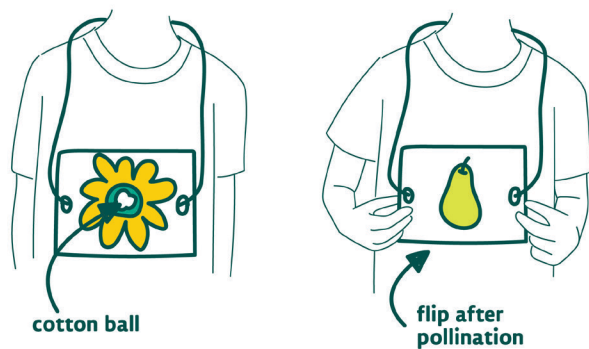
**3. Drawing:** Explain, *We’re going to play a pollination game, and we need to create our costumes. Half the class will be pollinators and have bee necklaces, and half the class will be flowers that turn into fruits with seeds after they’re pollinated.* Show students your models, asking them to guess what the cotton balls are for. Explain that if they have a flower necklace, they’ll also be drawing (or pasting) a fruit on the back. Pass out art supplies to students and circulate through the room, helping where needed. If you brought in books with photos of flowers and bees, put them in a corner “library” where students can go for inspiration. Help students who are making flowers attach “pollen” cotton balls with tape. If you have time, you may want to use a hole puncher to attach yarn so students can wear their wings and flowers, rather than hold them. Give students a three-minute warning before it’s time to clean up. **(15 min.)**

**4. Clean up! (5 min.)**

**5. Pollination Game:** Display the How Pollination Happens Poster. Gather students and bring up two volunteer flowers and one volunteer pollinator to help you demonstrate the game. Ask, *Who do you think gets to tag, the bees or the flowers?* (Bees!) Discuss how that’s because the flower has something the bee wants, food! Say, *When a bee tags a flower, the flower hands over its pollen.* Demonstrate. *Now, let’s say a bee is already carrying pollen from a different flower. When the bee tags a new flower, gesturing to your second flower volunteer, it passes the pollen to the new flower, and ta-da! Pollination has*

occurred! Have students repeat the word dramatically, “pollination!” The flower now turns into a fruit, and you flip your costume to show the fruit side. Demonstrate. Once all our flowers have been pollinated and turned into fruit, the game is over. Ask questions to check for understanding and then play. After one or two rounds, give students opportunities to act out scenarios such as, What would happen if there were only a couple bees to pollinate? What would happen if there were no flowers? If students seem to be understanding, you can add an element where certain bees go back to other bees and do the “waggle dance” to let them know where there’s food (or flowers).

**(10 min.)**



**6. Tasting:** Pass out a piece of fruit to each student, emphasizing that this is the result of pollinating all the flowers. Say something like, *Thank you, bees, moths, and bats, for helping plants make this tasty fruit!* **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- How did it feel to pretend to be a pollinator or

flower?

- What are ways that we can help bees in our community?

### Check for understanding

- How would you explain pollination to a friend or family member?
- How does a bee or other pollinator help create our food?
- What could we do to bring more pollinators to our garden?
- How can we provide food for those that are already here?

## ADAPTATIONS

**In the Classroom:** If you are playing this game in a classroom, set parameters to minimize running and maximize safety. In this case, you can say that the flowers are rooted in the ground and can’t move, and the pollinators are bees that buzz as they walk but cannot run.

**Musical:** Add music and dance to the pollination game! Have the pollinators and flowers dance to and from each other. You can even pause the music sometimes, and make it a freeze-dance game.

**Garden Setting:** Have students observe bees and other pollinators in the garden, and write poems based on their observations.

**Honey Tasting:** Show students a video of how bees make honey—they might be tickled to learn it involves regurgitation! Then have a tasting of local honey, if it’s available.

**Age:** Older students might enjoy creating a comic strip to demonstrate their understanding of the steps in pollination.

## **ACADEMIC CONNECTIONS**

Next Generation Science Standards, Life  
Science Disciplinary Core Idea

### **NGSS 2.LS2.A**

Interdependent Relationships in Ecosystems  
Plants depend on animals for pollination or to  
move their seeds around.

English Language Arts Common Core State  
Standards

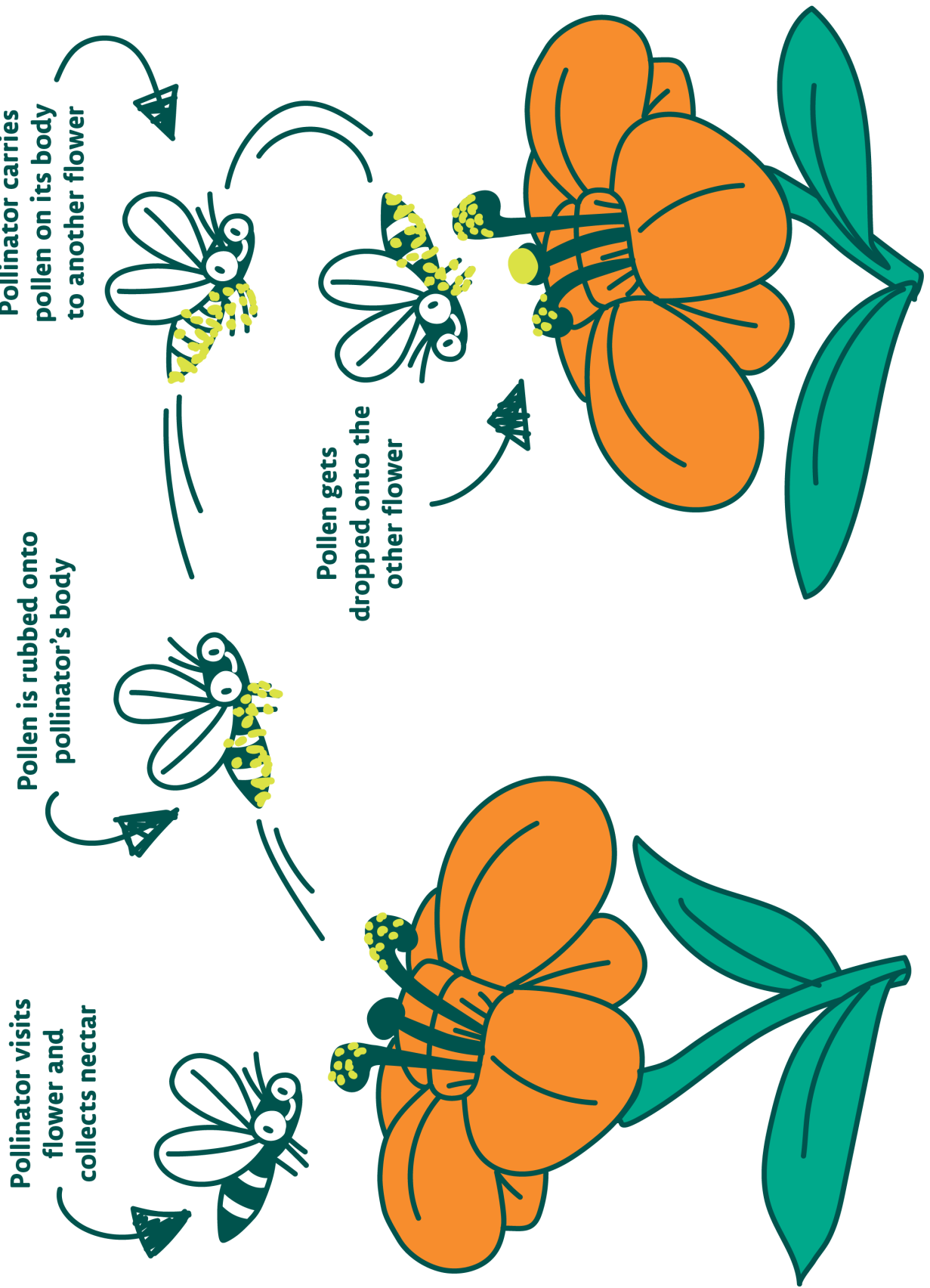
### **CCSS.ELA-LITERACY.RL.2.6**

Identify the main purpose of a text, including  
what the author wants to answer, explain, or  
describe.

### **CCSS.ELA-LITERACY.RL.2.4**

Describe how words and phrases (e.g., regular  
beats, alliteration, rhymes, repeated lines) supply  
rhythm and meaning in a story, poem, or song.

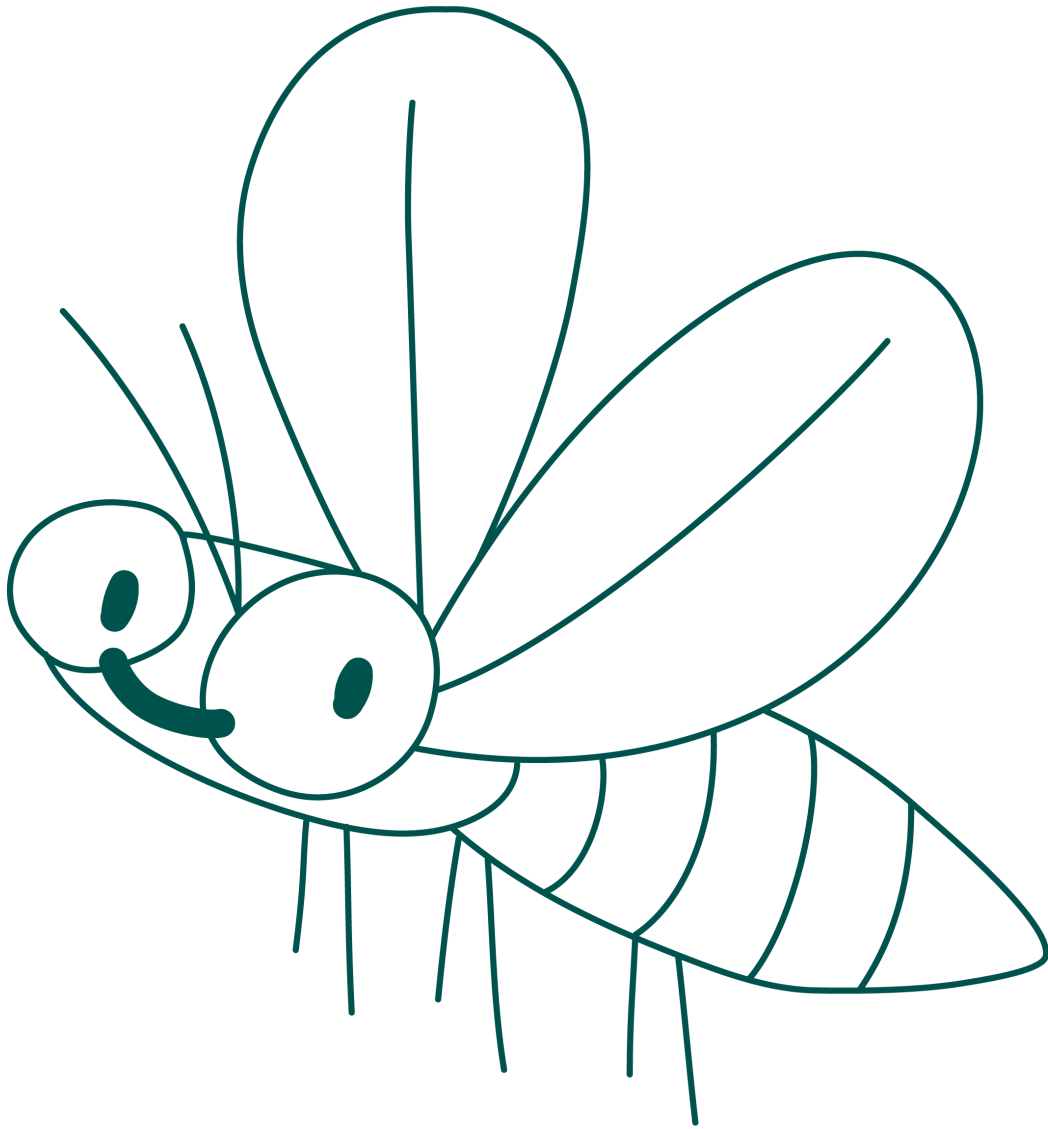
# How Pollination Happens Poster





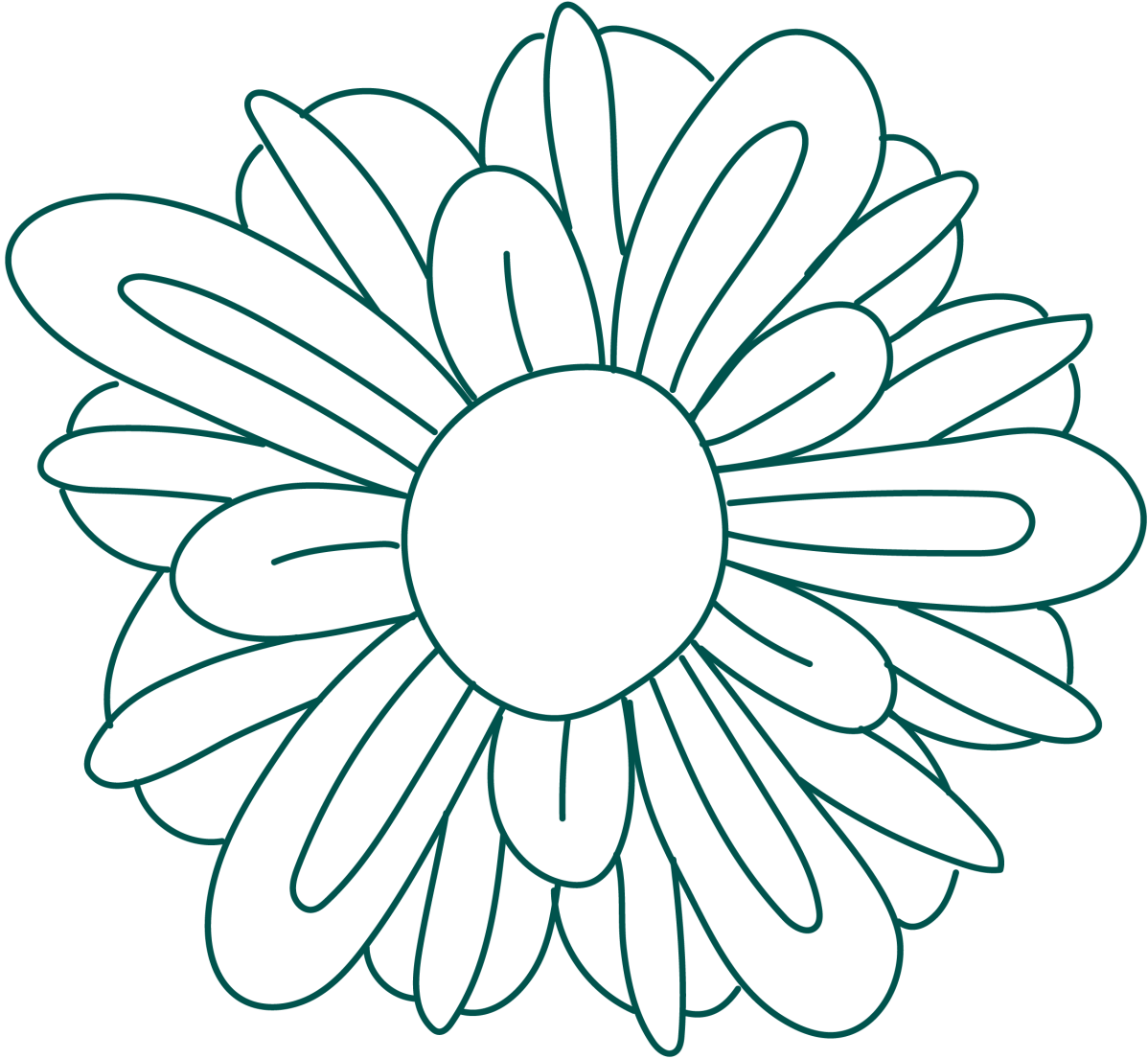
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# Bee Coloring Page



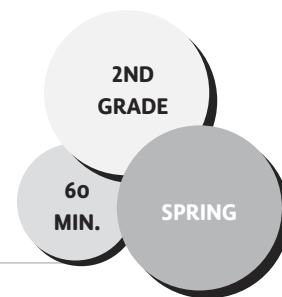
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# Flower Coloring Page



# Planting for Beneficial Insects

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*How do plants and animals rely on each other?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain the interdependence between beneficial insects and plants in a garden ecosystem.
- ✓ Students will be able to transplant a seedling in the garden.

## CONCEPTS

beneficial decomposers pest  
pollinators predators

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher whether they are able to support students in the other rotations, particularly the pollinator count, during Action Step 4 while you are planting. If not, consider streamlining the lesson to just the planting and beneficials vs. pests study.
- If doing rotations, ask the teacher if they already have an easy way to split the class into three groups.
- During Action Step 2, suggest that the teacher circulate through the garden, supervising students during the insect hunt, ensuring they're being respectful.

## LESSON DESCRIPTION

In this lesson, students consider the interdependence of plants and animals in the garden through learning about beneficial insects, going on an insect hunt, planting beneficial insectary plants, and collecting data on the amount of pollinators in the garden. This lesson can be paired with lessons Be a Bee! and Insect Homes.

## MATERIALS

- Beneficial Insects Poster

### ***Insect Hunt:***

- 10 Magnifying glasses, magnifying bug viewer cups, or plastic cups

### ***Planting for Beneficials Station:***

- 1 transplant for each group of 2–3 students
- Trowels
- Watering cans
- Hose for filling watering cans

### ***Pollinator Count Station:***

- Pollinator Count worksheet (p. 286)
- Clipboards
- Colored pencils
- Receptacle for collecting finished worksheets (optional)

### ***Beneficials vs. Pests Station:***

- Beneficials vs. Pests Flash Cards (pp. 287–289)

## PREPARATION

- › Identify the beneficial insectary plants that thrive in your region, and check the planting guidelines.
- › Choose an appropriate area to establish your beneficial insectary planting, considering many of these plants are perennial and

therefore will return year after year.

- › Research the beneficial and pest insects in your region. Use the appropriate Beneficials vs. Pests Flash Cards. You'll likely have to make multiple sets of these, so several pairs of students at the station can use them at a time.
- › Set up the Beneficials vs. Pests Station with flash cards and any other materials on local beneficial insects and pests.
- › Set up a station for students with the Pollinator Count worksheet, colored pencils, and clipboards. You might also want to include a receptacle for their finished worksheets so they have a place to put them when it's time to switch.

#### SAMPLE BENEFICIAL INSECTARY PLANTS

- Beebalm
- Buckwheat
- Calendula
- Cosmos
- Dill
- Echinacea
- Fennel
- Lavender
- Lemon balm
- Sunflowers
- Zinnias

## ACTION STEPS

**1. Engage:** Gather students in a circle and ask, *What are ways you help others? What are things you like getting help with?* Discuss responses and then say, *Plants and animals help each other as well. How do plants help us and other animals? How do animals help plants?* Explain that today they're going to consider how we can help the plants and animals in our garden by planting plants that insects like. **(5 min.)**

**2. Hunting for Insects:** Explain to students that they'll go on an insect hunt to look for insects or other critters that are helpful and those that are harmful in our garden. Ask students, *Which insects or other critters do you think you'll find in our garden today that are helpful to the plants?*

*Which do you think we'll find that are harmful?*

Show students what they'll be using to catch and collect their specimens, whether it's an insect box or a paper cup. Elicit ideas for ways that students should be caring toward these living creatures and the garden while they're hunting. For example, discuss putting logs or stones back in place and being calm and still around bees. Pass out insect boxes or cups, and let students know how you'll call them back when it's time. **(10 min.)**

**3. Show and Tell:** Gather students back in a circle, and have them share about the insects and other critters they found. Ask them to share where they found their critter as well as whether they think their critter is harmful or helpful to the garden. If students brought back their specimens to the circle in closed containers, you could have students pass them around the circle so that everyone gets a chance to see everyone else's. Call out "switch!" every 15 seconds or so, and have all students pass the containers clockwise. Show students the Beneficial Insects Poster. Explain, *Some animals help in the garden by decomposing dead plants, such as earthworms and roly polys, or pill bugs.* Have students say "decomposers." *Some help by pollinating plants so they can create tasty fruit, such as bees, butterflies, moths, and flies.* Have students say "pollinators." *Other critters help by eating the pests in our garden. These are ladybugs, beetles, spiders, and centipedes.* Have students say "predators." See if you can associate a gesture with each type of beneficial insect to help students remember each one. **(5 min.)**

**4. Stations:** Explain each station they'll be rotating through, and let them know the signal and how they should clean up when it's time to switch. Divide students into three groups. **(5 min.)**

**a. Planting for Beneficials:** Show students the plants you've selected, and briefly say the purpose of planting each one. Demonstrate proper tool safety to students as you model planting a start, then have groups of two or three students plant and water a transplant. **(10 min.)**

**b. Pollinator Count:** Have students or pairs of students take a clipboard, colored pencil, and worksheet and walk around the garden looking for bees and other pollinators. Remind students to stay where you can see them and that bees won't bother them if they stay relaxed. **(10 min.)**

**c. Beneficials vs. Pests Study:** Have students study the index cards you've prepared at this station. Then students can take turns testing each other. For example, they'd show a picture of the insect and say, "Ladybug! Helpful or harmful?" And have their peer guess. Once students have studied and tested each other, have them perform a second insect hunt to find some of the insects they learned about. Set the expectation that they may not find too many, but they should see if they can find one beneficial and one pest. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How do you feel about helping the plants and animals in our garden today?*
- *Ask yourself: Was I safe and respectful in the garden today?*

## Check for understanding

- *What was the most interesting insect you saw today?*
- *Which plants do insects seem to like the most in our garden?*
- *What are the different ways that insects can be helpful in our garden?*
- *How will the plants we planted today help our garden grow and thrive?*

## ADAPTATIONS

**Health Connection:** Point out that, just like some insects are good for the garden, there are lots of tiny microorganisms living inside our digestive system (or our gut)! These tiny living organisms help us stay healthy. The best way to have lots of good microorganisms in our bodies is to eat all kinds of plant foods like those found in the garden.

**Data Collection Extension:** With your class, track the presence of pollinators through the months or seasons. It'll be interesting to compare the presence of pollinators around plants already in your garden (for example, brassicas like kale or broccoli left to flower) versus the plants you planted during this activity.

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea






### NGSS.LS2.A

Interdependent Relationships in Ecosystems

- Plants depend on water and light to grow.
- Plants depend on animals for pollination or to move their seeds around.

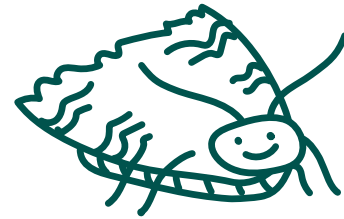
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# Pollinator Count Worksheet

PLANT	1	2	3	4	5	6	7	8	9	10
Example: ROSEMARY 										
1.										
2.										
3.										

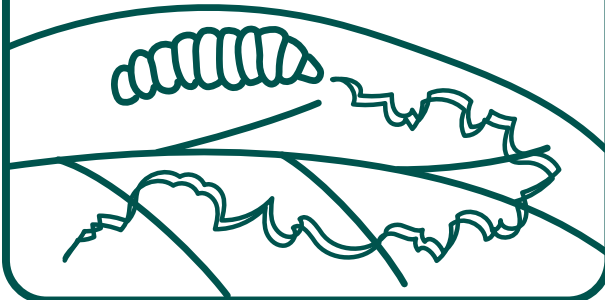
# Beneficials vs. Pests Flash Cards

cabbage worm



codling moth

leaf miner



aphids



slug

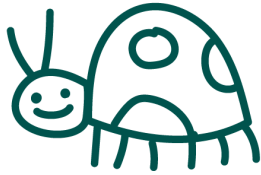


snail



# Beneficials vs. Pests Flash Cards

**lady bug**



**spider**



**praying mantis**



**centipede**

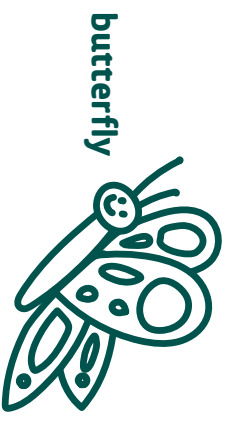




# BENEFICIAL CREATURES IN THE GARDEN



POLLINATORS



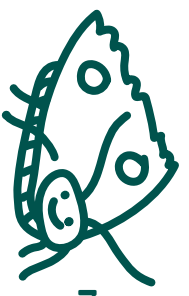
butterfly



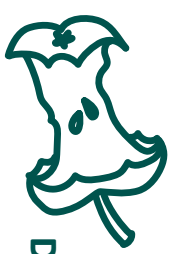
bee



fly



moth



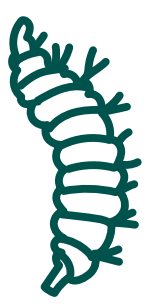
DECOMPOSERS



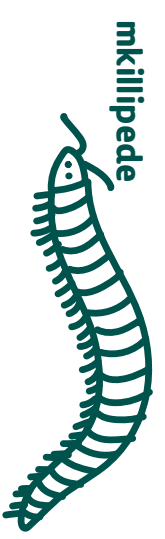
earthworm



rolly poly  
pill bug



black soldier  
fly larvae



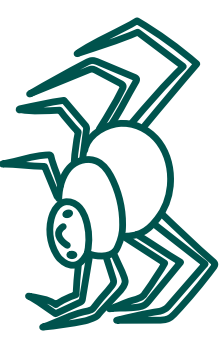
millipede



PREDATORS



ladybug



spider



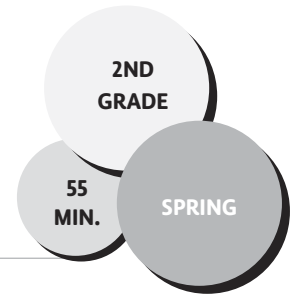
praying  
mantis



centipede

# Rainbow Grain Salad

**THEME:** PREPARING HEALTHY FOOD



## ESSENTIAL QUESTION

Why is it important to eat a variety of colorful foods?

## LEARNING OBJECTIVE

✓ Students will be able to practice knife skills by preparing vegetables for a grain salad.

## CONCEPTS

eat a rainbow ingredients knife safety

### *Engaging the Classroom Teacher*

- Prior to the lesson, discuss whether there are other adults, such as parent volunteers, who can supervise while students are using knives.
- During Action Steps 5 and 6, suggest that the teacher supervise as students are chopping vegetables. Have the teacher help groups take turns coming up and delivering their prepared ingredients to you.

## LESSON DESCRIPTION

In this lesson, students learn knife safety and techniques, observe a demonstration, and practice chopping vegetables in groups for a rainbow grain salad. This lesson is designed to be taught in conjunction with lessons Eat a Rainbow, Plant a Rainbow, and Rainbow at the Salad Bar.

## MATERIALS

- Fruit and Vegetable Sorting Cards (p. 294–298)
- Set of knives
- Small bowl and fork for each student
- Portion of each of the vegetables set aside for demonstration
- Rainbow Grain Salad Ingredients (see recipe below)
- Large spoon
- Materials for cleanup

### Tray of the following for each group of 4–6 students:

- 1 type of vegetable, portioned into 1 chunk for each student
- Cutting mats
- Group bowl for cut veggies
- Container for compost

## PREPARATION

- › Consider recruiting parent or community volunteers for this lesson to have extra eyes and helping hands for students working with knives.
- › Prepare four cups of cooked grains beforehand, following proper food safety guidelines about storing cooked food.
- › Wash all produce, and slice vegetables, so each student has something to work with.
- › Prepare trays for students and your own for demonstration.
- › Make a dressing for the grain salad. (see recipe below).

## FRUITS AND VEGGIES FROM THE RAINBOW

### Red/Pink

Apple  
Beet  
Radish  
Strawberry  
Tomato

### Orange

Bell pepper  
Carrot  
Clementine  
Peach

### Yellow/White

Corn  
Daikon radish  
Golden beet  
Turnip  
Yellow bell pepper

### Green

Collards  
Kale  
Rainbow chard

### More Green

Cabbage  
Celery  
Cucumber  
Zucchini

### Blue/Purple

Purple cauliflower  
Purple kohlrabi

## Rainbow Grain Salad Dressing

**Yield:** About 25 servings, ¼ cup

### Dressing

Two tablespoons lemon juice (1 lemon)  
1 teaspoon minced garlic (about 1 clove)  
1 teaspoon honey  
Salt, to taste  
¼ cup olive oil  
1 tablespoon finely chopped herbs  
(chives and parsley)

Whisk lemon juice, honey, garlic, and salt.  
Slowly drizzle in olive oil and continue whisking  
until well blended. Stir in herbs.

### Grain Salad

- 3 cups cooked grain such as quinoa, barley, brown rice, couscous, millet, teff, or bulgur wheat
  - 4 cups of a variety of fruits and vegetables (such as one each from the table below)
  - ¼ teaspoon salt, or to taste
- Cook selected grain. Cool grain spread on a baking sheet and set aside.
  - Meanwhile, prepare and chop fruits and vegetables into attractive, bite-sized pieces.
  - Mix grain with assorted fruits and vegetables and toss with dressing. Taste and add just salt, or add more dressing if needed.

### Example 1

3 cups cooked quinoa  
1 clementine, segments sliced into thirds  
1 cup diced yellow bell pepper  
1 cup diced cucumber  
1 cup shredded beet  
6 tablespoons dressing, more to taste

### Making Quinoa

1 cup quinoa  
½ teaspoon salt

- In a small pot, bring 1 ½ cups water to a boil over medium high heat.
- Add quinoa and salt, stir, and reduce heat to a simmer.
- Cover the pan and cook for 12–15 minutes, or until all the water is absorbed.
- Fluff the quinoa with a fork, and leave the lid off the pan to allow any residual steam to escape.

### Example 2

3 cups cooked millet  
1 cup diced strawberries  
1 cup diced carrot  
1 cup diced yellow bell pepper  
1 cup torn and massaged kale\*  
6 tablespoons dressing, more to taste  
\*coat kale with oil, then squeeze it for a couple minutes until tender

### Making Millet

1 cup millet  
½ teaspoon salt

- In a small pot, bring 2 cups water to boil over medium high heat.
- Add millet and salt. Return to a boil, then reduce heat to a simmer, cover and cook until tender, 15–20 minutes.
- Drain off any remaining water, and fluff with a fork.

## ACTION STEPS

**1. Engage:** Gather students in a circle, and tell them that today they'll be working with knives to create a delicious grain salad with vegetables that are every color in the rainbow. Pass out Fruit and Vegetable Sorting Cards to students in small groups, and ask them to create a rainbow. Ask, *Why do you think it's important to have a rainbow of colors in the foods you eat?* Field responses, and get to the idea that different colored vegetables have all the different vitamins and nutrients your body needs. **(5 min.)**

### 2. Knife Safety Demonstration (5 min.)

**3. Model Vegetable Prep:** Show students the vegetables they'll be adding to their grain salad, and model how to cut each type of vegetable. Be sure to go slowly. Exaggerate and highlight the proper techniques you want to see from them. Say things like, *See how I keep the tip on the cutting board the whole time, and I just rock the knife back and forth. See where my other hand is when I'm cutting.* Remind students that you'll be putting all the veggies into a salad, so you want the pieces to be pretty small. If your classroom has a document camera, project your demonstration so all students can easily see. Put your finished samples into small bowls, and give them to students for comparison when they're cutting. **(5 min.)**

### 4. Hand-Washing Break (5 min.)

**5. Chopping Vegetables:** Distribute trays to groups of students. You may want to pair students, and explain that each pair will have a chopper and a safety monitor, and they will be trading off halfway through. Circulate through

the room, guiding students to be safe and to use proper technique when needed. Give students a three-minute warning before having them clean their spaces. **(15 min.)**

**6. Making the Salad:** Call for attention at the front of the room where you have your bowl of grains, spoon, and dressing ready. Have a representative from each group deliver their cut veggies to you. You'll want about one and a half times the amount of veggies to grain. This should work out nicely to four cups of grain to six cups of vegetables, which may mean not using the entire portion of veggies that each group has cut. Toss the salad with dressing, and have a helper distribute it into bowls or tasting cups for each student. Have student helpers pass them out to classmates. During this process, ask students questions to build excitement and anticipation for what they're about to taste. **(10 min.)**

**7. Tasting:** Ask students to wait until each student has a sample before trying the salad. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What makes you proud about using a knife? What do you feel like you still need to work on?*
- *Ask yourself: How did I work together with my classmates to make this dish?*

### Check for understanding

- *How might you change this recipe if you were making this at home?*

- *What other dishes could you add rainbow veggies to?*
- *What helpful hints would you share to teach another student how to use a knife?*

## ADAPTATIONS

**Recipe Variations:** Have students apply their knife skills to make a rainbow smoothie (see lesson Rainbow Smoothie for a recipe), a rainbow vegetable soup (see lesson Stone Soup), etc. Or give students big crackers with hummus as a canvas for them to create rainbow veggie art!

**Literacy Extension:** Read *Rainbow Stew* by Cathryn Falwell about kids picking vegetables from their grandfather's garden to make a colorful stew.

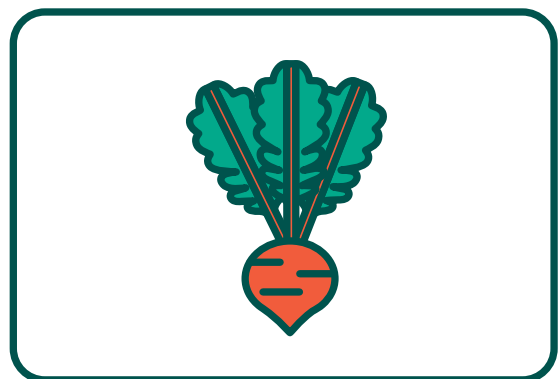
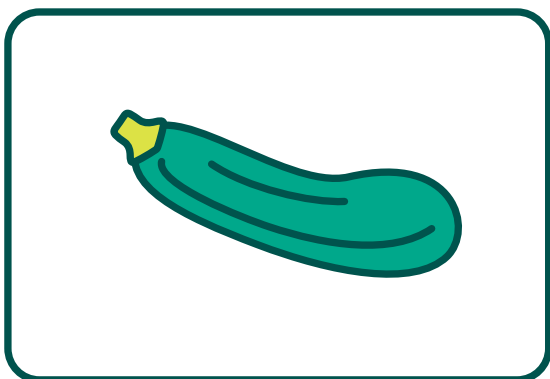
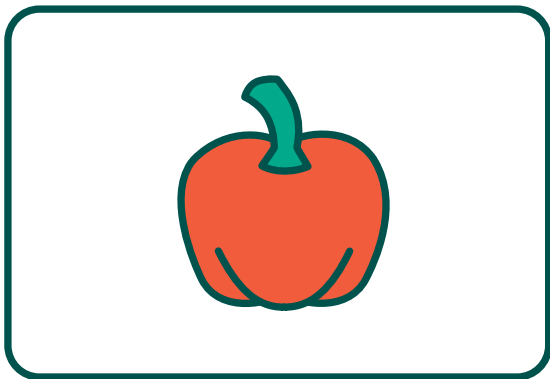
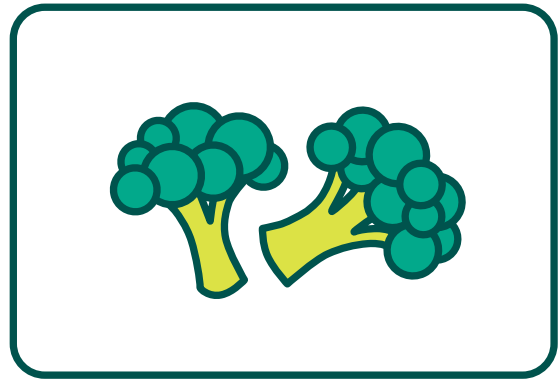
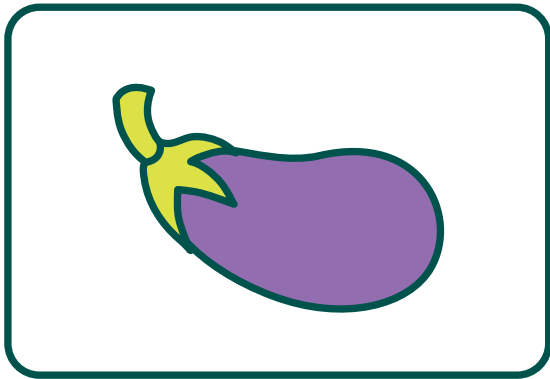
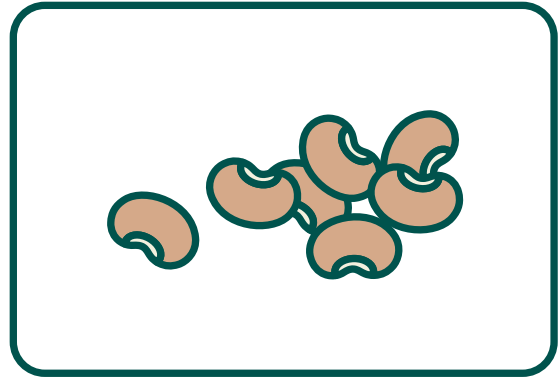
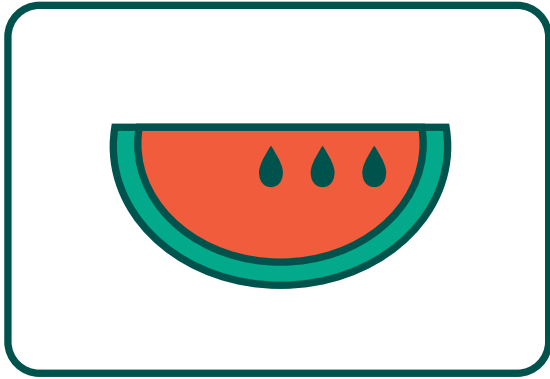
## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

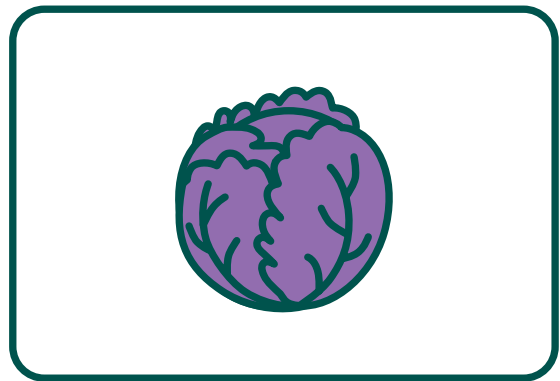
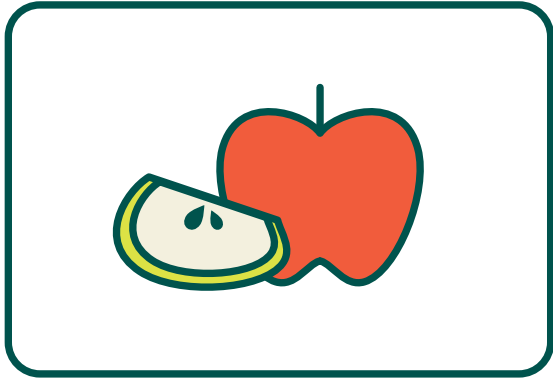
### **CCSS.ELA-LITERACY.SL.3.1**

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 3 topics and texts*, building on others' ideas and expressing their own clearly.

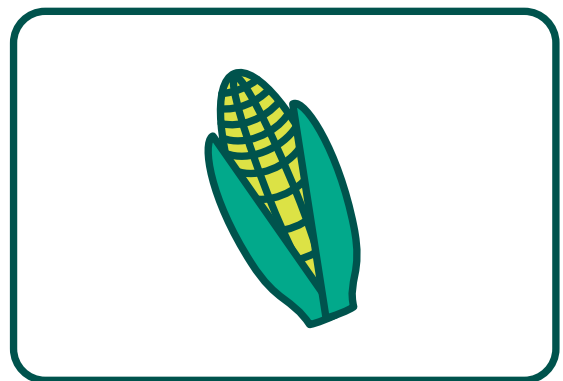
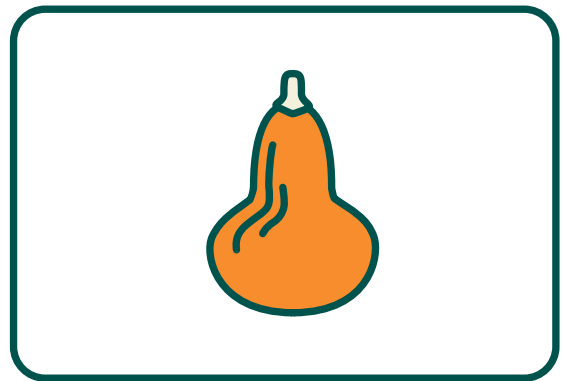
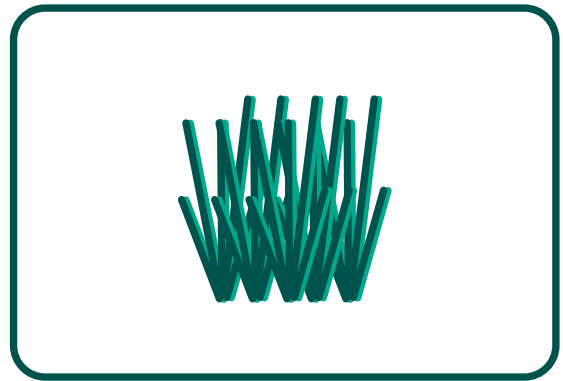
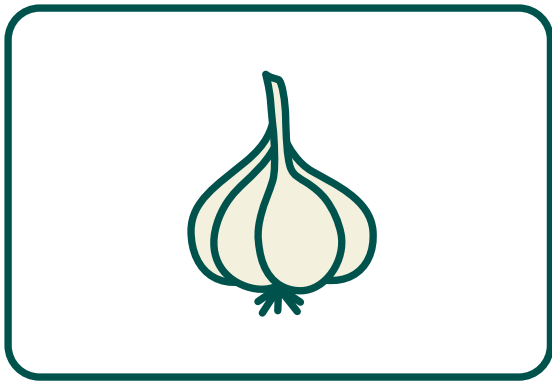
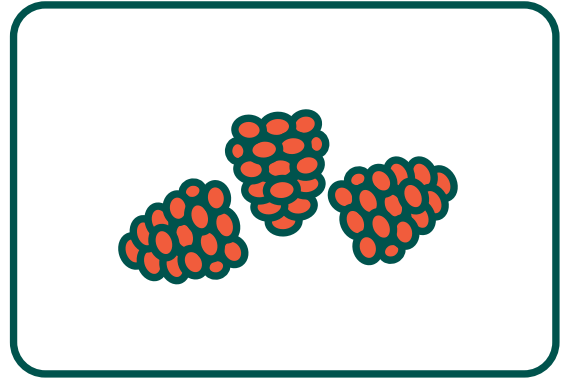
# Fruit and Vegetable Picture Cards



# Fruit and Vegetable Picture Cards

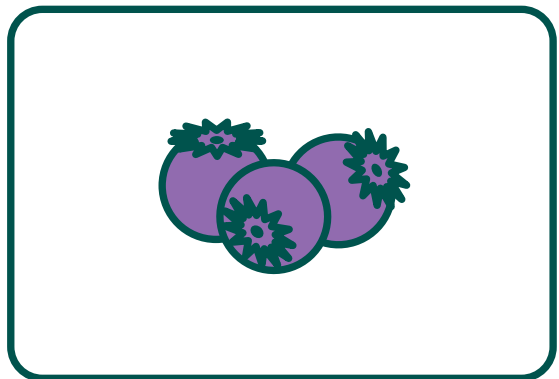
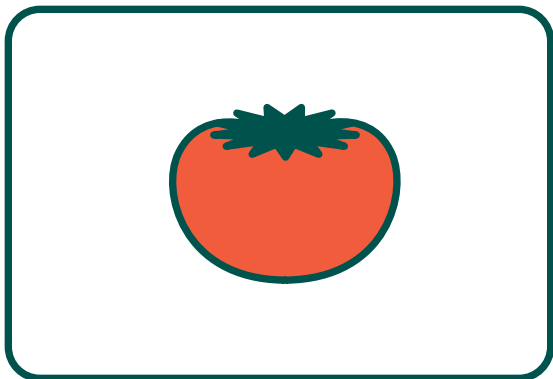
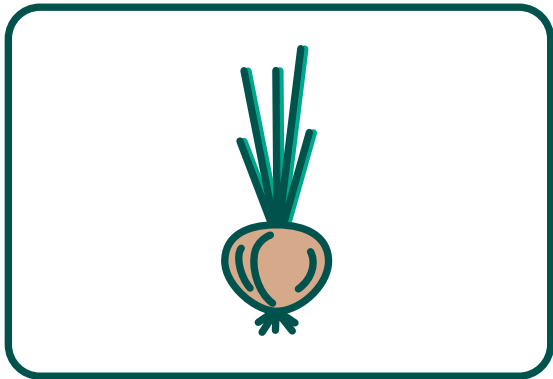
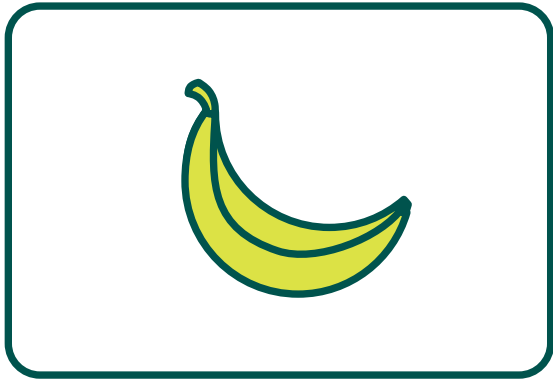
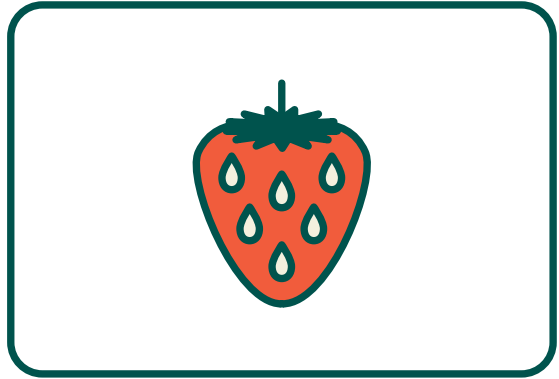
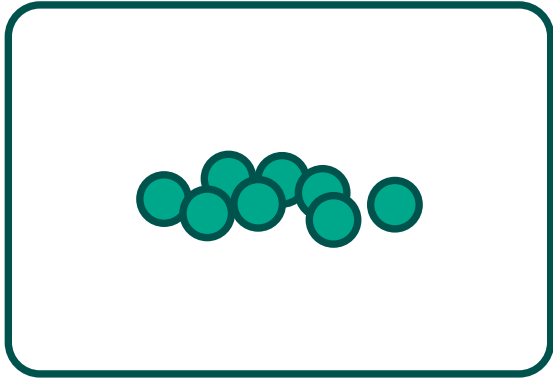


# Fruit and Vegetable Picture Cards

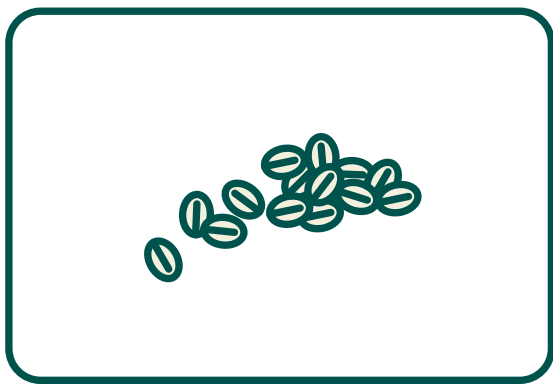
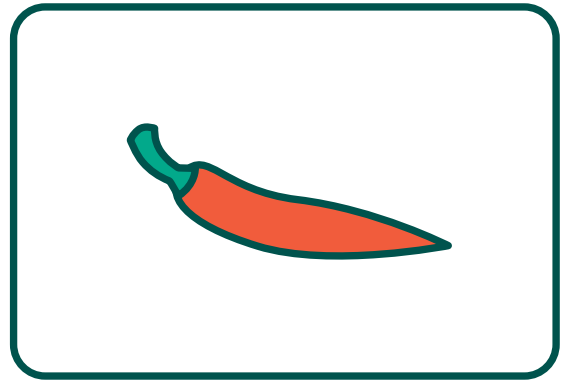
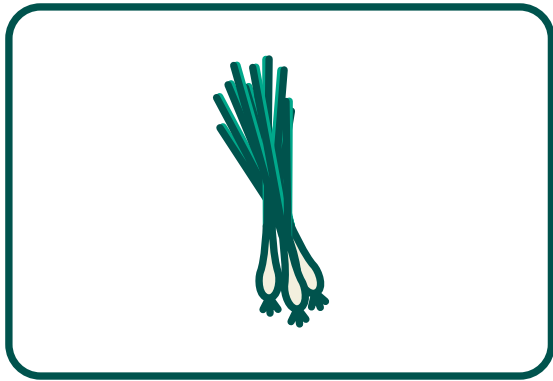




# Fruit and Vegetable Picture Cards

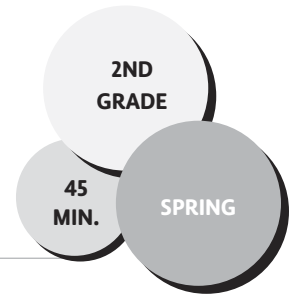


# Fruit and Vegetable Picture Cards



# Food Story Swap

**THEME:** CONNECTING FOOD, CULTURE, AND COMMUNITY



## ESSENTIAL QUESTION

*Why do we like the foods that we like?*

## LEARNING OBJECTIVES

- ✓ Students will be able to identify their food preferences.
- ✓ Students will be able to synthesize and present information they learn about a peer.

## CONCEPTS

interview                      preference  
taking turns                  tradition

### *Engaging the Classroom Teacher*

- Prior to the lesson, discuss with the teacher the students' writing skills, and adjust Action Steps 2 and 3 accordingly.
- Prior to the lesson, ask the teacher if they are willing to help model during Action Step 2.
- During Action Step 2, interview the teacher as your partner, modeling for students.
- During Action Steps 3 and 4, suggest that the teacher support students while they are interviewing each other and drawing each other's responses.

## LESSON DESCRIPTION

In this lesson, students explore food preferences by playing the getting-to-know-you game The Great Wind Blows, interviewing each other, and sharing information about their partners with the class.

## MATERIALS

- Document camera or chart paper
- Crayons, markers, or colored pencils
- A "talking piece" for each pair of students (optional, see ideas below)

For each student:

- Food Story Swap Worksheet (pp. 302–304)
- Clipboard (optional)
- Pencil
- Drawing paper

## PREPARATION

- › Ask the classroom teacher if you can use one of the math manipulatives as talking pieces for the activity, such as pattern blocks or tiles. Alternatively, upcycle something like bottle caps.
- › Edit or recreate the worksheet with questions best suited to your students.
- › Photocopy the Food Story Swap Worksheet.

## ACTION STEPS

**1. Playing a Warm-Up Game:** Have students gather in a circle, and introduce the game, The Great Wind Blows. Explain that a person will stand in the middle of the circle and say something that is true for them about food. Give an

example such as, *The Great Wind blows for me and anyone who loves strawberries*. Or, *anyone who helps make their own food*. Explain, *If that's true for you then you need to find a new seat in the circle. If there's no more left, then you're the person in the middle, and they get to say, "The Great Wind blows for me and anyone who . . ."* Remind students of the "Don't yuck my yum" policy. Play several rounds of the game, so a variety of topics are introduced. **(10 min.)**

**2. Explain the Activity:** Say, *Sharing our likes and dislikes and traditions is a nice way to get to know each other better*. Explain that today they're going to interview each other about food and then share as a class. Remind students, *We all have different taste buds and different experiences, and it's important not to make people feel bad just because they like or do something differently than you*. Pass out interview sheets to each student. Have the teacher come up to the front. Model interviewing the teacher. Ask the first question, have the teacher answer, and then model recording the teacher's response. Use a document camera so students can see how you answer (or recreate the handout on chart paper). Continue this way with a couple more questions. Then ask for student volunteers to read the remaining questions to the class so students will feel confident rereading them while interviewing partners. Explain that you'll set a timer for eight minutes for the first partner to ask questions to the other, and then they'll switch for the other person's turn. **(5 min.)**

**3. Interviewing Partners:** Pair students, pass out clipboards, and allow them to find a comfortable space in the room to interview each other. Tell them they'll get through as many questions as they can in eight minutes, but it's okay if they don't get to all of them. Set

the first eight-minute timer and then circulate through the room, listening to interviews and offering support where needed. Then let students know when it's time to switch. If students need more structure and support, you can have them do the interviews at their tables. Pass out a talking piece to each pair of students. Read one question aloud and say, *Everyone who has the talking piece, it's your turn to be interviewed. If you don't have the talking piece right now, your job is to record with words and pictures what you hear your partner saying*. Give two minutes for the first interview round, and then tell students to pass the talking piece to their partner and set another two-minute timer. Then continue on to another question. You'll likely want to select only three questions to do in this fashion. **(20 min.)**

**4. Making Visual Representations:** Have students create a visual summary of the information on their interview sheets to share. Have them write their partner's name in the middle, and then illustrate two or more things they learned about their partner. For example, they might draw their favorite snack with a heart around it and the food they try to avoid with an X through it. As students finish, have them partner with other students who have finished to share what they learned about their partner. **(10 min.)**

**5. Sharing Circle:** Gather students in a circle with their artwork displayed in the middle where everyone can see. Have students take a look and then whisper one thing they learned to someone sitting next to them. Then invite three or four students to share. End the circle with a positive observation about the diversity of responses such as, *It's really interesting to hear all the different ways our class community enjoys eating food*. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class:

*(5 min.)*

### Social and emotional learning

- *What was it like to write and share about your partner instead of sharing about yourself?*

### Check for understanding

- *Why do you think we like certain foods and not others?*
- *What are some fun, interesting things you learned about your classmates today?*

## ADAPTATIONS

**Tasting Extension:** Bring in a food you like or that is part of your culture or family tradition to share with students.

**Class Book Extension:** Have students use their interview sheets to write a mini profile of their partner, with two or three sentences they'll decorate. Then bind all the profiles into a class book to enjoy reading together. You might even take pictures of each student to include in the book!

**Reading Extension:** To set up the discussion of being open-minded about one another's different food preferences, read *The Sandwich Swap*, by Kelly DiPucchio and Queen Rania of Jordan, about two friends who hesitantly try each other's lunches.

**Storytelling Extension:** Read *I Will Never Not Ever Eat a Tomato* by Lauren Child, and have students write and illustrate imaginary stories about their partner's least favorite foods, such as Charlie telling his sister carrots are "orange

twiglets from Jupiter," and peas are "green drops from Greenland."

**At Home:** Make extra copies of the worksheet for students to bring home and interview a family member.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.SL.2.1

Participate in collaborative conversations with diverse partners *about grade 2 topics and texts* with peers and adults in small and larger groups.

### CCSS.ELA-LITERACY.L.2.5

Demonstrate understanding of word relationships and nuance in word meanings.

### CCSS.ELA-LITERACY.L.2.5.A

Identify real-life connections between words and their use (e.g., *describe foods that are spicy or juicy*)

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Food Story Swap Worksheet

› What is a food that you know how to make?

---

Draw your answer.

› What is your favorite food to eat with friends and family?

---

Draw your answer.

› **What is a food that is important to your family?**

---

Draw your answer.

› **Is your family from a different country, or are people in your life from a different country? What is a special food that they eat?**

---

Draw your answer.

› **What is a food you don't like to eat? Why?**

---

Draw your answer.

› **What is a food you have never tried? Why not?**

---

Draw your answer.

› **What is your favorite food memory with someone you love?**

---

Draw your answer.



# Insect Homes

**THEME:** EXPLORING THE ECOLOGY OF FOOD

2ND  
GRADE

45  
MIN.

SPRING

## ESSENTIAL QUESTION

*How can we create a habitat for the important creatures in our garden?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain the importance of habitat for living creatures.
- ✓ Students will be able to build habitats in the garden appropriate for insects.

## CONCEPTS

beneficial insect   habitat   structure

### *Engaging the Classroom Teacher*

- During Action Step 3, suggest that the teacher circulate through the garden to support students in building their structures.
- During Action Step 4, as more students move to the welcome sign station, suggest that the teacher supervise that station.

## LESSON DESCRIPTION

In this lesson, students will learn what makes an appropriate insect habitat, and then construct homes in the garden. This lesson can be taught in conjunction with lessons *Be a Bee!* and *Planting for Beneficial Insects*.

## MATERIALS

- Beneficial Insects Poster (p. 289; optional)
- How to Build an Insect Home Poster (p. 308)
- Natural building materials (see Preparation)
- Craft materials for welcome signs such as cardboard, found sticks, and permanent markers of various colors

## PREPARATION

- › Create a model insect home.
- › Create a model welcome sign.
- › Photocopy How to Build an Insect Home Poster.
- › Gather some natural and found materials for students to use to make their insect homes such as twigs, straw, bamboo, twine, stones, old cement pavers, toilet paper tubes, etc.
- › Set up two stations in the garden: one where students will access the insect home materials and one where they will access the welcome sign materials.

## ACTION STEPS

**1. Engage:** Gather students in a circle, and hold up your model insect home and ask, *What do you think this might be? (It's a home for insects!) What about this object might make it a good home, or habitat, for garden insects?* Tell them that today they'll get to be architects and builders for the living creatures in our garden.

Ask, *If you were an insect, what kind of home would you like to have? What would you need to have in your home or nearby?* Have students turn and talk to their neighbor and then discuss as a class. **(5 min.)**

**2. Explain the Activity:** Remind students, *There are many helpful insects that help our garden grow and thrive. We call these beneficial insects.* Here, you may want to show students the Beneficial Insects Poster. *In what ways can insects help our garden? If insects have a safe, comfortable space to live, with easy access to the things they need, we'll likely have more and more of them in our garden!* Display the How to Build an Insect Home Poster, go over steps, and discuss possible design ideas, for example a lean-to with found bark. **(10 min.)**

**3. Building Insect Homes:** Before setting students free, go over places where students can build and places that might be off-limits for students. Also discuss materials in the garden that students may harvest or utilize for their buildings. Give students the option to work independently or in pairs or triads. As students are building, walk through the garden to ensure they're working safely, and provide guidance and support to those who need it. **(15 min.)**

**4. Making Signage:** Encourage students who finish early to make a welcome sign for the beneficial insects in the garden, such as "Make Yourself at Home" or "Help Yourself to the Flowers!" **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- Ask yourself: *Was I safe and respectful in the garden today?*

### Check for understanding

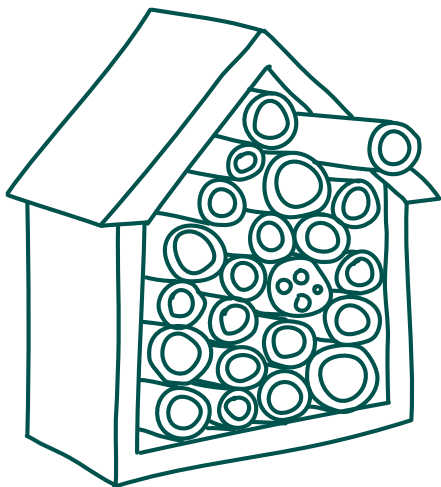
- *Why is it important for living creatures to have a habitat?*
- *How does it benefit us to create a home for the living creatures in our garden?*
- *What did you include in your home that you think will attract insects?*

## ADAPTATIONS

**Large-Scale Variation:** If you have permission at your school to create a more permanent structure, your group can create an Insect Hotel! Prepare by stacking wooden pallets and/or cinder blocks horizontally in your designated area. Then, during class time, have students stuff materials into various parts of the structure.



**Mason Bee Extension:** To make mason bee hotels, have students, supervised by adults, take turns drilling holes into wood blocks. The holes should be 6" deep and 5/16" wide.



**Insect Food Extension:** Bring in reference materials showing what different insects eat, and then invite students to gather insect food for their insects and place it in or around their homes.

**Take-Home Extension:** Give each student a toilet paper roll, and invite them to build a small insect home inside it to take home to increase insect habitats around students' homes.

**Follow-Up:** A month after building insect homes, have students perform a census, going around to the different insect homes to see who has taken up residence. Have students identify and count each living creature and then create a class chart.

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

### **NGSS LS4.D**

Biodiversity and Humans

There are many different kinds of living things in any area, and they exist in different places on

land and in water. (2-LS4-1)

### **NGSS K-2.ETS1.B**

Developing Possible Solutions

Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people (K-2-ETS1-2)

# How To Build An Insect Home

## STEP 1

Find a good spot

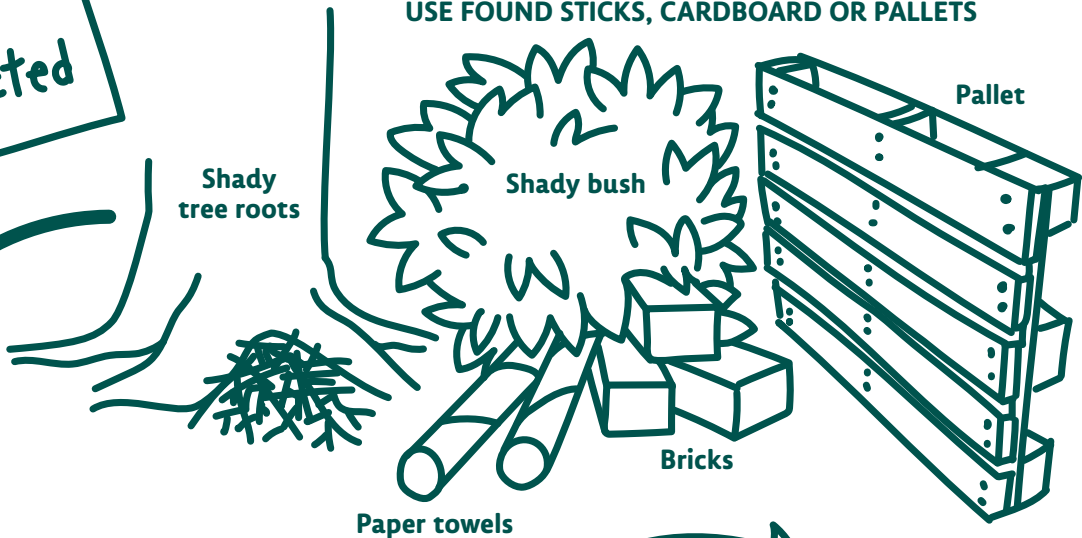
- cool
- moist
- shady
- protected



## STEP 2

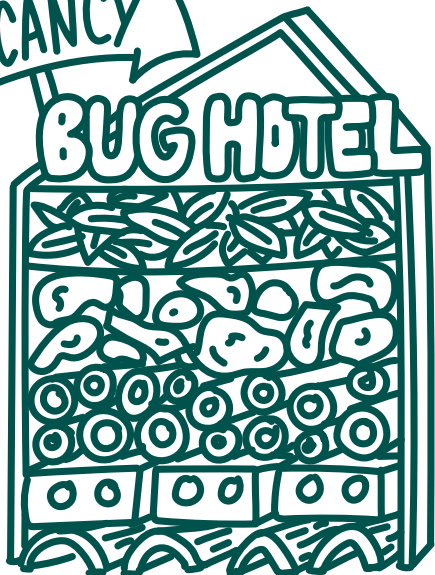
Create a structure

USE FOUND STICKS, CARDBOARD OR PALLETS



## STEP 3

Fill with gathered materials



DEAD WOOD & ROTTING BARK | Where beetles, centipedes, spiders, and woodlice love to be



HOLLOW STEMS | For solitary bees



STONES & TILES | Cool, moist place for newts and frogs



DRY DEAD LEAVES | Warm place to burrow



The background of the page is a light gray color with a repeating pattern of various fruits and vegetables. The items include watermelon slices, lemons, carrots, broccoli, grapes, and other produce, all rendered in a simple, line-art style. A large white circle is centered on the page, containing the main title.

# Third Grade

**LESSONS**

# All in for Applesauce

**THEME:** LIVING UP TO OUR FULL POTENTIAL

3RD  
GRADE

65  
MIN.

FALL

## ESSENTIAL QUESTION

*How can we pay close attention to our surroundings and one another?*

## LEARNING OBJECTIVES

- ✓ Students will be able to closely observe apples and describe them in detail.
- ✓ Students will be able to articulate how diverse varieties of produce contribute to a flavorful applesauce.

## CONCEPTS

diversity   observation   variety

### *Engaging the Classroom Teacher*

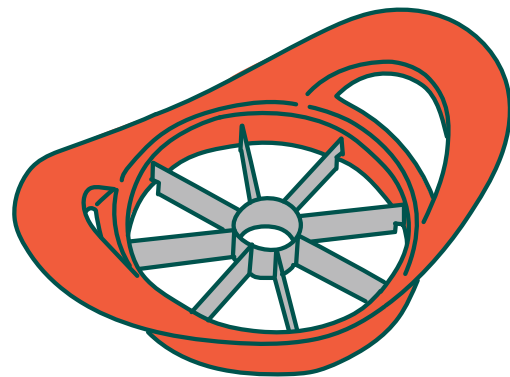
- Prior to the lesson, discuss with the teacher whether you are able to come back in the afternoon for the tasting, if you won't have enough time for the applesauce to sufficiently cook down. Adjust your lesson and plan accordingly.
- During Action Step 4, suggest that the teacher circulate through the room to help students fill out their worksheet.

## LESSON DESCRIPTION

In this lesson, students test their close observation skills by studying one apple and then trying to identify it among other apples. They then have a taste test of homemade applesauce.

## MATERIALS

- 1 apple of varying varieties for each student (or each pair of students if you have a large class)
- Applesauce Ingredients (see recipe below)
- 4 bowls
- Pot
- Hot plate
- Extension cord
- Flexible cutting mat for each group
- Long wooden spoon
- Potato masher (or immersion blender, if you have one)
- All in For Applesauce Recipe Worksheet for each student (p. 314)
- Colored pencils or pens for all students



## PREPARATION

- › Divide the apples into bowls for each group of three students.
- › Set up a station where you can plug in the hot plate, and small groups of students will be able to gather around to make applesauce. Have a couple of cutting mats and apple corers set out for students to use.

- › Have a couple of apples already sliced and ready to start cooking to help the process along. No need to peel them.
- › Write the following prompt on chart paper or a whiteboard where all students can see: “Diverse varieties of apples contribute to a flavorful applesauce. How do diverse people contribute to a vibrant community?”

## Applesauce

**Yield:** 34 servings, ¼ cup

10 apples of assorted varieties  
 Juice of 1 lemon (about 2 tablespoons; optional)  
 1 teaspoon–1 tablespoon cinnamon, to taste  
 Pinch of salt  
 1 cup of water, if needed

- Core and chop apples into large chunks (you don’t need to peel them).
- Add all ingredients into a large stockpot and bring to a boil. Once boiling, reduce to a low simmer, cover the pot, and stir occasionally until apples are very soft, approximately 40–50 minutes.
- Let cool slightly and then use a potato masher, or immersion blender if you have one, to achieve desired consistency.

### ACTION STEPS

**1. Hand-Washing Break:** Have a couple chopped apples with ¼ cup of the water already cooking during this time to get a head start. **(5 min)**

**2. Sensory Observation:** Divide students into groups of three, and pass out an apple to each group. Ask students to observe closely, saying, *What if this apple were the world? I want you to observe every nook and cranny, finding all*

*the mountains, all the cities, and all the farms. Where are the oceans? Where are the rivers? Can you find where we live? Can you find your home?* Give students time to observe their apples. **(5 min.)**

**3. Finding Your Apple:** Say, *You’re going to test your close observation skills by placing your apple back in the bowl with everyone else’s to see if you can find it again.* Give students one more minute to notice any unique markings or other characteristics of their apple. Then have students place their apples back in the bowl. You might want to go around and rearrange some of the apples in the bowls so students can’t easily find theirs again. Announce, *When I say “applesauce” you’re going to find the original apple that you studied so well.* Have students hunt for their apple. **(5 min.)**

**4a. Making Applesauce:** Explain to students that the class will be making applesauce using the different apple varieties they just studied. Say, *Some apple varieties taste sweet and others are tart, so they each contribute something unique to the applesauce.* Call up groups one at a time to contribute to the applesauce. Have each group of students use the apple corer to slice and core one apple, toss it into the pot, and stir or mash the apples. **(15 min)**

**4b. Creating a Visual Recipe:** While the applesauce is cooking, have students complete the All in For Applesauce Recipe Worksheet. If your applesauce still needs more time to cook after the writing activity, you might include one of the extensions below. **(20 min.)**



**5. Tasting:** Pass out a tasting cup of applesauce to each student. Ask students to use adjectives to describe the taste and texture of the applesauce. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What was your favorite part of this activity?*
- *What was challenging?*

### Check for understanding

- *What flavors did you taste in the applesauce?*
- *Why do you think we added many different types of apples to our applesauce, rather than just using one type?*

## ADAPTATIONS

**Garden Setting:** If you have a bountiful crop in your school garden, such as cherry tomatoes, you can adapt this activity so students are closely observing the crop that they can then harvest.

**Upper-Grade Writing Activity:** Have students write responses to the following prompt: Diverse varieties of apples contribute to a flavorful applesauce. How do diverse people contribute to a vibrant community? Before they begin, explain that “vibrant” can mean exciting, strong, and lively.

**Extension:** Have pairs of students sit together back-to-back. Demonstrate how to draw an object based on another person’s description, explaining, *One person will hold the apple and explain it with as much detail as possible. Meanwhile, the other partner will be drawing*

*what they hear the partner describing.* Have students try the activity, then switch apples with other pairs, switch roles, and try again.

**Geography:** Use one apple as a model of the world. Slice it into quarters, and explain that three-fourths of Earth is covered in oceans and seas. Remove those sections. Then take the remaining one-fourth, and explain that that’s the land. Chop that in half, and explain that half of the land is inhabitable, and the other half is uninhabitable. Remove the uninhabitable half. Now take the remaining apple slice, and chop it into fourths. Explain that only one-fourth of our inhabitable land is arable (or farmable). Remove all the other parts. Use this to discuss how precious our arable land is.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

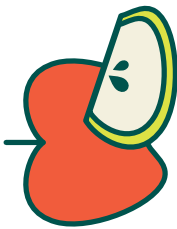
### CCSS.ELA-LITERACY.L.3.5

Demonstrate understanding of figurative language, word relationships and nuances in word meanings.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## ALL IN FOR APPLESAUCE

Recipe Yield: About 8 cups



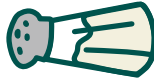
10 apples



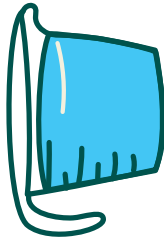
Juice of 1 lemon



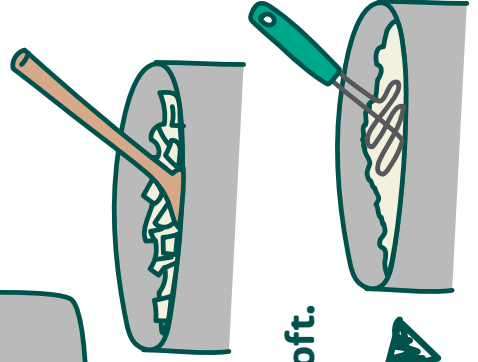
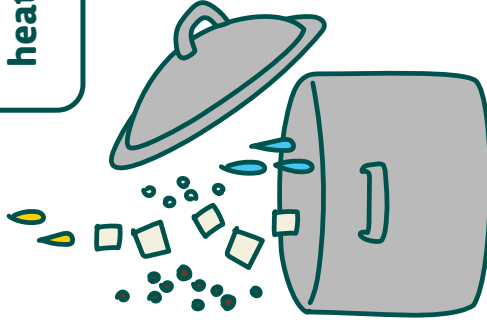
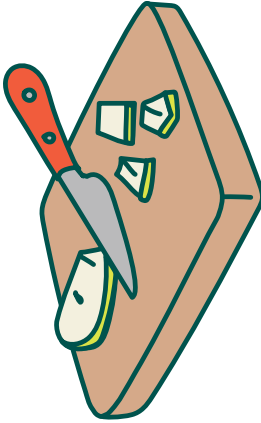
1 teaspoon cinnamon



Pinch of salt



Cup of water



**DIRECTIONS:** Use the word bank to fill in the blank spaces in the recipe.

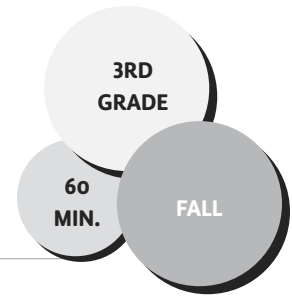
1. Core and \_\_\_\_\_ apples.
2. Add all \_\_\_\_\_ into a large \_\_\_\_\_.
3. Simmer at low \_\_\_\_\_ and \_\_\_\_\_ until apples are soft.
4. Let cool and then \_\_\_\_\_ apples.

**WORD BANK:**

ingredients  
mash  
stir  
chop  
pot  
heat

# Get to the Source

**THEME:** MAKING HEALTHY FOOD CHOICES



## ESSENTIAL QUESTION

*How can we tell the difference between whole foods versus processed foods?*

## LEARNING OBJECTIVES

- ✓ Students will be able to draw connections between common foods and their sources.
- ✓ Students will be able to interpret the information on a nutrition label to identify whole, minimally processed, and highly processed foods.
- ✓ Students will be able to articulate the health benefits of eating whole and minimally processed foods.

## CONCEPTS

nutrition label  
minimally versus highly processed  
product whole Food

### *Engaging the Classroom Teacher*

- During Action Step 1, to save time, suggest that the teacher tape the food images to students' backs as you're explaining the activity.
- During Action Step 2, suggest that the teacher help ensure students are playing by the rules, being respectful, and staying safe.

- During Action Step 6, suggest that the teacher circulate to different groups, answering questions and asking probing questions to help students arrange their processed food spectra.

## LESSON DESCRIPTION

In this lesson, students play a game to identify foods and match them to their sources. They then learn the definition of minimally versus highly processed foods and, in groups, apply that understanding to sort various food products that share an original, whole food source. This lesson can be taught in conjunction with lessons Let's Jam and Tortilla Time.

## MATERIALS

- Tape or glue
- Matching Food Source Cards (pp. 320–323)
- Sample Nutrition Label
- 5 sets of Processed Spectrum Sets (pp. 324–328)
- 5 zip lock bags (or other container) to hold food source sets
- 5 pieces of chart paper (1 for each group)

## PREPARATION

- › In leading this lesson, remember to emphasize inquiry around food and not judgment on food choices.
- › Photocopy and cut out Matching Food Source Cards.

- › Photocopy the Sample Nutrition Label of peanut butter, or find another food specifically for your students.
- › Photocopy and cut out Processed Spectrum Sets, and put each set into a zip lock bag.

## ACTION STEPS

**1. What Food Am I?:** Have students gather in a circle. Explain, *I'm going to tape a picture of a food onto each of your backs. Then we're going to play a game called "What Food Am I?" where we have to ask each other yes/no questions to figure out what we have on our backs. For example, I could ask "Am I fruit?" Or "Do I come in packaging?" Or "Am I spicy?" Could I ask "What color am I?"* (No, because that's not a yes/no question). Tape a food image to students' backs, making sure their match is in the mix. Remind students to keep the foods they see on their classmates' backs a secret and that the game isn't fun if we give away the food without the person guessing. Start the game and have students walk around the room, asking each other yes/no questions. If a student guesses their food, the student can move the card onto their front and continue answering questions for other players. Model with the classroom teacher as your partner before the game starts. Give students about five minutes to play and then call them back into a circle. **(10 min.)**

**2. Connecting to the Source:** Ask, *What did you notice about the different types of food pictures we had? Say, You might have noticed that some of you were whole foods, like a fruit or vegetable, and some of you were food products, things to eat that you make from whole foods. A whole food is food in its natural state that has been processed as little as possible,*

*like a tomato, a berry, or corn, whereas a product is something you make with a whole food, like jam or french fries, and it might come in packaging if you buy it at the store. Explain that now that they know what foods they have, they're going to stand up and try to find their match. Each food product has a whole food source match. For example, orange juice would match to an orange. Tell students once they find their match they should return to the circle to sit with their partner. Give students about five minutes or until everyone is back in the circle, and have pairs share how they know they're a match. **(10 min.)***

**3. Defining Processed Foods:** Say, *Raise your picture up in the air if you could be taken straight from a garden or farm. You're all the whole foods! Raise your picture up in the air if a person has to do some work to make you. You're all the food products or processed foods! What does it mean to be processed?* Field responses from students, and get to the idea that a processed food has been changed from its original form. Explain that people process foods by mashing them, cooking them, or blending them with other ingredients. This makes the food more convenient to eat, helps the food last longer, or changes the food's taste or texture. Explain, *There is a whole spectrum of food products from minimally to highly processed foods. Foods that are minimally processed are still really close to their original food source. For example, applesauce can be as simple as apples cut up and cooked down with nothing else added or maybe just a little cinnamon, lemon, and sugar. But the more original food is changed, and the more ingredients that are added to it, the more highly processed it becomes. **(5 min.)***

**4. Reading Nutrition Labels:** Show students a copy of the nutrition label for peanut butter. Explain that the first ingredient listed is what the product has the most of, and the ingredients go in decreasing order. Say, *The more ingredients you see listed there, the more highly processed the product is. Also, if you see ingredients like “diglycerides,” that you don’t recognize or have trouble pronouncing, that probably means it’s a chemical ingredient to change the color or texture or a preservative to make the product keep on the shelf longer.* **(5 min.)**

**5. Modeling:** Show students one of the Processed Spectrum Sets, and explain that they’ll arrange the pictures of foods from whole, to minimally processed, to highly processed. While modeling your thinking process for the class, demonstrate how students can go about this. Explain, *You can think of it by asking how many steps you think it would take to make that food or how many ingredients you would need to add. Foods with the most steps or ingredients go toward the end, and foods with the least steps or added ingredients go toward the beginning.* For example, if doing the oat spectrum, say, *These plain oats look the most like something that would come off of a plant. And then I know it’s pretty easy to make oatmeal. You just add water or milk and heat it, so I think that would be the next one. I think this cereal doesn’t really look like oats anymore. People probably had to use a machine to make it, so I think that’s the most processed thing. I’ll put it on the end.* Explain to students that there’s no right or wrong, as long as they have an explanation for their order.

**6. Sorting Processed Spectrum:** Have groups display their spectra for the class. Then have

students circulate through the room, observing other groups’ arrangements and writing questions or comments on Post-its that they add to each spectrum. Then have each group share their spectrum and answer any questions that arose. **(15 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did you work together with classmates?*
- *What parts of the activity were frustrating or challenging? Can you or did you come up with a solution?*

### Check for understanding

- *Why is it important to distinguish between minimally and highly processed foods?*
- *How can you tell if something is a whole food?*
- *How can you tell if something has been processed?*
- *How did your group decide that a food was more processed than another food?*

## ADAPTATIONS

**Ingredient List Variation:** Play a version of the game in which half the students have a food product and the other half have ingredients lists, and students must find which product they think they are based on their ingredients list.

**Fewer Materials Variation:** Instead of cutting out Spectrum Sets, you can pass out each page of images, and have groups order them with pencil. Or have groups cut them out to create the poster.

**At Home:** Have students record snacks and meals they eat during the week, and label where each food falls on a whole versus highly processed spectrum.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

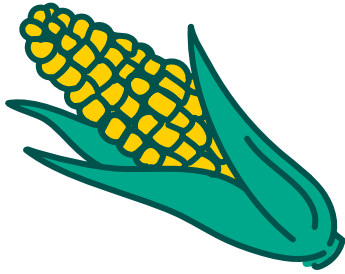
### **CCSS.ELA-LITERACY.RI.3.9**

Compare and contrast the most important points and key details presented in two texts on the same topic.

## **PEANUT BUTTER INGREDIENTS LIST:**

**Roasted peanuts and sugar, contains 2%  
or less of molasses, fully hydrogenated  
vegetable oils (grapeseed and soybean),  
mono and diglycerides, salt**

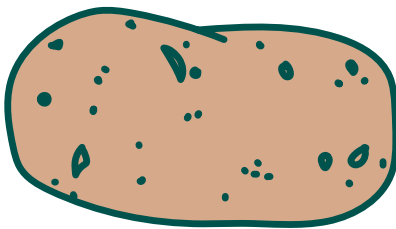
# Matching Food Source Cards



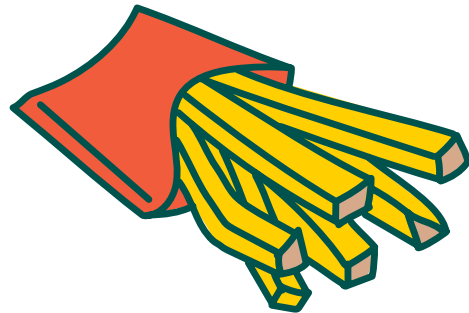
Corn on the cob



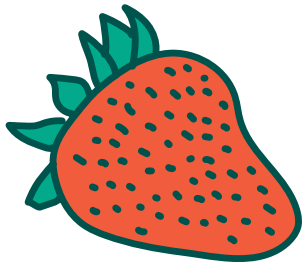
Popcorn



Potato



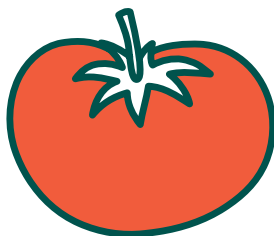
French fries



Strawberry



Strawberry jam



Tomato



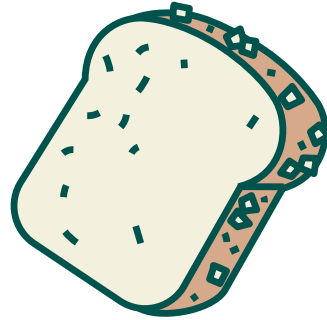
Ketchup



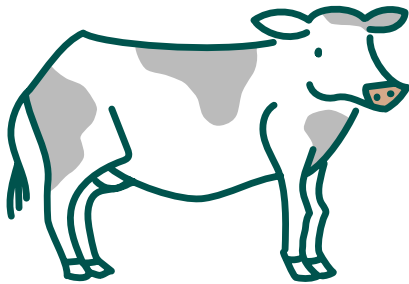
# Matching Food Source Cards



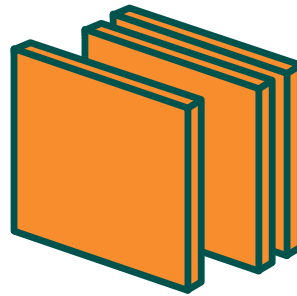
Wheat



Bread



Cow



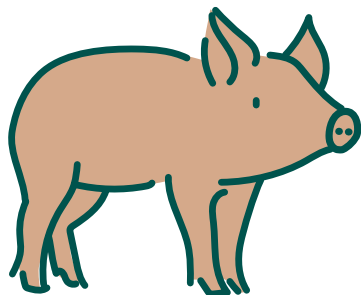
Cheese



Oats



Granola bar

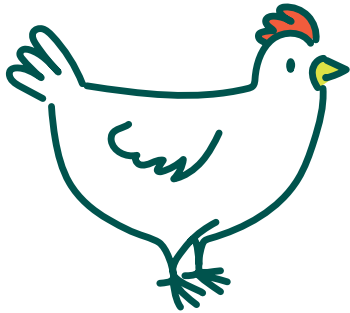


Pig

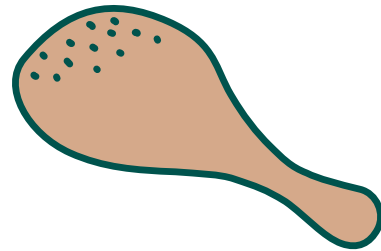


Bacon

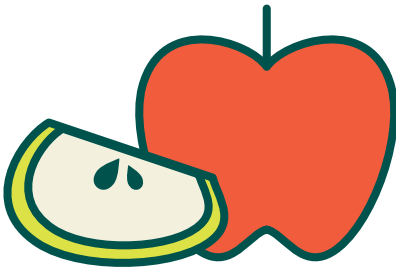
# Matching Food Source Cards



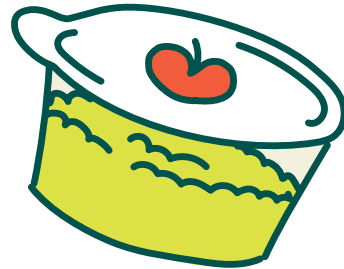
Chicken



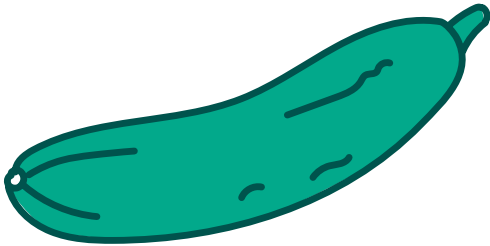
Drumstick



Apples



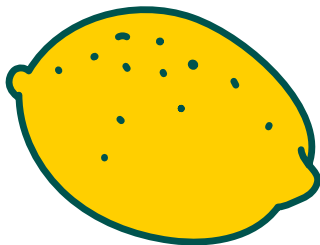
Applesauce



Pickle



Cucumber



Lemon

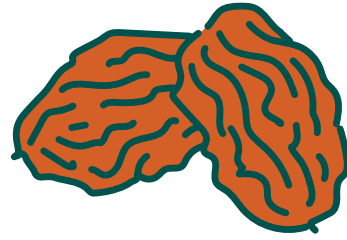


Lemonade

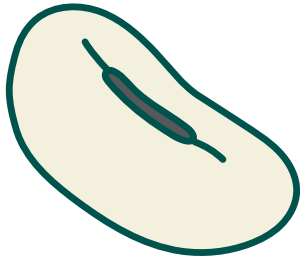
# Matching Food Source Cards



Grape



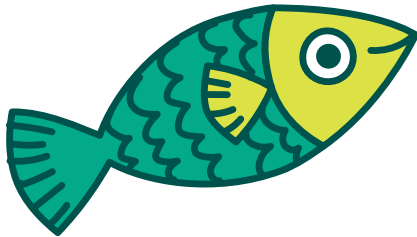
Raisins



Soy bean



Soy sauce



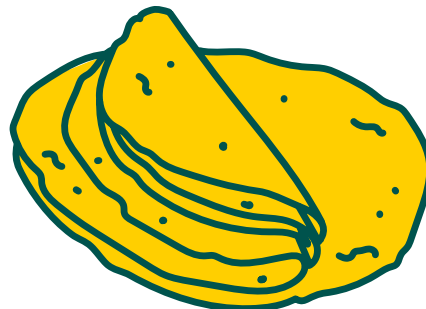
Fish



Sashimi

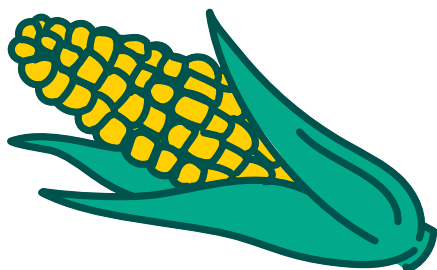


Corn



Corn tortillas

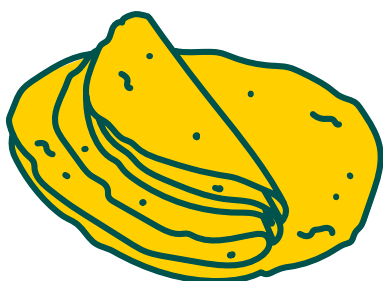
# Processed Spectrum Sets



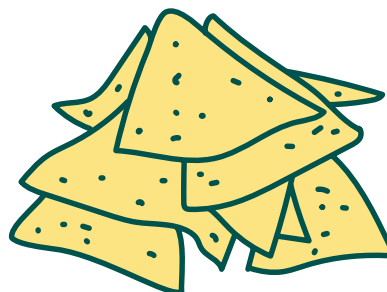
Corn on the cob



Canned corn



Corn tortillas

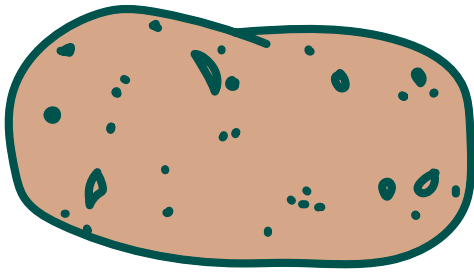


Corn chips

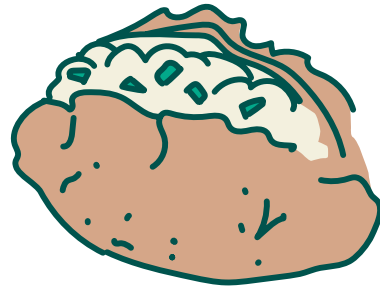


Soda

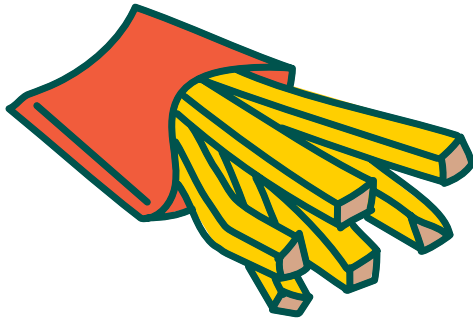
# Processed Spectrum Sets



Potato



Baked potato



French fries



Potato chips

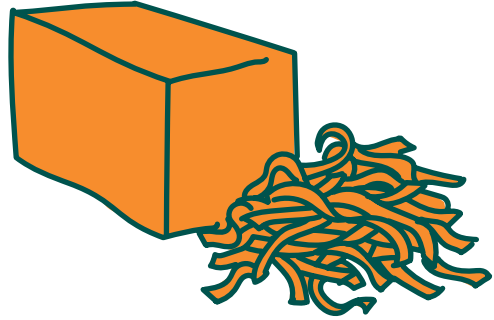


Sour cream and onion potato chips

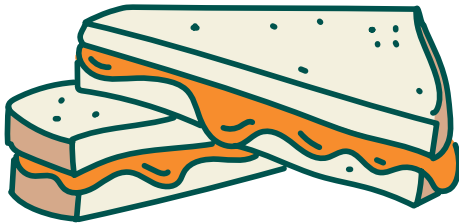
# Processed Spectrum Sets



**Cheese**



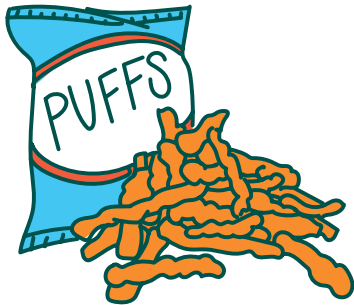
**Grated cheese**



**Grilled cheese sandwich**

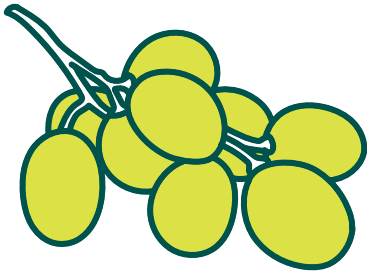


**Cheese dip**

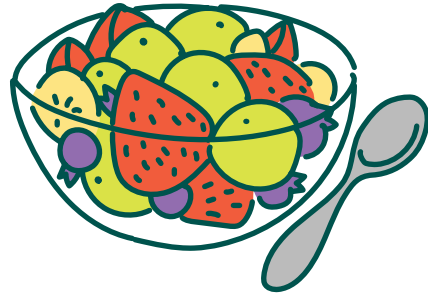


**Cheese puffs**

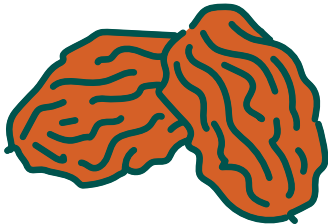
# Processed Spectrum Sets



Grapes



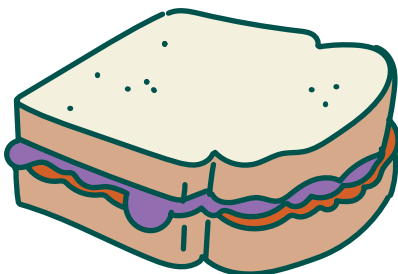
Fruit salad



Raisins



Grape jelly

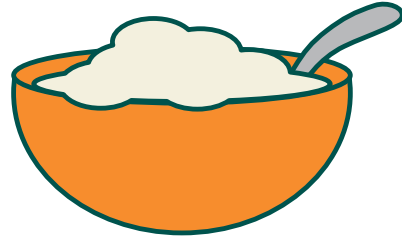


Peanut butter and jelly sandwich

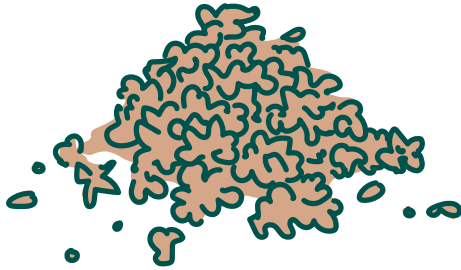
# Processed Spectrum Sets



Oats



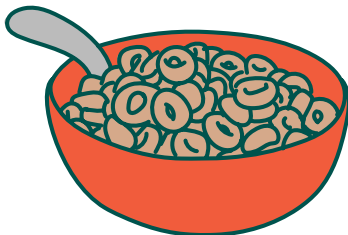
Oatmeal



Granola



Granola bar

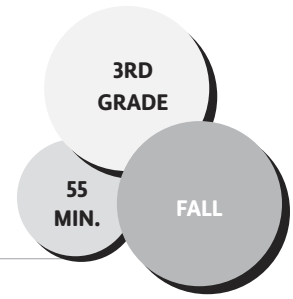


Oat cereal



# That's Life!

**THEME:** EXPLORING THE ECOLOGY OF FOOD



## ESSENTIAL QUESTION

*How do all living things grow and change over time?*

## LEARNING OBJECTIVES

- ✓ Students will be able to identify different stages of a plant's life cycle.
- ✓ Students will be able to draw the life cycle of a plant.

## CONCEPTS

life cycle   mature   pollination   sprout

### *Engaging the Classroom Teacher*

- Prior to the lesson, discuss with the teacher whether their class would benefit from starting and ending in the classroom or meeting outside.
- Ask the teacher what prior knowledge students might have about pollination and the plant life cycle.
- During Action Step 5, suggest that the teacher encourage students to add detail to their drawings on the worksheet.

## LESSON DESCRIPTION

In this lesson, students go on a life cycle scavenger hunt in the garden after exploring the different stages of a pumpkin's life and reading a book depicting this life cycle. In groups, they find samples of each stage of a plant's life cycle and draw the sequence.

## MATERIALS

- One of the following: *Pumpkin Circle* by George Levenson or *The Tiny Seed* by Eric Carle

### For each student:

- Life Cycle Scavenger Hunt Worksheet (p. 333)
- Clipboard
- Pencils

### For each group of 3–4 students:

- Pumpkin Life Cycle Cards (p. 332)
- Tray, basket, or large yogurt container for collecting samples

## PREPARATION

- › Scout around the garden, and identify plants that currently display several different life cycle stages.
- › Photocopy and cut out Pumpkin Life Cycle Cards.
- › Photocopy Life Cycle Scavenger Hunt Worksheet for each student.

## ACTION STEPS

- 1. Engage:** In the garden, gather students in a circle, and ask them to turn and talk to a

neighbor about what they remember doing when they were a baby. Then ask, *What can you do now that you couldn't do when you were a baby? What things will you be able to do when you get even older?* Explain that just like humans, plants grow and change over time and are able to do different things at different stages of their lives. **(5 min.)**

**2. Sorting Pumpkin Life Cycle:** Pass out the Pumpkin Life Cycle Cards to groups of students, and ask them to put the cards in order. Circulate through the space, observing the order and asking questions to check for understanding. **(5 min.)**

**3. Reading:** Say, *We're going to read a book about the life cycle of a plant to see if we put the pictures in the right order.* Read *Pumpkin Circle*, pausing throughout and encouraging students to rearrange the cards based on the information they learn from the book. **(10 min.)**

**4. Scavenger Hunt:** Say, *You'll now go on a scavenger hunt throughout the garden and find an example of a plant species at each stage of its life.* Explain that they may not find all their examples from the same plant species, and that's OK. Remind them that they shouldn't pick something if there aren't more than ten still growing in the garden. Tell students the signal you'll use to gather them back to you and then pass out the Life Cycle Scavenger Hunt worksheet on clipboards, and pass out the containers for collecting samples. **(10–15 min.)**

**5. Drawing:** Gather students back together, and have them lay out the samples they collected in the order of the plant's life cycle, just

like they did with the pumpkin cards. Have them draw the different samples on their Life Cycle Scavenger Hunt Worksheet. If it's cold outside, or students need to regroup after the scavenger hunt, consider bringing the samples back into the classroom, so students can focus on creating quality drawings sitting at their desks. **(15 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- Ask yourself: *Was I safe and respectful in the garden today?*
- Ask yourself: *Did I take turns and support my group members?*

### Check for understanding

- *What plant did you find?*
- *Was it challenging to find your samples at each life cycle stage? What clues did you look for?*
- *Why does the life cycle begin and end with seeds?*
- *How are plants' and animals' life cycles similar?*

## ADAPTATIONS

**Decomposition Extension:** If you have a fruiting plant from the summer, such as a pumpkin or tomato, allow it to stay in the garden throughout the fall and winter, and have your class periodically check on it, keeping a log of their observations.

**Seed-Saving Extension:** Grow some plants out to seed, such as by letting a carrot, kale, or broccoli plant flower. Then have students collect all the seeds from the fall garden, putting

them in separate envelopes and labeling them to take them home to plant next season.

**Health Connection:** Have students draw pictures of themselves at different stages in their own life cycles (i.e., as a baby, as a kindergartner, etc.). Discuss how eating well has helped them grow and can continue to help them grow over time.

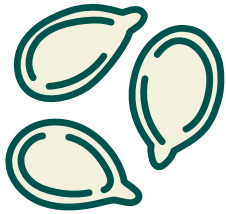
## **ACADEMIC CONNECTIONS**

Next Generation Science Standards, Life Science Disciplinary Core Idea

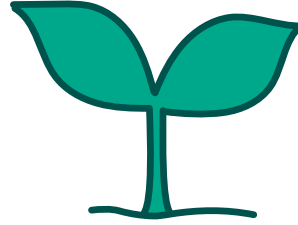
### ***NGSS.LS1.B Growth and Development of Organisms***

Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.

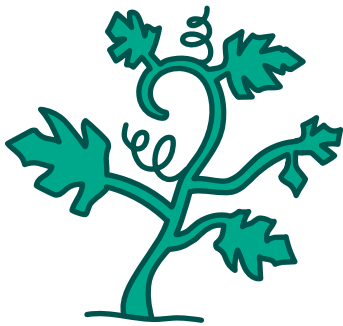
# Pumpkin Life Cycle Cards



seeds



sprout



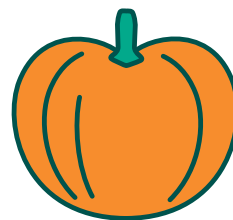
vines



flower



green baby  
pumpkin



adult  
pumpkin

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Life Cycle Scavenger Hunt Worksheet

Directions: In the circles below, draw a picture of your plant at each stage of its life cycle.

dead  
plant

seed

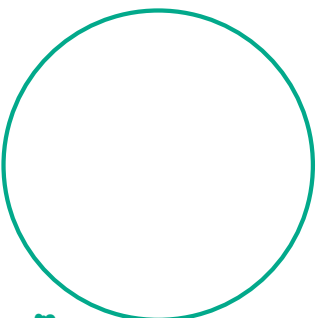
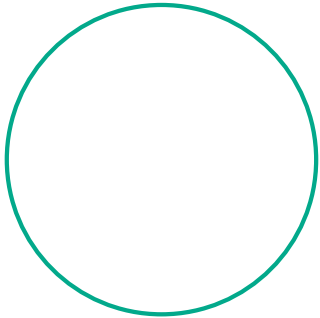
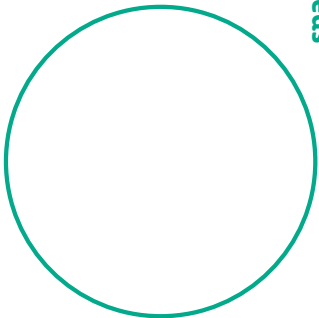
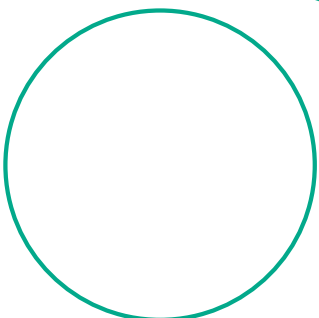
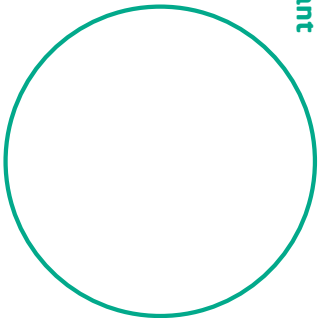
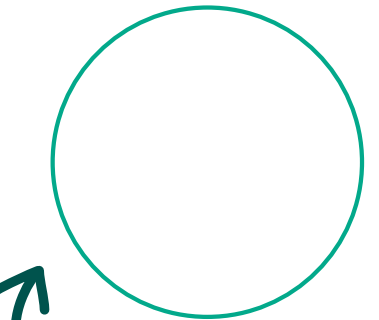
baby  
sprout

plant that  
has new seeds  
or fruit

## LIFE CYCLE

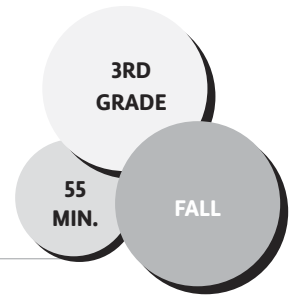
grown plant  
with leaves  
and vines

plant with a  
dead flower  
(because it has  
been pollinated)



# Worm Bin Wonders

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*How do decomposers play an important role in growing food?*

## LEARNING OBJECTIVES

- ✓ Students will be able to identify parts of the worm anatomy.
- ✓ Students will be able to construct a worm bin.

## CONCEPTS

anatomy   decomposition   digestion  
gizzard   worm castings

### *Engaging the Classroom Teacher*

- Ask teachers want beforehand whether they want a worm bin established for their class.
- Ask whether students are responsible enough to drill or whether you should pre-drill the holes.
- During Action Steps 3 and 4, suggest that the teacher support students who are exploring worms while you help students set up the worm bin.

## LESSON DESCRIPTION

In this lesson, students learn about the decomposition of food waste by observing worms, identifying parts of their anatomy, and working collaboratively to build a worm bin.

## MATERIALS

- 10-gallon opaque plastic storage bin
- Old newspaper
- Spray bottle filled with water
- 1 pound of Red Wiggler worms (if you have a friend with a worm bin, ask for some starter worms. If not, you can often purchase Red Wigglers in garden centers or even buy them online.)
- Quart container of garden soil
- Food scraps
- Cordless power drill with drill bit
- Paper towel for each student
- Permanent marker
- Worm Anatomy Poster (p. 338)
- Worm Anatomy Challenge Cards and Worm Anatomy Checklist (pp. 339-340)
- Chart paper (optional)
- Magnifying glasses (optional)
- Coffee stirrers for moving worms (optional)

## PREPARATION

- › If you are new to worm composting, research how to build and maintain a worm bin prior to teaching this lesson.
- › Collect approximately one quart of raw fruit or vegetable food scraps, perhaps from lunch or snack.
- › Use a permanent marker to mark and space out dots to drill holes along your bin's lid and the top third of the sides. Make sure there are enough dots so that each student can drill one hole.
- › Dampen paper towels to hand out to groups

observing worms.

- › Draw a KWL chart on the board or chart paper (see example).
- › Photocopy or display Worm Anatomy Poster. If you have access to a laminating machine, laminate copies for students to use as they're observing worms.

WHAT WE . . .		
Know	Want to Know	Learned

## WORM FACTS

### Worms . . .

- › Have no eyes but can sense light and move away from it
- › Can eat half their weight in food each day
- › Have both male and female organs
- › Don't have lungs, so they breathe through their skin
- › Will die if their skin dries out
- › Secrete a liquid that makes burrowing underground easier and keeps them moist
- › Have tiny hairs called setae on each body segment that help them move through the soil
- › Can likely regenerate their tail if it's cut off close to the end, but they can't grow back major organs such as the heart or clitella if cut in half
- › Are cold-blooded, so are the same temperature as their environment
- › Have an average lifespan of two years but can live up to eight years

## ACTION STEPS

**1. Connecting to Prior Knowledge:** Ask, *What do you typically do with food scraps?* Discuss whether students throw them in the trash, or whether they use compost bins. Ask, *Do you know that worms are excellent at recycling?* See if students can explain how. Ask students to share with a partner what they know and what they want to know about worms. Display a KWL chart on the board, and as students share with the class, fill in the "Know" and "Want to know" columns of the chart, taking the opportunity to dispel any myths and/or flag any questions that arise for later research. You don't need to be a worm expert! **(5 min.)**

**2. Explain Worm Bin Setup:** Explain that today you'll be building a worm bin that the class can use to process its food waste into excellent compost for the garden. Show the class the materials you'll use for creating the worm habitat. Explain, *Shredded newspaper is the worms' bedding, but they eat it too! We use the spray bottle to keep the newspaper nice and moist, like a wrung-out sponge. They can't have it too wet or too dry because worms breathe through their skin and can actually drown! We add soil from the garden because it helps their digestion. We'll also add food scraps, making sure that we bury it under the bedding so that we don't also attract fruit flies and other pests. Worms aren't crazy about food like onions and citrus. Do you know that worms can eat half their weight in food in a day?* **(5 min.)**

**3. Explain Worm Observation:** Explain that you're going to pass out worms for students to observe at their tables, while other students

begin work on the worm bin. Then groups will switch tasks. Ask, *How should we treat the worms?* Discuss being gentle. Say, *Let's remember to be observers. So we're mostly using our eyes to observe different parts of the worms. See how many body parts you can recognize.* To give students a purpose while they are observing the worms, pass out the Worm Anatomy Checklist, telling them their challenge is to observe every body part on the list. You can frame this as though they are doctors performing an annual checkup! Display or pass out copies of the Worm Anatomy Poster as well. Tell students that as they're observing, they should also think of new questions they have for the KWL chart. Pass out a small handful of worms on dampened paper towels to half your students to observe. **(5 min.)**

**4. Setting Up Worm Bin:** While half your students are observing worms, have the other half finely shredding newspaper and call them up one at a time to drill a hole into the bin (with help from an adult!), add their shredded newspaper, and spray with water. Be sure that each student only sprays a couple times. Remind students that we don't want our worms to drown! If you already have an established worm bin, this rotation can be about students maintaining the worm bin with fresh bedding, food, and hydration. **(15 min.)**

**5. Finishing Worm Bin:** Once groups have both observed worms and helped establish the worm bin, have the class watch as one student adds the worms beneath the bedding, another student sprinkles the container of soil, and another buries the food scraps under the bedding. If the teacher has popsicle sticks or another method to randomly generate student volunteers, use them! Have all students wash

their hands, clean the workspace, and return to their seats. **(10 min.)**

**6. Worm Anatomy Challenge:** Show students a diagram of a worm, and ask them to share body parts they found. Then explain that there are still other body parts inside that we can't see. Shuffle the Worm Body Part Cards, and hand them out to groups of students. Challenge students to arrange the cards in the order of a worm's body parts (head at one end, then crop, gizzard, intestine, and anus at the other end). Now use this model to explain how worm digestion works: *Soil and organic matter, like decaying plants and food scraps, are ingested by the worm, temporarily stored in the crop, and then get broken down with help from the grit, or small stones, in the gizzard. They travel through the intestines and are excreted as rich, beautiful compost full of good nutrients.* When students have the cards in the correct order, have them wiggle the cards together as one worm! **(10 min.)**

**7. Reviewing Responsibilities:** If this class is keeping the worm bin in their room, explain to students that they'll be responsible for keeping their worms healthy, happy, and fed each week. Explain the role of the Worm Lifeguard who rotates each week. Say, *You'll want to check your worms' bedding and spray water if it's too dry, or add more newspaper if it's too wet. Start by feeding them once a week, but be sure to observe how much they've eaten since you last fed them, and adjust the amount accordingly.* **(5 min.)**



## REFLECTION

Have students discuss the following questions in small groups, then share with the class: (5 min.)

### Social and emotional learning

- *What worked well in making our worm bin as a class? What could we have done better?*
- *Ask yourself: Did I take turns and help my classmates during the activity?*
- *What's one way you helped a classmate today?*

### Check for understanding

- *What's one new thing you learned about worms today? (Add responses to L column of KWL)*
- *How do worms digest their food?*
- *How do worms help us grow our food?!*
- *How will you be taking care of your worms each week?*
- *What do you think we will see when we observe the worm bin in one week?*

## ADAPTATIONS

**Literacy Extensions:** Have students create a how-to brochure of how to care for the worm bin. Students can also keep a weekly log in which they take notes on what they observe.

**Song:** Teach students the song “Gusano (I am a Worm)” by the Bungee Jumpin’ Cows.

**Thought Experiment:** Explain to students that there are over 1 million worms in the size of a football field. Ask them to imagine what our earth would be like without earthworms tunneling in the soil and decomposing organic matter into rich worm castings. Have students draw a picture of what our world would be like without worms.

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

### NGSS LS.4.D

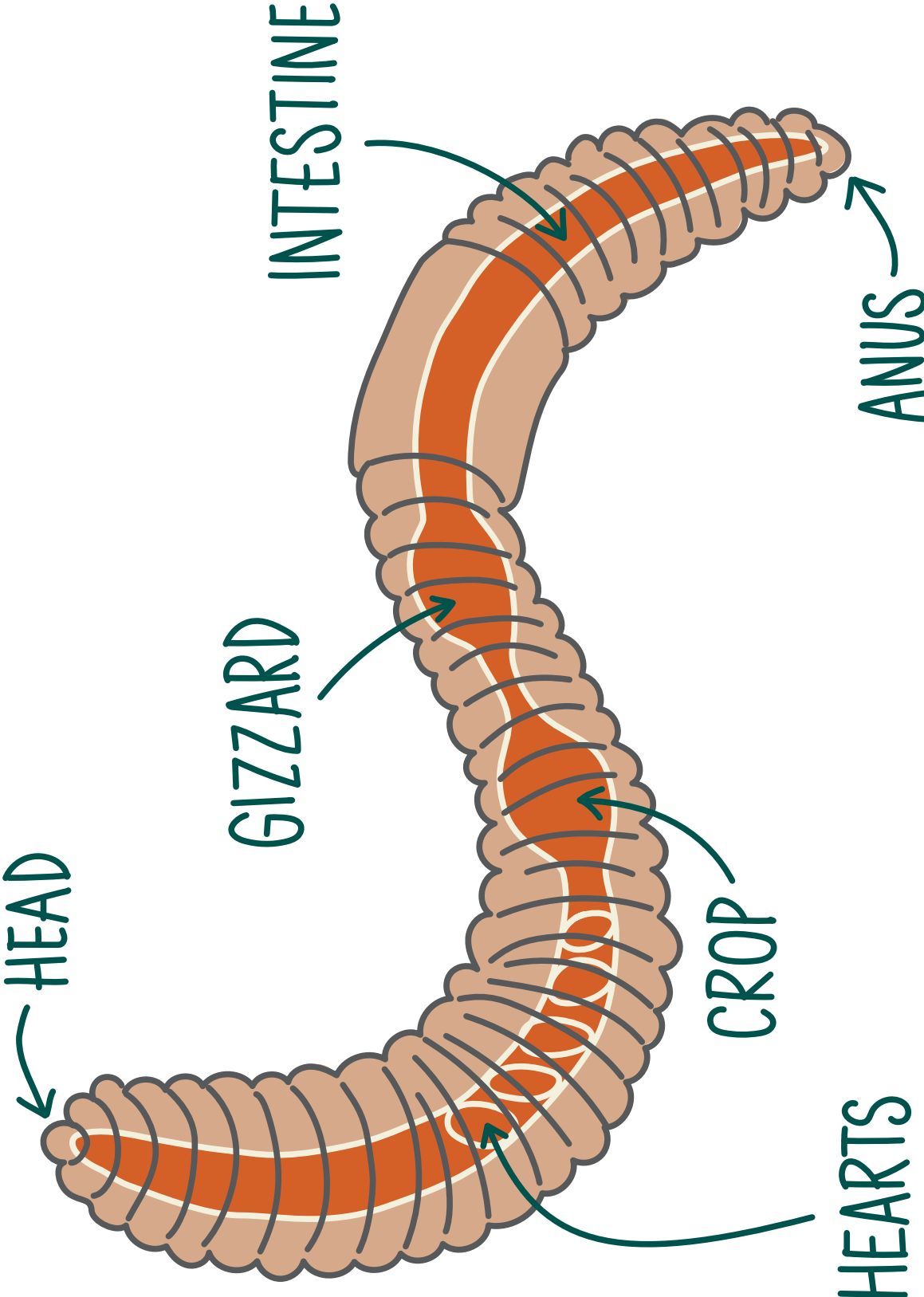
Populations live in a variety of habitats, and change in those habitats affects the organisms living there.

English Language Arts Common Core State Standards

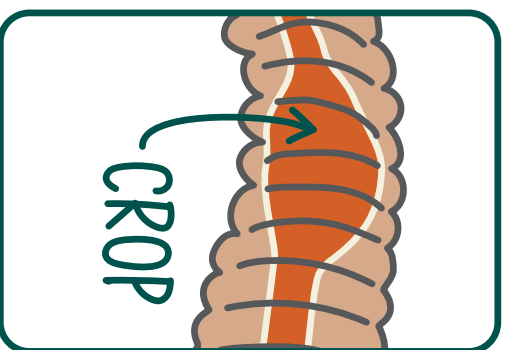
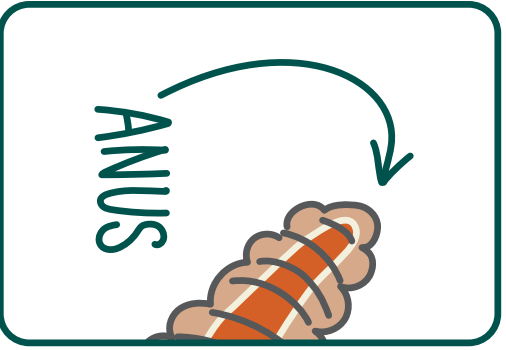
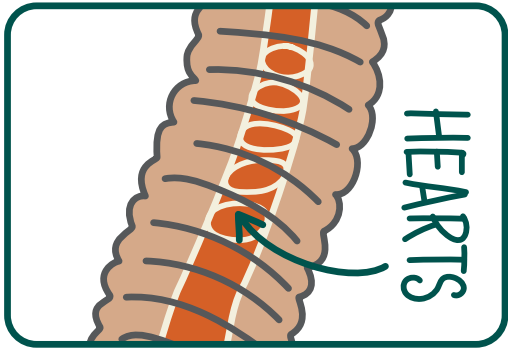
### CCSS.ELA-LITERACY.SL.3.1

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 3 topics and texts*, building on others’ ideas and expressing their own clearly.

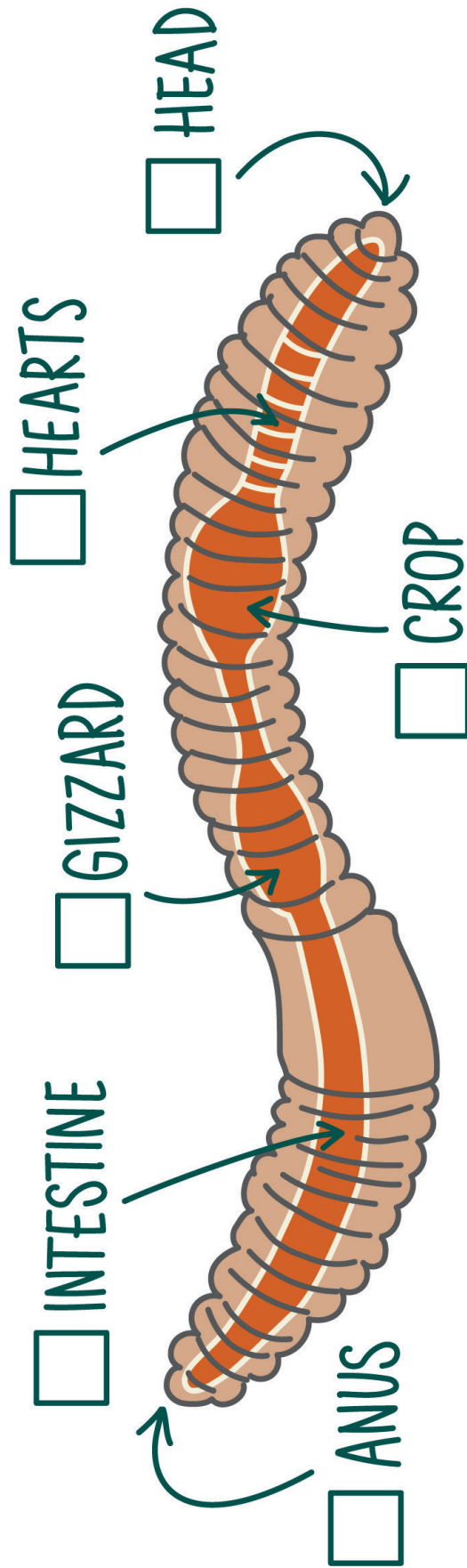
# Worm Anatomy Poster



# Worm Anatomy Challenge Cards



# Worm Anatomy Checklist

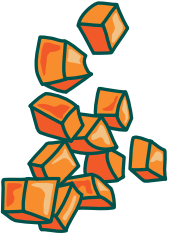




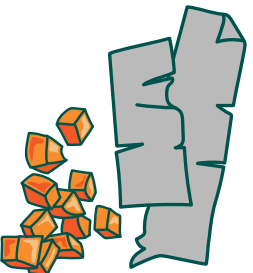
# WORM LIFE GUARD CHORE CHART

**STEP 1:** Feed worms about a cup of food

- Raw fruit and veg
- Small pieces decompose quickly

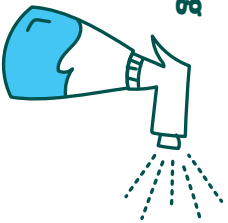


**STEP 2:** Cover food with bedding



**STEP 3:** Check the moisture of the bedding

- If very dry, spray lightly
- If wet, add more bedding



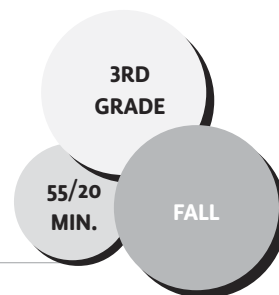
WEEK	NAME(S)

# Quick, Pickle That!

**THEME:** PREPARING HEALTHY FOOD

55 min. (Day One)

20 min. (Day Two)



## ESSENTIAL QUESTION

*How can we preserve fresh fruits and vegetables?*

## LEARNING OBJECTIVE

✓ Students will be able to collaborate to make quick pickles.

### CONCEPTS

collaboration food preservation pickling

### *Engaging the Classroom Teacher*

- Prior to the lesson, discuss with the teacher the best strategy for breaking up the class into groups of 4–6.
- Determine the best day to return for the pickle tasting, approximately one week after the activity (it should take about one week for the pickles to ferment). Be sure to eat the pickles within three weeks after making them.
- During Action Step 6, suggest that the teacher help groups who are struggling to agree on their flavors.
- During Action Step 7, suggest that the teacher circulate through the room to ensure teams are following directions.

## LESSON DESCRIPTION

In this lesson, students explore the role of

preservation in preparing food. In teams, they make customized quick pickles.

## MATERIALS

- Jar of store-bought sliced pickles
- Toothpicks
- 2–3 different ingredients from each column in the chart
- Pitcher of pickling brine (see recipe below)
- Liquid measuring cup
- Wide-mouth funnel
- Masking or painter's tape
- Permanent marker
- Materials for cleanup
- Blank Recipe Cards for each student (p. 346)

### Tray with the following for each group of 4–6 students:

- Half-pint jar with lid
- Several cutting mats
- Several knives
- Wide-mouthed funnel
- Bowl of produce you're pickling—from the chart (you may opt to have different groups prepare different vegetables, or keep it simple with one type of vegetable and allow for variety through the use of herbs and spices.)
- Small bowl for gathering herbs and spices
- Container for compost.
- Descriptive Food Words Poster (p. 347; optional)

## PREPARATION

- › Place sliced pickles on a plate, and skewer each with a toothpick.
- › Before class, use the Pickling Brine Ratio to make a brine for the class to use. Allow the brine to cool before handling it with students.
- › Wash the produce.

- › Prepare a small tray of samples of the herbs and spices students will have to choose from.
- › Set up a station at the front of the room with measuring spoons and the various herbs and spices available to students.
- › Photocopy and cut blank recipe cards for students.
- › Check with school staff, and locate a refrigerator where you can store your pickle jars until you meet with your group the following week for Day Two of the lesson (tasting).

## Quick Refrigerator Pickles

**Yield:** About 25 servings, ¼ cup

### Pickling Brine Ratio\*

- 2 cups vinegar
- 2 cups water
- 2 tablespoons salt

- Adjust the brine amounts assuming each half-pint jar will need approximately a ½ cup of brine. Combine ingredients in a saucepan over high heat and bring to a boil.
- Stir the liquid so the salt dissolves, then remove from heat.
- Let cool and then store in an airtight container until ready for use.

### Example of a Savory Pickle

- 1 cup carrots (about 1 ½ medium carrots)
- ½ tablespoon coriander seeds
- 1 garlic clove
- ½–1 cup rice vinegar brine, enough to submerge fruit/veg in jar (an extra ¼ cup)

### Example of a Sweet Pickle

- ¾–1 cup strawberries
- ½ tablespoon honey
- ½–1 cup apple cider vinegar brine, enough to submerge fruit/veg in jar

**Note:** You'll need approximately five cups of produce (one cup for each group). See the table below for ideas of possible pickle ingredients. Consider having two produce options, so half the groups can work on a different main ingredient.

- Prepare fruit and/or vegetables—enough to fit in one ½ pint jar, approximately 1 cup.
- If making a sweet brine, stir honey or sweetener of choice into brine until it dissolves.
- Place half of herbs and seasoning at the bottom of the jar. Fill halfway with the vegetable, add the rest of herbs and seasoning, then add the rest of the vegetable. Pour the prepared brine over ingredients, leaving ½ inch of headroom at the top.
- Wipe down jar rim, and screw on metal top. Refrigerate immediately.
- Remember to eat the pickles within three weeks after making them. Children who are at high risk for food-borne illnesses (those with compromised immune systems) should eat refrigerator pickles within the fresh food guide line time frame of three days.

### POSSIBLE PICKLE INGREDIENTS

Produce	Vinegar (1-to-1 ratio with water)	Herbs and Seasoning
• Carrots	• Apple cider vinegar	• Basil
• Cucumbers	• Rice vinegar	• Coriander seeds
• Green beans	• White vinegar	• Dill flower heads and seeds
• Radishes		• Garlic cloves
• Rhubarb		• Honey
• Strawberries		• Mint
• Summer squash		• Paprika
• Sweet peppers		• Rosemary
• Turnips		
• Zucchini		

## ACTION STEPS

**1. Engage:** Teach students the tongue twister, “Peter Piper picked a peck of pickled peppers.” Ask students whether they’ve ever eaten a pickle. Ask, *When you imagine a typical green pickle, do you know what plant that comes from?* Discuss cucumbers, but also explain that so many other fruits and vegetables can make delicious pickles, like Peter Piper’s pickled peppers. **(5 min.)**

**2. Pickle Tasting:** Give each student a pickle slice on a toothpick, and have him or her taste it. Ask students to describe how pickles taste and if they know what ingredients give pickles their taste. Explain, *For as long as humans have been eating food, they’ve found ways to preserve. Preserving means to make something last longer. For example, berries only grow for a few months in the summer, so people make jam as a way to enjoy the flavor all year long. Pickles are the same. We add vinegar or salt to foods as a way to make them last longer. Pickling foods first began as another way to preserve the summer harvest.* Introduce the vegetable(s) you’ll be using in class. **(5 min.)**

**3. Explain the Activity:** Tell students that today they’re going to make pickles in teams, and they’ll taste all the different teams’ pickles during the next class. Pass a sample of the various herbs and spices around the circle for students to smell, naming each one and having students repeat the name. Explain that in groups they’ll decide on their flavors, chop their vegetables, and add all the ingredients to their jar. Explain that you’ll then come around to help them fill their jar almost to the top with brine. Show them the brining liquid, explaining that it’s equal parts water and vinegar with some dissolved salt. **(5 min.)**

**4. Hand-Washing Break:** Remind students about the importance of cleanliness while cooking and preserving food. **(5 min.)**

**5. Knife Skills Demonstration (5–10 min.)**

**6. Deciding on Flavors:** Split the class into groups of 4–6, and have them discuss and determine which seasoning they’d like to add to their pickles. Consider the following structured way for students to self-select their groups: Designate the four corners of the room to different flavor profiles such as “sweet,” “spicy,” “garlicky,” and “herby,” so students who are interested in similar flavors can group together. **(5 min.)**

**7. Making Pickles:** Pass out trays with supplies to each group. Supervise students while they’re cutting vegetables. While teams are chopping, have one team member from each group come up and shop for the flavoring ingredients. Emphasize that they should take no more than 2 teaspoons of spices and no more than 1 tablespoon of fresh herbs. Once students have packed vegetables, herbs, and spices into their jar, move through the room, pouring the brine over the contents, leaving ¼ inch of room at the top of the jar. Have students seal the jars, and use a permanent marker to write their team name and the date on masking tape to label their jar. **(10 min.)**

**8. Writing the Recipe:** Have students clean up. Pass out recipe cards. Have them write a list of the ingredients they used. Next, as a class, review the directions for making quick pickles. Explain, *These are also called refrigerator pickles because they must be kept in the fridge, which is where I’ll keep them until I see you next!* **(10 min.)**



**Follow-Up:** Next class, have each group share what type of pickles they made. Then have a smorgasbord of pickles to try. Students can use toothpicks to test pickles from each jar. You may want to bring plain crackers as a palate cleanser between pickle tastings. Have students focus on describing the different flavors of the various pickles, rather than whether they liked them. Pass out or display the Descriptive Food Words Poster to give students vocabulary for what they taste. **(20 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did your team decide what to put in your pickle jar?*
- *Was each person's voice heard? Did everyone have a chance to contribute?*
- *What could you do better next time as far as teamwork?*

### Check for understanding

- *How do you pickle something?*
- *Why do people pickle foods?*
- *What makes pickles a healthy food?*

## ADAPTATIONS

**Garden Setting:** Have teams of students harvest the summer fruits and herbs from the garden to make your quick pickles.

**Literacy Extension:** For the second session, use the activity described in lesson Poetic Produce as a way for students to get to taste the various pickles and describe the flavors.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.L.3.5

Demonstrate understanding of figurative language, word relationships and nuances in word meanings.

### CCSS.ELA-LITERACY.L.3.5.B

Identify real-life connections between words and their use (e.g., describe people who are *friendly* or *helpful*).

# Recipe Cards

<b>RECIPE:</b> _____ _____		
<b>INGREDIENTS:</b> _____ _____ _____ _____ _____ _____ _____	<b>STEPS:</b> _____ _____ _____ _____ _____ _____ _____	

<b>RECIPE:</b> _____ _____		
<b>INGREDIENTS:</b> _____ _____ _____ _____ _____ _____ _____	<b>STEPS:</b> _____ _____ _____ _____ _____ _____ _____	

## DESCRIPTIVE FOOD WORDS

**FLAVOR**

Bitter  
Cheesy Creamy  
Hot Rich Milky  
Salty Smoky  
Sweet Sour Spicy  
Tart Tangy

Other? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**TEXTURE**

Bubbly  
Crackly Crispy  
Crunchy  
Soft Chewy  
Effervescent  
Fizzy Gummy  
Light Dense  
Silky Smooth Soft  
Sticky Thick Velvety

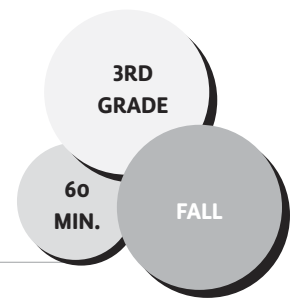
Other? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**WHAT ARE SOME MORE?**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# Celebrating the Autumn Harvest

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*Why is it important to give thanks when harvesting from the garden?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain why being respectful in the garden is important.
- ✓ Students will be able to thoughtfully harvest from the garden.

## CONCEPTS

abundance harvest  
honoring respect tool safety

### *Engaging the Classroom Teacher*

- During Action Step 2, suggest that the teacher supervise students on their scavenger hunt, answering questions, and ensuring students aren't yet harvesting from plants.
- During Action Steps 4 and 5, suggest that the teacher support students as they harvest, modeling the appropriate behavior alongside students.
- During Action Step 6, suggest that the teacher help pass out the tasting and encourage them to try the fruit or vegetable themselves!

## LESSON DESCRIPTION

In this lesson, students will appreciate the abundance of an autumn garden, through observation and a scavenger hunt. They will consider the “honorable harvest,” how to respectfully and thoughtfully harvest from plants, and they will put these principles into practice by harvesting and preparing a simple tasting of ripe fruits and vegetables from the garden.

## MATERIALS

- How We Harvest Poster (p. 352)
- Harvest Scavenger Hunt Worksheet for each pair of students (p. 353)
- Clipboards and pencils
- Large bowls or colanders for students to harvest into
- Supplies for washing vegetables
  - Hose
  - Bus tubs
  - Clean, dry towels
- A few full watering cans
- Snips for deadheading, if available
- Mulch or finished compost, if available
- Wooden skewers, if using
- Plate or paper towel for each student
- Yogurt Herb Dip Ingredients, if using (see recipe below)
- Bowls for dip, if using

## PREPARATION

- Read local resources related to harvest or one or more of the following resources describing the “Honorable Harvest”:

- › The chapter, “The Honorable Harvest,” from Robin Kimmerer’s *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants* (2013)
- › The article, “The ‘Honorable Harvest’: Lessons From an Indigenous Tradition of Giving Thanks” in *YES! Magazine* online
- › Explore local indigenous and native harvest traditions by talking with elders, partners, and individuals with local harvest knowledge in the community. If possible, ask local individuals to share these traditions with students. If not, with permission, integrate those traditions into your harvest lesson.
- › Familiarize yourself with the local harvesting seasons because these are not the same in every place.
- › Create a large poster of the How We Harvest: Thoughtful Harvesting Practices to share with students.
- › Determine what kind of tasting you’ll have based on what you have to harvest (e.g., make wraps such as in the lesson Plant Part Wraps, pass out wooden skewers for students to make their own veggie skewers, or prepare the Yogurt Herb Dip).
- › Determine which beds you’ll harvest from and how you’ll arrange to have students all harvesting at the same time. Ideally, you’d have a couple adjacent beds students can harvest from and/or an adult volunteer to help students at another bed.
- › Set up a washing station close to a food-grade hose, where students can wash produce under running water.
- › Set up supplies for students to use to “give

back to plants,” such as a few full watering cans, some snips for deadheading, some mulch, or some finished compost.

- › Prepare the dip, if using.

## Yogurt Herb Dip

**Yield:** 4 cups, 25 servings of 2 tablespoons

1 32-ounce container Greek yogurt\*  
(about 4 cups)

Handful of finely chopped herbs  
(such as parsley, dill, mint, and basil)

2–4 tablespoons lemon juice

1 teaspoon salt, more to taste

¼ teaspoon pepper, more to taste

\*For dairy-free students, consider dairy-free alternatives such as coconut, almond, or cashew yogurt.

Mix all ingredients together in a bowl.  
Taste and adjust seasoning, as needed.

## ACTION STEPS

- 1. Engage:** Gather students in a circle and say, *The word “abundance” means a lot of or an overflowing amount of something.* Have them repeat the word, perhaps performing an accompanying hand gesture you show them. Ask, *Staying in your spot, turn your head looking all around the garden. Where do you see abundance?* Have students share their observations, and then say, *The fall is a special time of year when all the hard work preparing the soil, planting seeds, watering, and weeding comes to fruition—it’s time to pick and gather all the ripe crops we’ve tended all season long.* Discuss what “harvest” means and if there is a local word for this practice. You might even share how,

in Old English, the word for the season between summer and winter was called “harvest.” **(5 min.)**

**2. Scavenger Hunt:** Pass out a clipboard and Harvest Scavenger Hunt Worksheet to each pair of students. Let students know they’ll be looking for things that are ready to harvest, but they won’t be harvesting anything yet. You’ll do that together later in the lesson! Remind the class of expectations in the garden and your callback strategy for when it’s time to circle up again. **(10 min.)**

**3. The Honorable Harvest:** Call students back to the circle, and ask pairs to share one example of abundance they found in the garden. Invite local elders, partners, and individuals with local harvest knowledge in the community to participate in or lead this circle. Say, *Nature is giving us gifts of food to eat and save up for wintertime—gifts of beautiful flowers to make us smile and gifts of seeds to collect for planting next season. We want to honor these gifts by being respectful and thoughtful with them.* Display the How We Harvest Poster of thoughtful harvesting practices for students to see. Go over each practice, and ask students why that practice is important and what that might look like. Share the origin of this tradition and local harvest traditions, if possible. Explain to students that they can verbally ask plants for permission, such as saying, “May I harvest your fruit?” But also explain to students how to test for ripeness. Say, *By giving a gentle tug on a fruit, we can see if it’s ripe and ready. If it doesn’t want to come off easily, that’s the plant’s way of saying it’s not ready to be harvested yet.* Ask students for ideas of how to give thanks and give back to the plant

they’re harvesting from. Ideas might include saying thank you and breathing some carbon dioxide onto the plant, watering it, removing dead growth, applying mulch, top dressing with fresh compost, or weeding around its roots. **(10 min.)**

**4. Harvesting and Preparing:** Bring students to the beds they’ll be harvesting from, and tell students about the plant or plants they’ll be harvesting. Model the proper technique for harvesting that particular plant, and then allow students to harvest. Encourage each student to ask for permission and to harvest carefully. Have small groups of students take turns washing produce. **(10 min.)**

**5. Giving Back to the Plants:** Discuss with students what these plants need to grow and thrive (sun, nutrients from soil, water, and air), and then give back to the plant in their own way, such as by sprinkling plants with finished compost, weeding around them, speaking to them, or watering them. **(10 min.)**

**6. Tasting:** Gather students back together to try the fruit or vegetables you’ve harvested. Invite students to express words of gratitude before the tasting. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- Ask yourself: How was I respectful toward others and the plants in the garden today?
- How do you feel when you treat plants with care and respect?

### Check for understanding

- *How do we know if a plant is ready to be harvested?*
- *What examples of abundance in our garden are most exciting to you?*
- *What are ways we can give thanks to the plants that produce so much good food for us?*
- *Sometimes abundance isn't something we can see or touch. What are other examples of abundance in your life?*

## ADAPTATIONS

**Music:** Sing “Dirt Made My Lunch” by the Banana Slug String Band, a song in which you give thanks to soil for helping grow the food you eat.

**Gifting:** If you have a bumper crop (a crop that has yielded an unusual abundance), consider ways of sharing the harvest with other school community members, such as setting up a table outside the classroom, sharing with parents at pickup, or donating to a local food pantry.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.L.3.5.B**

Identify real-life connections between words and their use (e.g., describe people who are *friendly* or *helpful*).

NOTE: Connect to state social studies standards if possible.

# How We Harvest Poster

## How We Harvest Thoughtful Harvesting Practices

- Ask permission of the ones whose lives you seek.  
Abide by the answer.
- Never take the first. Never take the last.
- Harvest in a way that minimizes harm.
- Take only what you need and leave some for others.
- Use everything that you take.
- Take only that which is given to you.
- Share it, as the Earth has shared with you.
- Be grateful.
- Reciprocate the gift.
- Sustain the ones who sustain you,  
and the Earth will last forever.



Excerpted from Robin Kimmerer, “The Honorable Harvest:  
Lessons From an Indigenous Tradition of Giving Thanks” (2015)

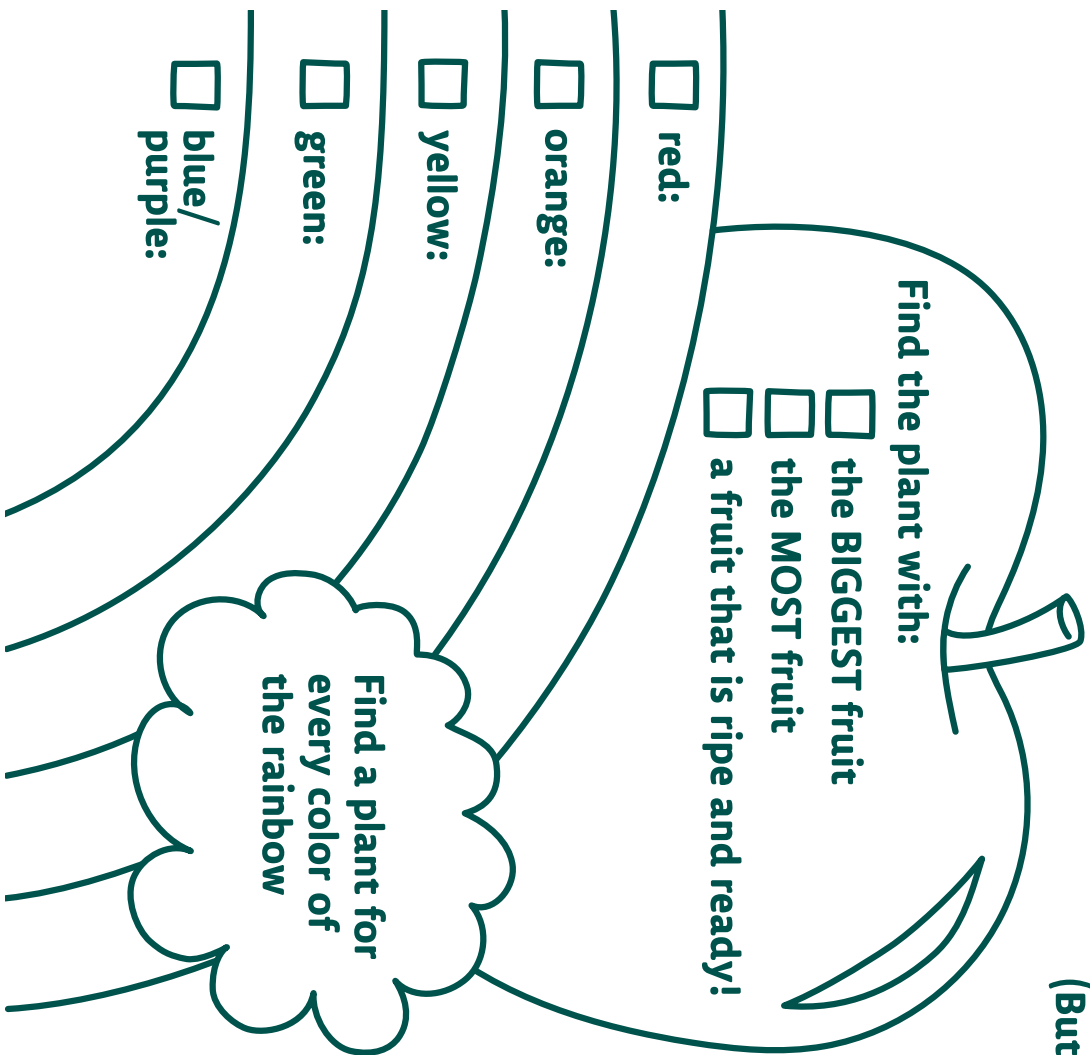


Name: \_\_\_\_\_

Date: \_\_\_\_\_

## HARVEST SCAVENGER HUNT

**DIRECTIONS:** Find with your  eyes examples of **ABUNDANCE** in our garden. (But don't harvest anything yet!)



### EDIBLE PLANT PARTS

Find:

stems



flower



seeds



leaves



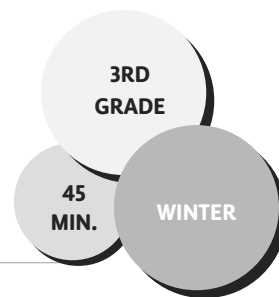
roots



that are ready  
to be harvested

# Tortilla Time!

**THEME:** MAKING HEALTHY FOOD CHOICES



## ESSENTIAL QUESTION

*How do the foods we eat get from the plant to our plate?*

## LEARNING OBJECTIVES

- ✓ Students will be able to distinguish whole foods and processed foods.
- ✓ Students will be able to prepare homemade tortillas.

## CONCEPTS

ingredients processed whole foods

### *Engaging the Classroom Teacher*

- Prior to the lesson, discuss whether there are other adults, such as parent volunteers, who are part of a culture where tortillas are prepared, and see if they'd like to help teach about this food.
- During Action Step 5, suggest that the teacher supervise as students are rolling or pressing their tortillas. Have the teacher help students take turns coming up and delivering their prepared tortilla to be cooked.

## LESSON DESCRIPTION

In this lesson, students learn to distinguish between whole and processed foods by making corn tortillas from masa harina, and they learn

about the cultural tradition of tortilla making through listening to a read-aloud. This lesson can be taught in conjunction with *Get to the Source* for further exploration of whole versus processed foods. Or it can be taught with *Breaking Down Bread*, *Building Up Rocks* for further exploration of staple grains.

## MATERIALS

- Dried corn on the cob and/or a jar of corn kernels
- Empty bag of corn chips
- Tortilla ingredients (see recipe below)
- Mixing bowl
- Induction burner
- Extension cord
- Nonstick pan
- Cutting mats (2–3 for each group of students)
- Plate for each student
- Materials for cleanup
- *The First Tortilla* by Rudolfo Anaya (YouTube read-aloud)
- 4–6 rolling pins (optional)
- Grinder (optional)
- Mortar and pestle, with newspaper underneath (optional)
- Tortilla press (optional)

## PREPARATION

- › Find out if you have any students whose family members know how to make tortillas and, if so, invite them to teach the students how to press and cook tortillas.
- › Recruit a second adult, if possible, to cook the tortillas while you guide the students in an activity while they wait.

- › If you haven't made tortillas before, practice on your own to become familiar with the process, and address any challenges ahead of time.
- › Find a read aloud on YouTube of Rudolfo Anaya's *The First Tortilla* to show to students.
- › Set up a station with your induction burner and pan. If you have a mortar and pestle or grinder, set up a station where students can take turns independently grinding corn with these tools.
- › Follow the directions on your masa harina package to prepare the tortilla dough beforehand.
- › Divide the dough evenly for groups of 4–6 students to make one tortilla each. (A ball the size of a ping-pong ball will make approximately one 6-inch tortilla).

## Tortillas

**Yield:** 28 6-inch tortillas

3 cups masa harina  
 ½ teaspoon salt  
 2 cups hot water or low-sodium  
 veggie broth

- Mix flour and salt together in a bowl. Slowly add liquid while mixing with a spoon until dough forms into a ball. The dough should feel similar to playdough. If it's crumbly, add water, a tablespoon at a time, until it comes together. If it's too wet and sticking to your hands, add a tablespoon of masa harina at a time until it's smooth.
- Knead dough on a lightly floured surface until it is smooth.
- Wrap the dough, and let it rest for 30 minutes or up to 24 hours.

- Break off pieces of dough and roll into a small ball. Then between two sheets of plastic wrap, using a tortilla press, a pie plate, your fingers, or a rolling pin, press until the dough is 5–6 inches in diameter.
- On a hot plate, or large cast-iron skillet, cook a couple tortillas at a time over medium heat until they brown in spots—about 1 minute. Flip and repeat on the second side.

## ACTION STEPS

**1. Engage:** Explain to students that today you'll be talking about whole versus processed foods and getting to know corn a little better. Say, *Every day we typically eat a mix of some whole and some processed foods.* Show students the corn on the cob and the empty corn chip bag. Say, *Think in your heads which one of these is whole and which one of these is processed.* Then take a vote. Reveal the answers. **(5 min.)**

**2. Defining Whole Versus Processed:** Ask students to turn and talk to a partner to come up with a definition of what a whole food is versus what a processed food is. Share answers, and come up with definitions as a class. Ask, *Do you think the corn chips have been processed just a little bit or a lot?* Have students show you with their hands the extent to which they think the corn chips have been processed. Explain that the more steps a food undergoes and the more additional ingredients added, the more processed it is. **(5 min.)**

**3. Explain the Activity:** Tell students that today they're going to process corn to make a new food themselves: tortillas! Explain that Mexico and other countries in Central America have been making tortillas from corn for centuries. Ask students whether their families have a practice of making tortillas or using masa for other foods. Show students the jar of corn kernels and the

jar of masa harina. Ask, *How do you think the corn went from this to this? Discuss grinding the corn.* If you have a grinder or mortar and pestle, show these tools, and tell students they'll have the opportunity to use them soon. Then show students the prepared tortilla dough. Ask, *How do you think I processed the masa harina to make this dough?* Tell students about adding water, mixing, and kneading the dough. **(5 min.)**

**4. Model:** Model for students how to make a tortilla. Pinch off a ping-pong sized amount, and roll into a ball. If you don't have a tortilla press or rolling pins, show students how to press the ball with the palm of their hands until it's about six inches in diameter. Explain that once they're finished making their tortilla, they'll bring it up to you on their plate, where you'll cook it for them. **(5 min.)**

**5. Making Tortillas:** Pass out cutting mats, and provide groups of students with tortilla dough. If you have grinding tools, this is the time to invite students to practice using them. Heat up your nonstick pan as students begin pressing the dough. Cook the tortillas for one or two minutes on each side. Be sure students keep a safe distance from the burner as you cook their tortillas. You may want to allow students to eat their tortilla when they return to their seat while it's still warm or when everyone at their table has one. **(15 min.)**

**6. Enjoy!** Consider playing a read-aloud of *The First Tortilla* by Rudolfo Anaya to share more about the tradition of tortilla making and to keep students engaged once they've made their tortilla. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What was your favorite part of today's activity?*
- *How did you share with or help a classmate today?*
- *If you were able to share a personal food tradition today, how did it feel to share?*

### Check for understanding

- *How many steps did it take to go from corn on the cob to our tortillas?*
- *What are some words you would use to describe our tortillas' smell? Taste? Texture?*
- *What tips or tricks did we find for creating our tortillas?*

## ADAPTATIONS

**Tasting Extension:** Conduct a taste test comparing homemade tortillas with store-bought ones.

**Stations Variation:** Set up stations for students to learn more about the culture and history of tortillas. Create a geography station with maps where students compare a map of Mesoamerica with a map of present-day Central America and the US. Students must then identify which present-day countries were part of Mesoamerica. Create a second research station in which students watch a video about the history of tortillas and fill out a KWL chart, in which students share what they know, what they want to know, and what they've learned.

## ACADEMIC CONNECTIONS

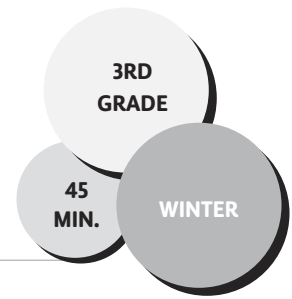
English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.SL.3.1**

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 3 topics and texts*, building on others' ideas and expressing their own clearly.

# Let's Jam!

**THEME:** EXPLORING THE ECOLOGY OF FOOD



## ESSENTIAL QUESTION

*Where does our food come from?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain the steps and people involved in processing food.
- ✓ Students will be able to make a simple jam.

## CONCEPTS

factory   food product   food system

### *Engaging the Classroom Teacher*

- Prior to the lesson, coordinate with the teacher to see whether you can lead the activity in the morning and return in the afternoon (or lead the activity in the afternoon and return the next day), giving the jam time to set.
- During Action Step 4, suggest that the teacher ensure students who have either finished their job or are waiting for their job to begin are filling out their worksheet.

## LESSON DESCRIPTION

In this lesson, students consider the steps in the food system with each student taking on an important role in the processing of strawberry jam. This lesson could work with any type

of jam that makes sense in your region at this time of year (orange marmalade, cranberry, etc). This particular Chia Strawberry Raw Jam is a good option if you don't have access to a burner because it can be prepared raw.

## MATERIALS

- Jar of store-bought jam
- Food System Role Cards (1 per student; p. 363–364)
- Role props (optional; see Preparation)
- Bowl for role cards
- Chart paper or class board
- Large bowl for rinsed berries
- Large mixing bowl for sliced berries
- Measuring cups
- Long-handled spoon
- Ladle
- Tape
- Permanent marker
- Small tasting cups
- Chia Strawberry Raw Jam ingredients (see recipe below)
- 5 cutting knives
- 5 cutting mats
- Tray
- Box of crackers or pieces of bread to eat jam with
- Our Food System Worksheet (p. 362) for each student
- Colored pencils

## PREPARATION

- › Photocopy a Food System Role Card for each student. Depending on the class size, you may need to combine a few roles, or give the same role to several students. Roles such as Ingredients Sourcer and Mixer could

be combined, while roles such as Slicer and Supermarket Seller could work for several students to have. Add even more roles, such as an advertiser who makes advertisements for the product or a factory cleaner who washes all the tools.

- › Photocopy Our Food System Worksheet for each student.
- › Set up three stations in the room where students can enact each step: the farm, the factory, and the supermarket. Put appropriate supplies at each station.
- › Optional: Gather props for students to use to distinguish and add to their roles (e.g., give sun hats to the farm workers, create a steering wheel out of cardboard for the truck driver, provide hair nets for the factory workers, provide aprons to the supermarket employees, etc.).

## Chia Strawberry Raw Jam

**Yield:** 2–2½ cups, about 35 servings of 1 tablespoon

4 cups strawberries (frozen if not in season)

2–4 tablespoons lemon juice, to taste

2–4 tablespoons honey, agave, maple syrup, or sugar, to taste

3–4 tablespoons chia seeds, plus more if needed

**Note:** Cooking the jam softens chia seeds quickly, so this is a good option if you have access to a burner but less time to let jam set.

- Wash, hull, and slice strawberries into small pieces.
- If you have time and access to a burner, cook down fruit on medium heat, stirring occasionally until it becomes sauce-like and loses some water— about ten minutes. If using frozen fruit, some cooking down is necessary.
- Add lemon juice and honey and stir together. For a smoother texture, use a potato masher or immersion blender to achieve desired consistency. Stir in chia seeds.
- Let jam stand for at least five minutes to thicken. If possible, refrigerate it for ½ hour to further set.

### FOOD SYSTEM ROLES

#### FARM

- **Harvester**—Pick stems off berries
- **Washer**—Wash berries
- **Truck Driver**—Deliver berries

#### FACTORY

- **Slicer**—Slice berries into small pieces
- **Ingredients Sourcer**—Follow recipe and measure ingredients
- **Mixer**—Add ingredients and mix
- **Label Maker**—Create a label for each cup
- **Packager**—Pour strawberry jam into cups and affix label

#### SUPERMARKET

- **Truck Driver**—Transport cups to supermarket
- **Supermarket Seller**—Sell (pass out) cups to customers

### ACTION STEPS

**1. Engage:** Gather students in a circle, and show them a pint of strawberries and strawberry jam. Ask, *What's the difference between these two things?* Have students turn and talk to a neighbor to discuss. Ask, *What steps would it take*

to get from one to the other? On the board or chart paper, make a list of the steps students anticipate. **(5 min.)**

**2. Assign Roles:** Explain, *Today we're going to make strawberry jam. You'll each have a role to play in the "food system."* A "food system" is a series of people and activities that get food from a farm to our plates. Show students the "farm," the "factory," and the "supermarket" in the classroom. Pass out Our Food System Worksheet. Explain that while some students are performing their roles, others will be illustrating the process. You might pay homage to farmers by having all students pretend to plant strawberry seeds as the first step of the process. Have students draw role cards out of a bowl and then go to their respective stations. **(5 min.)**

### **3. Hand-Washing Break (5 min.)**

**4. Making Jam:** While a few students at a time are fulfilling their role to help make the jam, have the remaining students illustrate each step on their worksheet. Have Harvesters pick stems off berries, have Washers wash the berries, and have the Truck Driver deliver the berries to the factory station. At the factory, the Labelers can start creating and affixing labels to cups while the rest of the factory workers are making the jam. Have Ingredients Souncers measure out other ingredients while Slicers slice berries and place them in a bowl they pass off to the Mixer. After the Mixer has incorporated all the ingredients, they should pass the bowl to the Packager who will pour a little into a tasting cup for each student. If you have the time, place the jam in the refrigerator to set for thirty minutes. Otherwise, expect it

to be a bit runny. **(20 min.)**

**5. Tasting:** Have the Truck Driver transport the cups to the supermarket on a tray. Then have students form single file lines at the supermarket to buy jam from the Supermarket Sellers. Meanwhile, have another student deliver crackers to students' desks. Once all students are seated, have them taste the jam together. Ask students to describe the flavors and texture of their jam. Explain that most jam you buy at the store is cooked but that they made a raw jam that gets its texture from chia seeds. You might compare the ingredients listed on the jar of jam with the ingredients that went into your recipe. **(5 min.)**

## **REFLECTION**

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### **Social and emotional learning**

- Ask yourself: How did I contribute to making our jam? Did I work well with my classmates?

### **Check for understanding**

- What are some differences between buying jam and making our own jam?
- What surprised you about the activity we did today taking strawberries from the farm to the supermarket?
- Why is each person important in the process of making the food we buy and eat?

## **ADAPTATIONS**

**Economics Extension:** Have students consider the cost of each step by having a dollar symbol to represent the pay for each person involved in the process and tallying the dollar symbols. You can also discuss with students how much



they would want to get paid for their role, and add those figures to get at the total cost. This extension could be a great conversation starter for engaging older grades in thinking about farm workers' rights and compensation.

**Literacy Extension:** Read *How Did That Get in My Lunchbox?* by Chris Butterworth to reinforce and expand upon the concepts in this lesson.

**Table-Group Variation:** For a streamlined version of the lesson, have students at table groups perform each role. This will likely mean cutting some roles and steps in the process, so be sure to discuss these with students.

**Cooking-Show Style Variation:** If you don't have enough in-class time to let the jam set, or are unable to return to the class at a later time, consider making the jam yourself beforehand. After students have gone through the process, have them taste the set jam you've already made.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

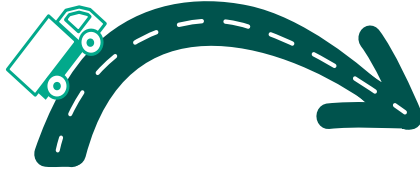
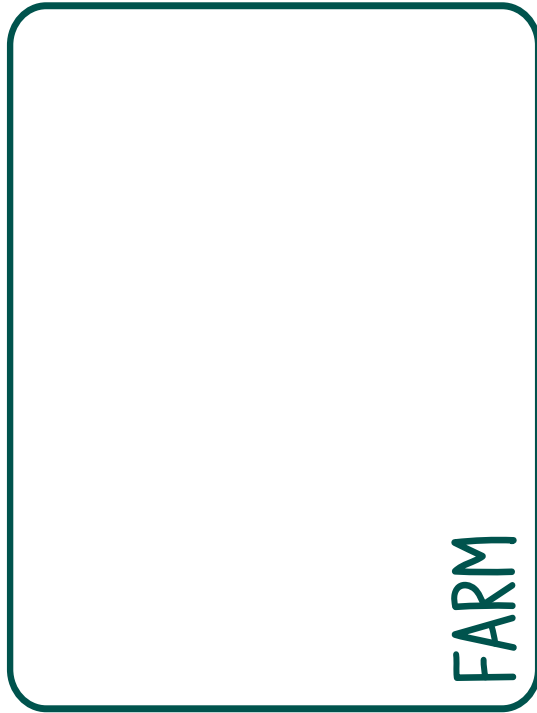
### **CCSS.ELA-LITERACY.SL.3.1**

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 3 topics and texts*, building on others' ideas and expressing their own clearly.

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# Our Food System Worksheet

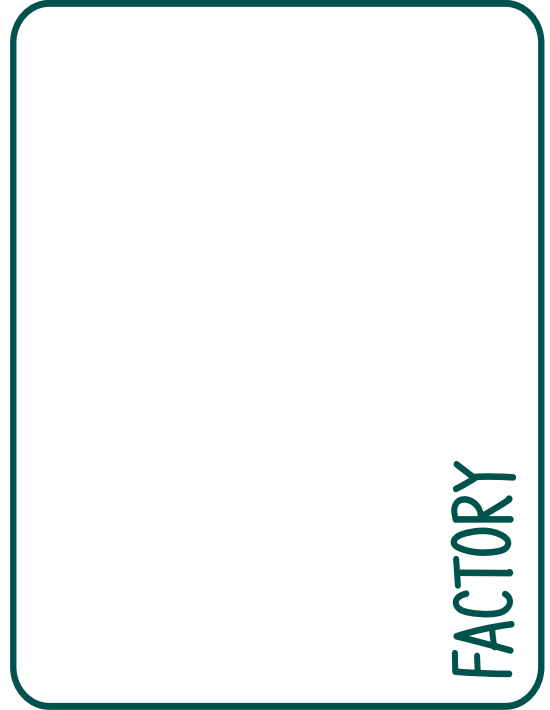
FARM



SUPERMARKET



FACTORY



# Food System Role Cards

FARM

## Harvester

Pick stems off berries

FARM

## Washer

Wash berries

FARM

## Truck Driver

Deliver berries

FACTORY

## Slicer

Slice berries into  
small pieces

FACTORY

## Ingredients Sourcer

Follow recipe and  
measure ingredients

FACTORY

## Mixer

Add ingredients and mix

FACTORY

## Label Maker

Create a label for each cup

FACTORY

## Packager

Pour strawberry  
jam into cups  
and affix label

# Food System Role Cards

SUPERMARKET

## **Truck Driver**

Transport cups  
to supermarket

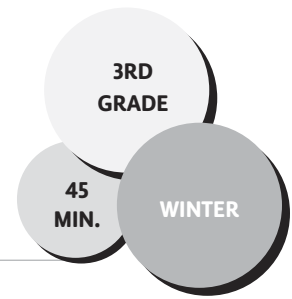
SUPERMARKET

## **Supermarket seller**

Sell (pass out)  
cups to customers

# Exploring Our Worm Bin

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*How can we help create a healthy, thriving ecosystem?*

## LEARNING OBJECTIVE

✓ Students will be able to identify and describe indicators of the health of their worm bin's ecosystem.

### CONCEPTS

environment    habitat  
observation    worm castings

### *Engaging the Classroom Teacher*

- Prior to the lesson, check with the teacher about how their class worm bin is doing. If the class doesn't have an established worm bin, ensure the teacher understands the messy nature of this activity.
- Ask the teacher to prepare for the lesson by having students clear everything off their desks.
- During Action Step 3, suggest that the teacher circulate through the room and support students in following expectations.
- During Action Step 4, suggest that the teacher help ensure students are cleaning up their spaces.

## LESSON DESCRIPTION

This lesson is a follow-up to the third grade fall Worm Bin Wonders lesson. In this lesson, students observe changes that have occurred in the worm bin they established in the fall, diagram elements they can identify in the worm bin, and compare their knowledge of worms to information in a book about worms.

### MATERIALS

- Established worm bin
- Worm Lifeguard Chore Chart (if students have been tracking chores using the extension adaptation from fall's Worm Bin Wonders lesson) (p. 345)
- Magnifying boxes (ideally one for each pair of students)
- Dampened paper towels to put worm castings on
- A separate, small bin of dampened paper towels for cleanup
- Worm Bin Observation Worksheet (p. 369)
- Food scraps for the worm bin
- Chart paper and markers
- Gardening gloves (optional)
- Worm Bin Creatures Poster (p. 368)
- Worm Anatomy Poster (p. 338; optional)
- *Wiggling Worms at Work* by Wendy Pfeffer

## PREPARATION

- › Check your worm bin just before the lesson to make sure your worms are doing well.
- › Photocopy Worm Bin Creatures Poster. If you have access to a laminating machine, laminate these so they can be easily cleaned and reused for

this messy activity! Consider making it double-sided with the Worm Anatomy Poster on the back.

- › Write guiding questions on chart paper or the board:
  - › What changes have occurred since we set up our worm bin?
  - › What other living things are present, apart from our Red Wiggler worms?
  - › What worm behaviors do you observe?
  - › How do you think we should change the food or bedding to make the habitat better?

## ACTION STEPS

**1. Engage:** Gather in a circle and ask students how caring for their worm bin has been. Ask, *How do we know that the worms are doing well? What should our noses, hands, and eyes look for? Remind students that we can think of the worm bin like the house in Goldilocks and the Three Bears. Say, The worms don't want their environment to be too wet or too dry, but juuuust right. And the same goes for temperature and the amount of food.* Explain that today they're going to have a second chance to observe worms up close, but this time, they'll also be looking at part of the habitat they've created for them. **(5 min.)**

**2. Explain Expectations:** Display the guiding questions, and read each one aloud. Say, *As you're observing the worms, you'll be thinking about and discussing each of these questions with your partner. Then you'll draw a picture of everything you see in your pile of worm castings on your worksheet, and you'll try to label each part.* Students can refer to the Worm Bin Creatures Poster. Emphasize handling the

worms gently because the worms are our helpers in the garden. Also emphasize to students that their job is to be observant detectives, gathering clues by using their senses of sight, smell, and touch. **(5 min.)**

**3. Observing:** Have students return to their desks, and give pairs a magnifying box, Worm Bin Observation Worksheets, a damp paper towel, and a small handful of castings from the worm bin that includes a couple worms. As they're observing the worms and castings, circulate through the room, reminding students of expectations and asking probing questions and encouraging critical thinking. **(10 min.)**

**4. Cleanup:** After ten minutes, collect worms, have students wipe their hands with fresh, wet paper towels, and collect all the wet paper towels in one bin. **(5 min.)**

**5. Debriefing:** Come back together on the carpet with students' worksheets. Go through the guiding questions, and have students share their drawings with someone who they weren't partnered with, naming all the different components and organisms they identified. Then have students share some of their observations with the whole class. Ask probing follow-up questions to their observations such as, *Hmm, a lot of you observed fruit flies. I wonder why our worm bin has fruit flies. Do you think there is something we can do differently? Or, Wow, a lot of you observed that our worm bin is sort of stinky. Why do you think? Or, What clues tell us we're feeding them too much, too little, or just right?* **(7 min.)**

**5. Feeding the Worms:** Add some food scraps to the worm bin, and cover with the used, wet

paper towels. **(3 min.)**

**6. Reading:** Read *Wiggling Worms at Work*.

Explain that whenever students hear something they already know about worms, they should make a wave gesture with their hand, like a worm wiggling, but when they hear new information, they should tap their heads with their hands (or you could teach them American Sign Language for “idea”). After reading, acknowledge and congratulate students for all the information they already knew about worms. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- Ask yourself: Was I safe, respectful, and kind to the living creatures in our classroom today?
- Ask yourself: Did I take turns and support my partner?

### Check for understanding

- What were you surprised to observe in our worm bin? What is one new thing you learned about worms today?
- What is the best habitat for our worms? Do we need to change any of the ways we’ve been caring for them?

## ADAPTATIONS

**Physical Activity:** Play Decomposer Tag at the school’s field, blacktop, or gymnasium. Have one student wear an armband indicating that they’re “Frost” or “Death,” and have a couple other students wear a different-colored armband, indicating their roles as worms or decomposers. Have all other students be

plants. If Death tags a plant, the plant is frozen until a decomposer tags it, representing the decomposition cycle. To show that without decomposers recycling plant matter there’s no new life, try playing where Death is allowed to tag the decomposers.

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

### NGSS 3.LS4.D

Populations live in a variety of habitats, and change in those habitats affects the organisms living there.



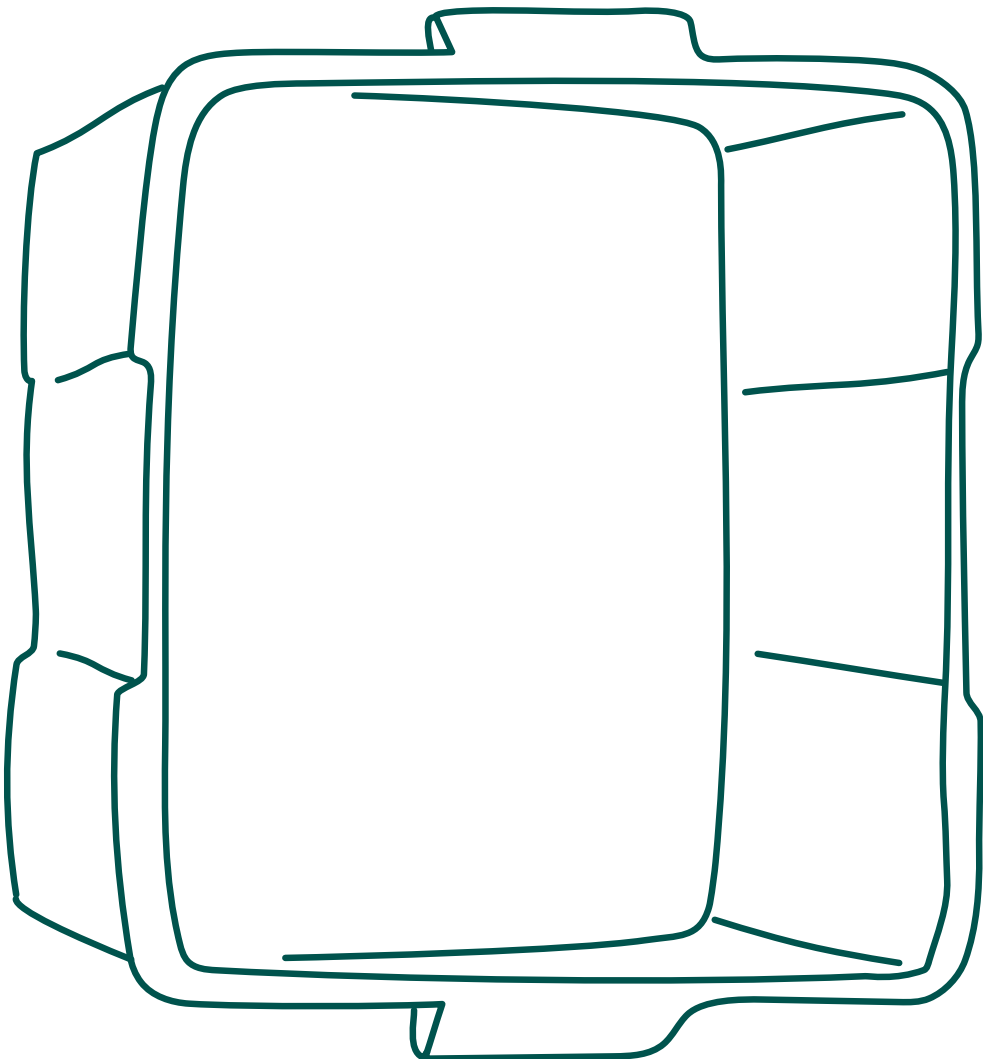


Name: \_\_\_\_\_

Date: \_\_\_\_\_

# WORM BIN OBSERVATION SHEET

DIRECTIONS: Draw everything you see in your worm bin sample.



## SCAVENGER HUNT CHECKLIST:

Worm egg



Fruit fly



Mold mite



Fungus



Decomposing food

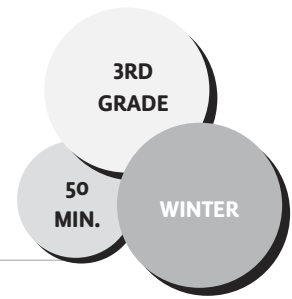


Worm castings



# Root Fruit Slaw

**THEME:** PREPARING HEALTHY FOOD



## ESSENTIAL QUESTION

*How can we prepare a healthy dish?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain the function of plant roots and fruits.
- ✓ Students will be able to assemble a slaw with root vegetables and fruits.

## CONCEPTS

ingredients   kitchen tool safety  
observation   plant parts   storage crops

### *Engaging the Classroom Teacher*

- Prior to the lesson, discuss whether there are other adults, such as parents or volunteers, who can supervise while students are using graters.
- During Action Steps 5 and 6, suggest that the teacher supervise as students are grating vegetables. Have the teacher help groups take turns coming up and delivering their prepared ingredients to you.

## LESSON DESCRIPTION

In this lesson, students consider the importance of storage root crops in our diet during the winter, closely examine root veggies using magnifying glasses, and create a tasty root

and fruit slaw. (An extra adult, such as a parent or community volunteer, would be helpful because students will be using box graters.)

## MATERIALS

- Ingredients for Apple Cider Vinaigrette (see recipe)
- Small jar
- Tongs
- Materials for cleanup

### For each student:

- Tasting cup
- Fork

### For each group of 4–6 students:

- At least one root vegetable with root hairs (for observation)
- Half a pear or apple (for observation)
- Magnifying lenses
- Box grater
- Cutting mats
- Container for compost
- 1 piece each of apple, 1 carrot, and 1 beet (for salad)
- Bowl

## PREPARATION

- › Wash and prepare produce for students to grate.
- › Prepare a slideshow of pictures of root cellars to show students while you're discussing storage crops (optional).
- › Set up a station in the room, where all students can see you, at which you will demonstrate grating. Set out a bowl and cutting mat.

## Root Fruit Slaw

**Yield:** 6 cups, 24 servings of ¼ cup

3 medium apples, cored, one large chunk per table group  
2–3 large carrots\*  
2–3 large beets\*  
Salt, to taste  
Lemon juice, to taste

### Apple Cider Vinaigrette

Two tablespoons apple cider vinegar  
Two tablespoons cup honey  
Juice of 1/2 lemon (1–2 tablespoons)  
1/2 teaspoon salt, more to taste  
1/3 cup olive oil

- Whisk together vinegar, honey, lemon juice, and salt. Then drizzle in olive oil and whisk until emulsified (or shake in a lidded jar).
- Wash and prepare ingredients, then shred each on the largest holes of a box grater, so you have roughly even amounts of each fruit or vegetable.
- Mix each shredded ingredient together in a large bowl. Combine with vinaigrette. Taste and adjust with salt or more lemon juice.

\*Tip: Leave the tops of carrots and beets on as a “grip” for grating.

### GUIDING QUESTIONS

- Which two parts of the plant are we going to eat today? How do you know?
- What interesting things do you notice about these parts of the plant?
- What can you see with a magnifying lens that you can't see with only your eyes?

## ACTION STEPS

**1. Exploration:** Gather students in a circle, and explain that today they're going to prepare something to eat with two parts of the plant. Say, *I'm going to see if you can guess which parts of the plant they are by doing a close observation.* Go over the Guiding Questions and then pass out carrot or beet and halved pear or apple, as well as magnifying lenses, to small groups. **(5 min.)**

**2. Discussing:** Ask groups to share their observations. You might discuss how you know that a plant part is a fruit if it contains seeds inside. When students mention the small hairs they see on the root vegetables, have them consider their function, asking, *How do you think the root hairs help the plant?* Discuss how they help the plant gather water and nutrients from the soil as well as anchor the plant in place. Explain, *The roots of a plant also store the sugars or food for the plant during the cold, dark months when it's not producing new food. It's just like if we buried our food underground during the winter to save it until it was warm and more food was growing. In fact, root vegetables are what we call a storage crop because people have traditionally saved them over the winter because they provide a lot of nutrients.* Show students the slideshow of root cellars, if using, and explain that people have always had to figure out ways to have enough food in the winter, when it is harder to grow things. Now we can store foods by freezing them, or we can go to the grocery store and buy foods imported from places where it is less cold, but it wasn't always that way. **(5 min.)**

**3. Hand-Washing Break (5 min.)**

**4. Model:** Demonstrate how to grate the produce onto the cutting mat, keeping your

fingers high on the fruit or vegetable and taking long strokes. Say, *Make sure to stop early! Don't worry about getting the last bit,* and show students how you stop grating long before your fingers are close to the grater. Explain to students that they'll be sharing the box graters in their groups, so it's important to make sure everyone gets a turn. **(5 min.)**

**5. Grating:** Pass out trays to groups of students. While students are grating fruits and vegetables, circulate through the room, keeping an eye out for safe techniques and ensuring students are sharing materials. **(10 min.)**

**6. Assembling Slaw:** Have a student from each group bring up their grated fruits and vegetables as you show them how to prepare the dressing. Mix the dressing with the grated produce, then taste and adjust the flavor with salt and pepper and lemon if needed. **(5 min.)**

**7. Tasting:** Distribute the slaw into small tasting cups for each student. Have student volunteers pass out forks and tasting cups. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *Ask yourself: How did I share and take turns with my classmates?*
- *How did you help make this dish?*

### Check for understanding

- *How would you describe the flavors of our root fruit slaw?*
- *What other vegetables would be good in this dish?*

- *Why are root vegetables an important food for winter time?*
- *Why do vegetables store sugar or energy in their roots?*

## ADAPTATIONS

**Science Extension:** For a possible extension, see the first grade lesson Root-View Cups, in which students sow seeds in clear plastic cups to observe the growth of roots.

**Garden Setting:** Grow carrots in the garden, and leave them in the ground over the winter to harvest in the cold season. See if your students notice the extra sweetness of their winter carrots!

## ACADEMIC CONNECTIONS

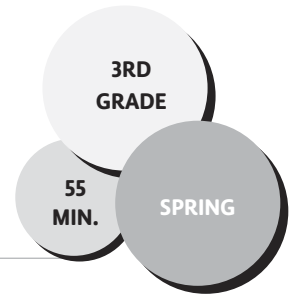
English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.SL.3.1

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 3 topics and texts*, building on others' ideas and expressing their own clearly.

# Neighborhood Food Maps

**THEME:** MAKING HEALTHY FOOD CHOICES



## ESSENTIAL QUESTION

*Where can we access fresh fruits and vegetables in our community?*

## LEARNING OBJECTIVE

✓ Students will be able to identify locations in their communities where they can access fresh foods.

## CONCEPTS

access fresh foods neighborhood

### *Engaging the Classroom Teacher*

- During Action Step 2, suggest that the teacher support students in setting up the quadrants on their plates.
- During Action Step 5, suggest that the teacher encourage students to add detail to their maps.

## LESSON DESCRIPTION

In this lesson, students consider where they can access whole foods in their community, and they taste a variety of produce from different places within the school neighborhood. Students then draw a map of their school neighborhood, highlighting places where fresh foods are available.

## MATERIALS

- Vegetables (from 4 different places within your school neighborhood)
- Photos of each place where you got the vegetables
- Map of school neighborhood
- Paper plate or blank paper for each student
- Pencils
- Colored pencils or crayons
- Chart paper or board
- Poster board (for thank-you card)

## PREPARATION

- › Consider limits that students and their families may have around choosing where to access food. Parameters such as transportation, affordability, and the times when stores are open affect these choices. This lesson is intended to open up a conversation about food access and should not include judgement about choices families or students make.
- › Obtain a vegetable for tasting from several different places within a mile of the school (e.g., a grocery store, a convenience store, the school cafeteria, a farmer's market, a school or community garden, a food pantry, or a donated harvest program)
- › Cue up the school on Google Maps on the document camera. Alternatively, print out a map of a radius around the school. that makes sense for your region. (In a dense, urban area

you might choose a smaller area, such as within three blocks. In a rural area, it might be several miles.) Highlight and label the places where you got your vegetables. Label and display photos of each place on the map.

- › Wash and prep the vegetables for students, labeling and keeping track of where you got each variety from. Students only need one or two bites of each sample.
- › Keep one whole, intact vegetable from each place to show students.
- › Create a model paper plate, divided into quadrants. In each quadrant, write the name of one place you got a vegetable for this activity.
- › Set up a station in the room with four posters or cards for students to come up and write and draw their thanks to the stores and community members who supplied the fruits and vegetables. Label each poster or card with the name of the person or place. Have crayons and colored pencils at the station.

## ACTION STEPS

**1. Engage:** Ask, *Where in our community can you go to get whole food?* Make a list on the board or on chart paper of student responses. As students name places, ask probing questions such as, *What else can you get here? Do they have lots of whole foods or just a few? How long does it take to get there? When is this place open?* Take brief notes next to each place to reflect students' understanding of these places. Explain that some neighborhoods have lots of places to get whole foods, and some have fewer, and that there are people working to make sure that every person in every neighborhood has access to whole foods in their community. **(10 min.)**

**2. Labeling Neighborhood Map:** Explain that you've brought in vegetables that you got from different places around the school neighborhood. Display the map and photos on an overhead or on the board. Show students each food sample, say where you got it from, and show them the location on your map. Pass out paper plates or blank paper, and show students your model. Have them divide their paper plate into even quadrants, one for each sample, and label them with the place names you showed them on your map. **(10 min.)**



### 3 Hand-Washing Break (5 min.)

**4. Tasting:** Before passing out each sample, let students know they should wait until you tell them to taste them, but they are welcome to touch and observe. Pass out samples, letting students know where each is from so they can place it in the proper spot on their plate. Then taste the samples together, and have students share observations about each sample. **(10 min.)**

**5. Gratitude and Drawing Food in the Community:** Have students draw their own map of the school community, highlighting all the places they know they can get whole food. Meanwhile, call up groups of students to draw

and/or write a note of appreciation to the store owners or community members who gave the food they ate during the tasting. **(15 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did it feel to identify all the places you can get food in our community?*
- *What do you like or are thankful for in our community?*

### Check for understanding

- *Which vegetable did you like best? Why?*
- *What's a meal you like to eat that includes one of the fruits or vegetables we tried today?*
- *Where can we get fresh foods in our community?*
- *What other things besides whole foods do you think all communities should have access to?*

## ADAPTATIONS

**Cafeteria Extension:** Take a “field trip” to the cafeteria, and determine what’s whole and what’s processed on the lunch menu.

**Garden Extension:** Sow seeds or starts in the garden to help students make the connection between growing plants and eating whole foods.

**Classroom Extension:** Have a guest speaker, such as a cafeteria staff member, farmer, or store owner, come in and explain to students why they stock or provide whole foods.

**Age:** Have students in older grades brainstorm with partners and then discuss the following

reflection question: “What could we do to add more whole foods in our community?” If they have actionable ideas, consider a project-based unit where you try to make one of the ideas a reality. For example, having a couple garden beds in the school garden be Produce for the People, wherein all the fruits and vegetables harvested from those beds gets donated to the food bank or a local pantry.

## ACADEMIC CONNECTIONS

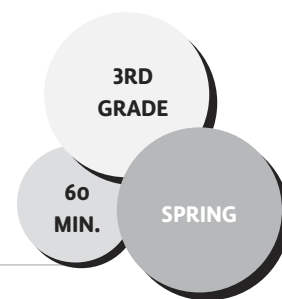
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# Breaking Down Rocks, Building Up Bread

**THEME:** EXPLORING THE ECOLOGY OF FOOD



## ESSENTIAL QUESTION

*How can all the foods we eat be traced back to natural resources, including rocks?*

## LEARNING OBJECTIVE

✓ Students will be able to explain how diverse grains from around the world can be traced back to plants that grow in soil made, in part, from eroded rocks.

## CONCEPTS

erosion   grains   staple foods   whole foods

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher about students' familiarity with the process of erosion.
- During Action Step 2, suggest that the teacher help coordinate students who are holding the next prop to get up and stand in the appropriate space in the line.
- During Action Step 4, suggest that the teacher circulate through the room to different groups to support them in figuring out the steps in their rocks-to-grain story.

## LESSON DESCRIPTION

In this lesson, students read a book about how bread is a staple food around the world. They then use a variety of props to explain how

bread originates from plants that grow in soil made, in part, from eroded rocks. Finally, they work in small groups to explain how different staple grains from cultures around the world can all be traced back to natural materials, including rocks. This lesson is designed to be taught in conjunction with Flatbread Crackers and Tortilla Time.

## MATERIALS

- *Bread, Bread, Bread* by Ann Morris or *Bread is for Eating* by David and Phyllis Gershator
- Rocks-to-Bread Props (in mason jar or zip lock bags)
- Rocks-to-Bread Cards (pp. 380–390)
- 5 zip lock bags (1 for each set of cards)
- Loaf of whole wheat bread, sliced (optional)

## PREPARATION

- › Gather objects for props including the following:
  - › Rock
  - › Something to represent wind (such as a folding fan that says “wind” on it or a paper cutout of something blowing in the wind)
  - › Something to represent sunlight (such as a fake tealight candle, flashlight, or paper cutout of a sun)
  - › Worm in some soil or a picture of a worm (if using a real worm, make sure to add some soil and some air holes to the jar)



- › Jar of water
- › Jar of soil
- › Jar of wheat seeds
- › Jar of wheat stalks (or any grass to represent these)
- › Jar of flour
- › Jar of yeast
- › Jar of salt
- › Copy and cut out Rocks-to-Bread Card sets, according to the amount of students and use blank cards if need be. Put each set into separate bags.
- › Slice bread to have a piece for each student, if using.

### Rocks to Bread Key

Corn Tortilla—rock, wind, sun, worm, water, farmer, soil, corn on plant, corn kernel, sprouted corn, masa mix, salt, tortilla

Oatmeal—rock, wind, sun, worm, water, soil, farmer, oat plant, oat seed, oatmeal

Rice Noodles—rock, wind, sun, worm, water, soil, farmer, rice, rice flour, rice noodles

Naan (Indian wheat flatbread)—rock, wind, sun, worm, water, soil, farmer, wheat plant, wheat flour, yeast, cow, milk, butter, salt, yogurt

Soba Noodles (Japanese buckwheat noodles) — rock, wind, sun, worm, water, soil, farmer, buckwheat plant, buckwheat flour, wheat plant, wheat flour, buckwheat noodles

## ACTION STEPS

**1. Reading:** Gather students in a circle and read a book about bread such as *Bread is for Eating*,

which introduces the idea that bread is a food around the world and discusses all that goes into making a loaf of bread. Explain, *Bread is called a staple food because people eat it regularly and get a lot of their energy from it.* Ask students, *What are other staple foods you and your family eat? (10 min.)*

**2. Rocks-to-Bread:** Ask students, *Do you know that bread comes from rocks?* Have students explain how they believe that could be, and say, *I've brought clues to show you how, but you'll have to solve it yourselves.* Ask for volunteers, and randomly pass out objects that represent each part of the process. Explain that they're going to use these props to show the different steps involved in making bread. Say, *So if bread starts with a rock, which object do you think comes next?* Have students guess and together, call up the sun, water, wind, worms, plants, and soil, putting these props together to describe the process of erosion and decomposition that builds soil. Then say, *Now we have our soil thanks to erosion! What comes next?* Continue having students guess the next step, having the student with that prop stand up in line. For the process of growing grain, have students call up the wheat seed, water, sunlight, and wheat stalk, explaining how grains grow. Finally, have students identify the bread ingredient props (wheat stalks, wheat flour, yeast, salt, and water), and use these to describe the process involved in turning those grains into flour, and, ultimately, into bread. Several of the items may be used more than once, for example water, which is part of erosion, a growing plant, and making bread. Add props as needed for the size of your group, for example, an oven and a farmer. **(10 min.)**

**3. Discussing:** Ask students to make observations of the order of steps they've created. Ask, *What other things that you eat are made from flour?* Field responses such as pasta, tortillas, cookies, cake, and then say, *All flour comes from grinding down a whole grain or seed grown from a plant. We're going to explore other staple grains that people from different cultures eat as a regular part of their diet. (5 min.)*

**4. Telling a Rocks-to-Grain Story, Small Groups:** Divide students into groups, and pass out a set of cards to each group. Ask students to work in teams to use their cards to tell a story about growing that crop, starting with rocks and ending with their final dish (i.e., a tortilla or naan). Remind students that they'll likely need to use some of the pictures in more than one place in the story. Circulate through the room while students are sorting through cards with their groups, providing guidance and support where needed. *(10 min.)*

**5. Whole-Class Sharing:** Have each group present their story to the class. Encourage students to see how water and sunlight (or heat) are used over and over again, at each stage of the process: erosion, growing the grain, and making the staple food. *(15 min.)*

**6. Tasting:** Pass out a small slice of bread to each student. As students taste the bread, have them name all the "ingredients," starting from rocks, that went into making it. *(5 min.)*

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: *(5 min.)*

### Social and emotional learning

- *How did your group work together to figure out the puzzle of your rocks-to-grain story?*

### Check for understanding

- *What is a grain? What is a staple food?*
- *What are some of the ingredients that had to work the hardest? Which ingredients in the process were used again and again?*
- *How did your group figure out how to get from soil to your staple food?*

## ADAPTATIONS

**At Home:** Have students work with their caregivers to make a list of staple grains they eat at home. Then have them share these with one another or with the whole class.

**4th Grade NGSS:** This activity can be used in conjunction with a geology unit related to the following standard: NGSS: ESS2.A: Earth Materials and Systems. Rainfall helps shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soil, and sediments into smaller particles and move them around. (4-ESS2-1)

**Song:** Learn the song "Dirt Made My Lunch" by the Banana Slug String Band, and sing it with students.

**Soil Composition Extension:** Have students fill a quart jar halfway with a soil sample from your garden. Then have them fill the rest with water, tighten a lid on top, and shake vigorously until the soil clumps are broken up. After one day, the soil should settle into distinct layers of silt, sand, and clay.

**Cooking Demonstration Extension:** To help students better understand the process of making bread, consider doing this lesson over several sessions and making bread together before Action Step 4. Then students will be able to compare their staple grain food with the bread you make together as a class.

## **ACADEMIC CONNECTIONS**

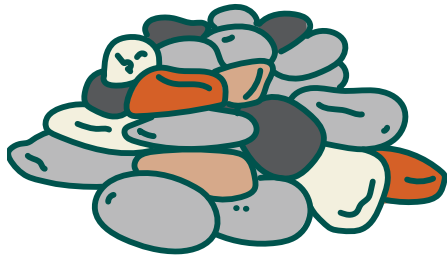
English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.RL.3.1**

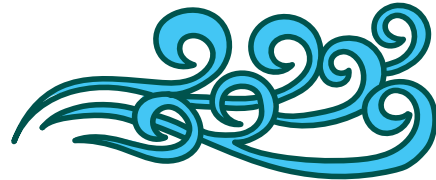
Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

# Corn Tortilla

Corn tortilla is a flatbread made in countries in Central America such as Mexico. Corn is sprouted and turned into a flour called *masa harina*. The masa flour is mixed with water or broth to make a dough. Then the dough is pressed into rounds and grilled.



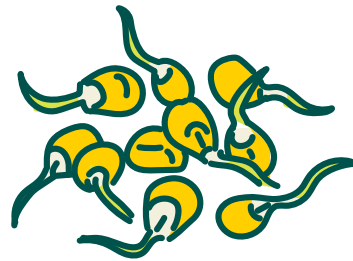
**Rocks**



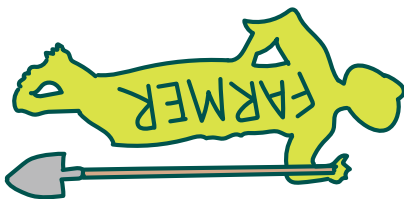
**Wind**



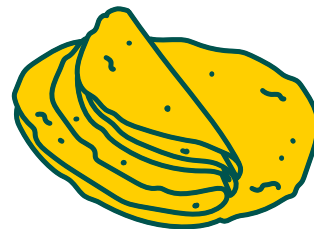
**Masa Mix**



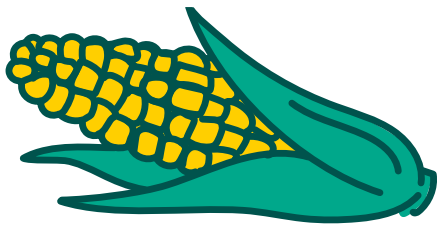
**Sprouted corn**



**Farmer**



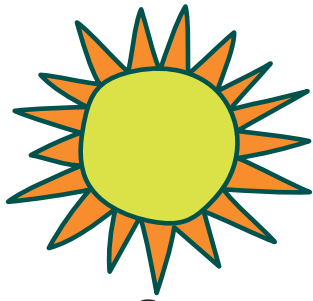
**Tortillas**



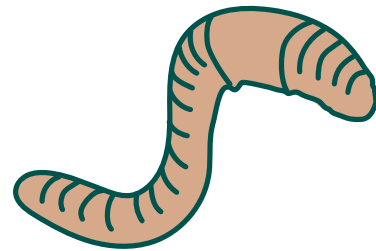
**Corn on the plant**



**Corn kernel**



**Sun**



**Worm**



**Water**



**Soil**



**Salt**

# Oatmeal

Oatmeal is a porridge typically eaten at breakfast in places such as the US, Scotland, and Canada.

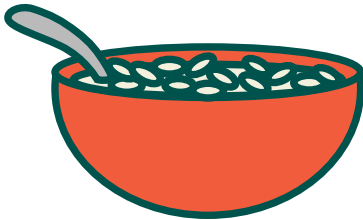
The seeds from an oat plant, known as oats, are flattened, crushed or ground, and cooked with flour or milk to make the popular breakfast food.



**Oat plant**



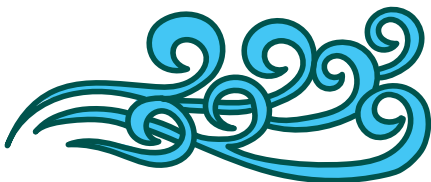
**Oat seed**



**Oatmeal**



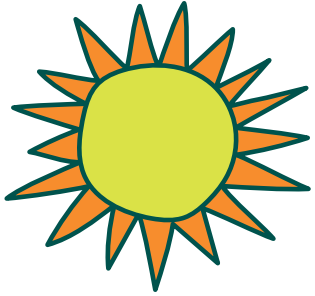
**Rocks**



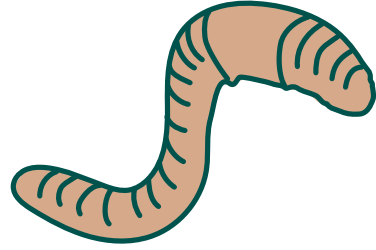
**Wind**



**Farmer**



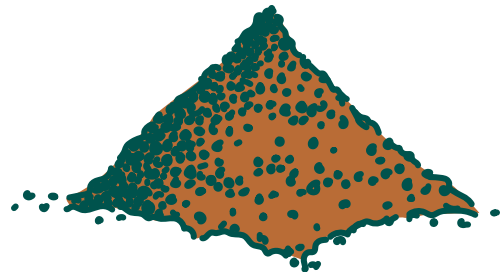
**Sun**



**Worm**



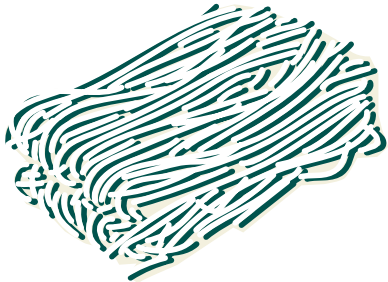
**Water**



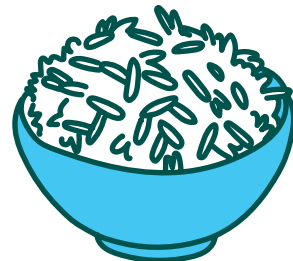
**Soil**

# Rice Noodles

Rice noodles are a staple in countries in East and Southeast Asia, such as Laos, Thailand, and Vietnam. Rice is ground into a flour, and then the rice flour is combined with water.



**Rice noodles**



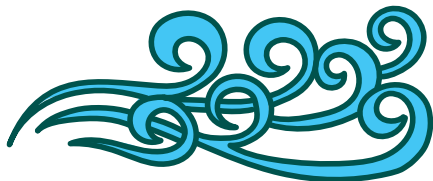
**Rice**



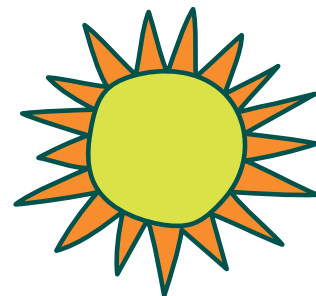
**Rice flour**



**Rocks**

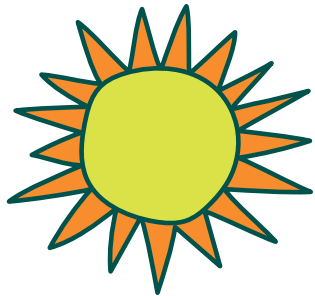


**Wind**

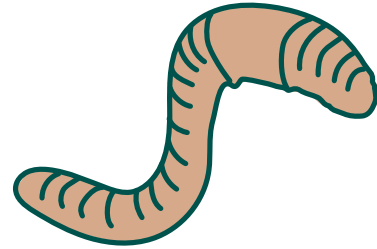


**Sun**





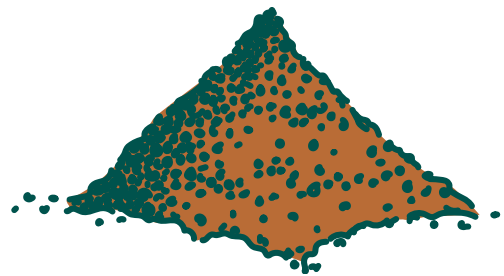
**Sun**



**Worm**



**Water**



**Soil**

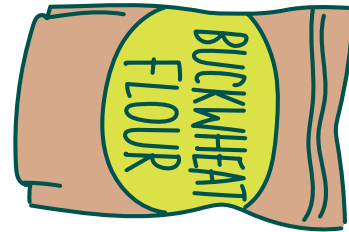


# Naan

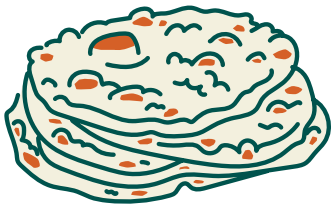
Naan is an Indian flatbread that uses yeast for leavening. Wheat flour is combined with yeast, salt, and often yogurt and butter to make the dough. The dough is rolled into rounds and often grilled in a tandoor (clay oven).



**Buckwheat noodles**



**Buckwheat flour**



**Naan**



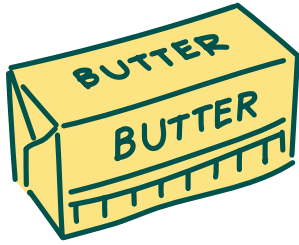
**Wheat flour**



**Wheat plant**



**Yeast**



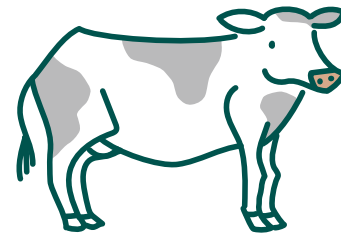
**Butter**



**Salt**



**Yogurt**



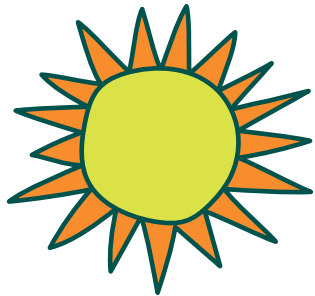
**Cow**



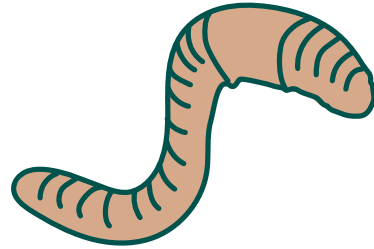
**Milk**



**Rocks**



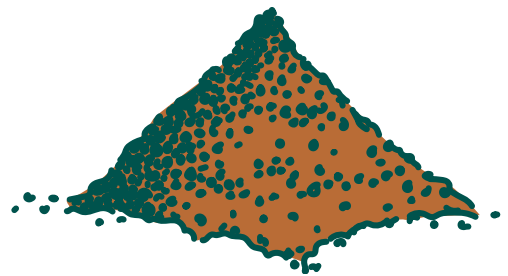
**Sun**



**Worm**



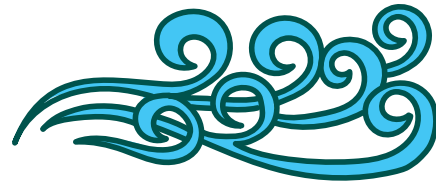
**Water**



**Soil**



**Farmer**



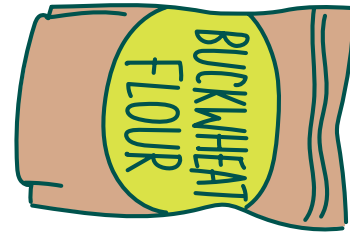
**Wind**

# Soba

Soba is the Japanese word for buckwheat, a type of plant that has a seed ground down to make a flour. Buckwheat flour is combined with water and sometimes wheat flour to make buckwheat noodles. The dough is sliced into long strands and then boiled.



**Buckwheat noodles**



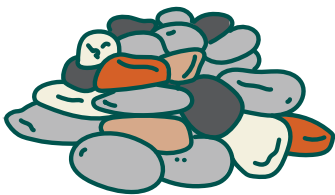
**Buckwheat flour**



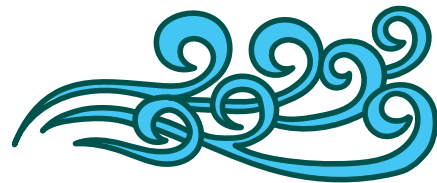
**Buckwheat plant**



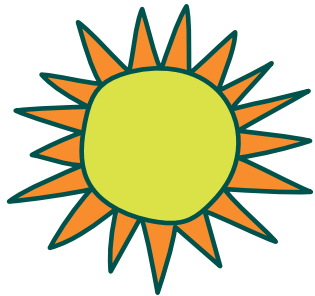
**Wheat flour**



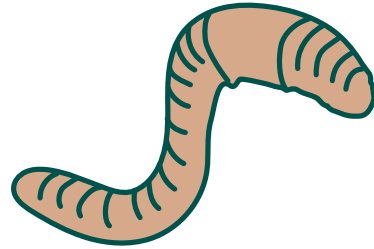
**Rocks**



**Wind**



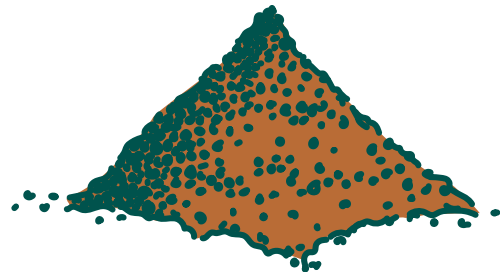
**Sun**



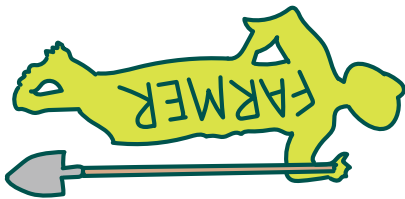
**Worm**



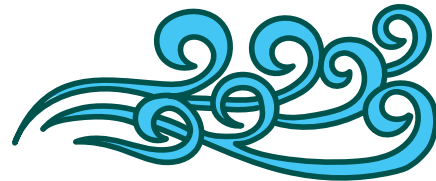
**Water**



**Soil**



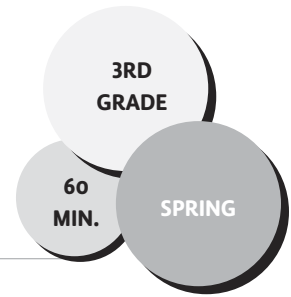
**Farmer**



**Wind**

# Planting the Three Sisters

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTIONS

*How are plants dependent on one another?*

*How do we depend on one another?*

## LEARNING OBJECTIVES

- ✓ Students will be able to plant a garden bed and care for it through harvest.
- ✓ Students will be able to describe the method of companion planting known as The Three Sisters.
- ✓ Students will be able to explain how plants, like humans, can depend on one another.

## CONCEPTS

Three sisters interdependence tool safety

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher about students' familiarity with performing and presenting stories. Together you can determine how to structure Action Step 6 and whether there is a younger class of students who students would enjoy performing for.
- Ask the teacher whether they have established groups of 3–5 students who work well collaboratively.
- During Action Step 2, suggest that the teacher support students in writing down their examples of interdependence.

- During Action Steps 4 and 5, suggest that the teacher supervise groups working on creating their retellings as you plant with groups.

## LESSON DESCRIPTION

In this lesson, students learn about the traditional Haudenosaunee planting of The Three Sisters and the accompanying legend. Students then plant a Three Sisters bed, and, in groups they devise a creative retelling of the legend to share with other students. When teaching this lesson locally, it should be planned with and informed by local native and indigenous community input.

## MATERIALS

- The Three Sisters' Roles Worksheet (p. 395) for each student
- Index card for each student
- Pencils
- The Three Sisters Poster (p. 396)
- Bag of props for students to use for their Three Sisters representations
- Corn starts, bean, and squash seeds (see Preparation)
- 3–5 trowels
- 3 watering cans
- Hose (for refilling watering cans)
- Paint stirrers (as plant markers)
- Permanent marker

## PREPARATION

- › Become acquainted with Haudenosaunee legend The Three Sisters. Consult with local Native and Indigenous communities for input on historical accuracy and cultural relevance.
- › Research who are the native people(s) of in your region and, if relevant, learn what variation of companion planting is traditionally grown.
- › Consult a local planting guide to make your selection. These crops should be planted after the threat of frost has passed. If garden programming is not in session in summer, you can plant winter squash, dry beans, and popping corn to be harvested in the fall (as opposed to summer squash, pole beans, and fresh corn varieties such as Mountain Pima, Hopi Sweet, Cherokee White).
- › Because corn needs a head start from the beans and squash, plant the corn yourself two to three weeks ahead of your meeting with students, or have corn starts to plant along with the squash and bean seeds.
- › Scout a location for your Three Sisters bed. You'll want it in a place that receives direct sunlight most of the day. There are many design options for your bed, but a 3-foot round mound is a common practice, containing four corn plants, two bean plants, and one squash plant on the outside. If you have a large class, you might have each group plant one Three Sisters mound. But if you are teaching this lesson to more than one class, and your garden space is limited, each group within a class can plant one sister each.

## ACTION STEPS

**1. Storytelling:** Gather students in a circle, and tell them the story of The Three Sisters. You might display the Three Sisters Poster as you tell the story. Explain, *The Native Americans confederacy of tribes, the Haudenosaunee tell a story of three sisters who love and support one another. There is the oldest sister, Corn, who grows very tall and lends support to her younger sister, Bean, who wraps herself around her older sister. Without Corn, Bean wouldn't have a place to climb and reach closer to the Sun. Bean helps her sisters by feeding food to the soil through her roots. Then there's the youngest sister, Squash, who's happy to stay close to the ground where she can fan her wide leaves out and bathe in sunlight from down there. She helps her sisters by shading the ground, keeping the earth moist with water, and preventing other weed plants from growing. As you name each crop, offer a hand gesture or ask students for suggestions to associate with them. For example, for beans you might twirl your finger up toward the sky. Ask, Why do you think the three crops of food that are grown are called sisters? (5 min.)*

**2. Discussing Interdependence:** Hand out an index card to each student. Explain, *When you have a relationship with someone or something where you each depend on one another, that's called interdependence. Have students repeat the word, and ask, We have interdependence in our classroom; where else do we have interdependence? Say, Think of someone you rely on. Describe in a sentence on your card how you depend on them. For example, maybe it's depending on a classmate to hold the door for you or a caregiver to take care of you when*



*you're sick.* Give students a moment to write their sentence, then say, *Now turn your card over and write something you do to help that person.* Have students share examples of the interdependence among their friends and family. **(10 min.)**

**3. Explain:** Pass out Three Sisters' Roles Worksheet, and show students the Three Sisters Poster. Go over the role of each sister crop, and have students match the roles to the crop on their worksheet. **(5 min.)**

**4. Three Sisters Role Play:** Explain to students that they'll get into groups to come up with a creative way of telling The Three Sisters story while groups take turns planting. Say, *You can create a skit, and act out the roles of The Three Sisters; you can write a poem; or you can sing a song.* Explain that they should have one person be the recorder for their group, and they'll be sharing their version with the class after everyone has planted. **(25 min.)**

**5. Planting:** Call up one to two small groups at a time to help with planting. Demonstrate tool safety and proper planting techniques for the group before you pass out seeds or starts. Emphasize respect for the plant. Demonstrate for students how they might speak to the plants to encourage their growth and express gratitude for the abundance they'll provide. Have each group water their plants and identify them with plant markers **(8 min. per group)**

**6. Performing:** Gather students in a place where each group can present their story of The Three Sisters. Remind students to be a respectful audience to their peers. **(15 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *Working in your groups today, when did you show interdependence or relying on one another?*
- *Ask yourself: Was I safe and respectful planting in the garden today?*

### Check for understanding

- *What did you think was the most important point to get across in your retelling of The Three Sisters story?*
- *How do The Three Sisters crops depend on one another to grow and stay healthy?*
- *How do you depend on others to grow and stay healthy?*
- *As we watch the three sisters crops grow, What examples of interdependence do you expect to see?*

## ADAPTATIONS

**Cooking Extension:** Create a Three Sisters meal such as a salsa, stew, or tacos with corn tortillas, zucchini, and beans.

**Nutrition Extension:** Adapt the first grade lesson Go, Grow, Glow to show how each of The Three Sisters is a go, grow, or glow food. Point out to students that eating the Three Sisters together provides all the nutrients we need, which further demonstrates the idea of interdependence.

**Flour Extension:** Have students shuck ears of corn, and use a grinder to turn the corn into flour.

**Graphic Novel Adaptation:** Instead of a skit, or in addition, have your students fold a piece of paper into eight equal sections and then create a cartoon or graphic novel depicting *The Three Sisters* and how they help one another.

**Sharing with Younger Students:** Have students share their retelling of the legend of *The Three Sisters* to younger grades who can help with tending the beds.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.W.3.3**

Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

### **CCSS.ELA-LITERACY.RL.3.2**

Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text.

Next Generation Science Standards,  
Disciplinary Core Idea

### **NGSS.LS2.A**

Interdependent Relationships in Ecosystems  
The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and

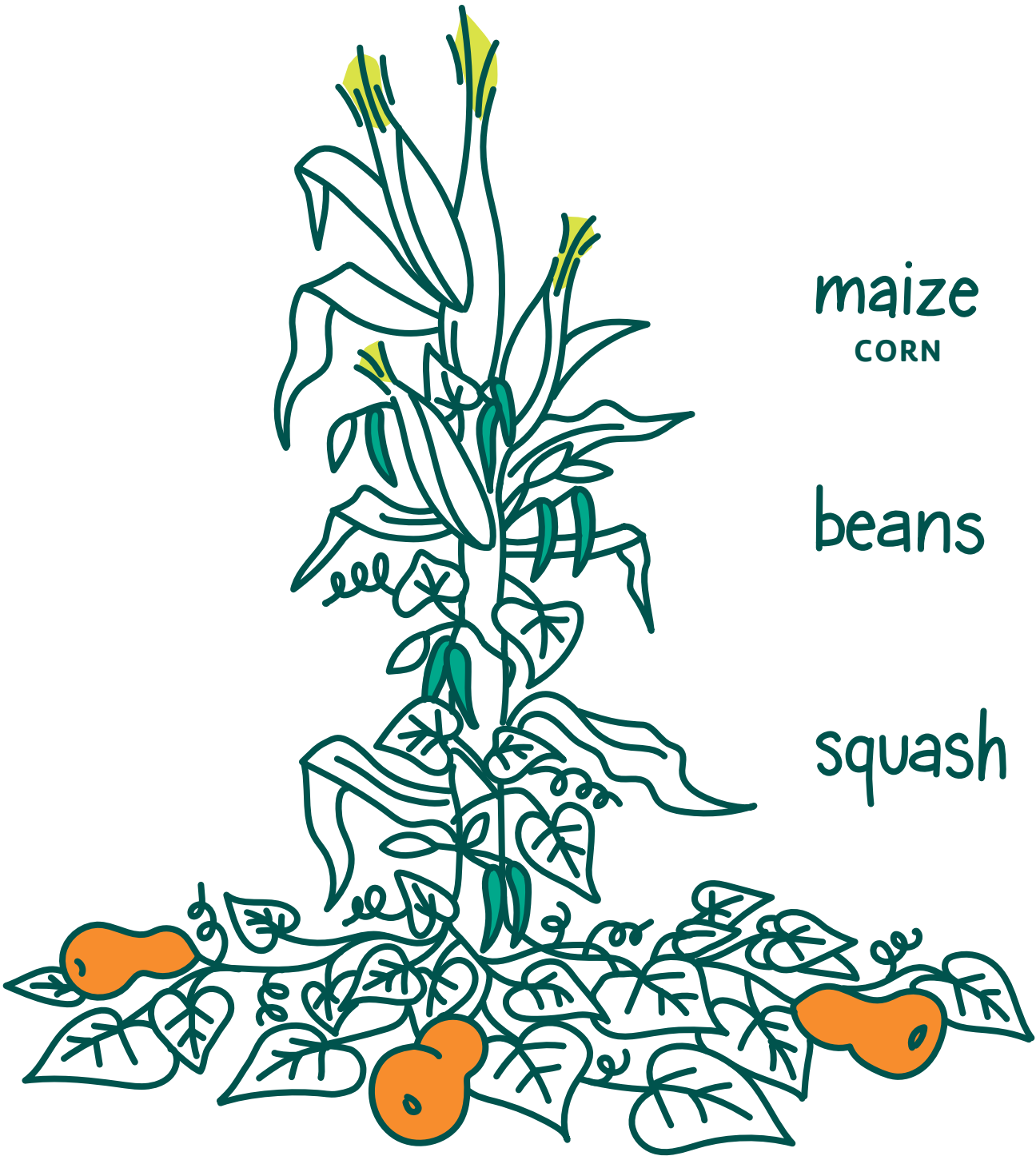
animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem.

# The Three Sisters' Roles Worksheet

**Directions:** Match each plant with what it provides to its plant sisters.



# THE THREE SISTERS



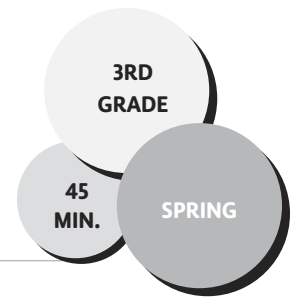
maize  
CORN

beans

squash

# Whole Grain Crackers

**THEME:** PREPARING HEALTHY FOOD



## ESSENTIAL QUESTION

*Why are whole grains an important part of a healthy diet?*

## LEARNING OBJECTIVES

- ✓ Students will be able to describe the difference between whole wheat and white flour.
- ✓ Students will be able to explain why eating whole grains is important.

## CONCEPTS

wheat berry parts    whole grains

### *Engaging the Classroom Teacher*

- Prior to the lesson, discuss whether the teacher is comfortable overseeing the grinding flour station, if using, or another station of your choice.
- Discuss with the teacher whether students are prepared to read nutrition labels.
- Determine whether there is another adult who can supervise a third station or whether students can work individually at one. Adjust your plan accordingly.
- During Action Step 3, suggest that the teacher supervise a station while you help students make crackers.

## LESSON DESCRIPTION

In this lesson, students learn about what comprises a whole grain through exploring different flours, comparing and contrasting white and whole wheat products, and participating in other activities. They then make whole grain flatbread crackers. (It would be helpful to have an adult volunteer to supervise students as they use the toaster oven.) This lesson is designed to be taught in conjunction with the lesson *Breaking Down Rocks, Building Up Bread*.

## MATERIALS

- 1 wheat berry for each student
- Wheat Berry Diagram (p. 401)
- Wheat Berry Coloring Sheet (p. 402) and pencil for each student
- Crayons or colored pencils
- Mortar and pestle (or a wheat grinder if you have one)
- 2 cups of wheat berries for grinding
- 5 small bowls, each with one of 5 different flours (buckwheat, spelt, whole wheat, all-purpose white flour, cornmeal)
- Food packaging containing whole grain and white flour ingredients
- 2–3 rolling pins (if you don't have rolling pins, students can flatten dough with their hands)
- Flatbread Cracker ingredients (see recipe)
- All-purpose flour for dusting
- Flexible cutting mats
- 1 pizza slicer, 1 set of cookie cutters (a variety is fun, but make sure they are roughly the same size for even cooking time), or 1 knife

- Vinyl tablecloth
- Toaster oven
- Extension cord
- 2 cookie sheets
- 1 cup seeds for topping crackers (sesame, poppy, etc.)
- Materials for cleanup

## PREPARATION

- › Make the cracker dough. Divide the dough into four evenly sized balls (one for each group)
- › Set up four stations in the room for students to rotate through during the exploratory phase of the lesson. (See Action Step #2 below for a description of what to include at each station.)
- › Display the Wheat Berry Diagram.
- › Photocopy Wheat Berry Coloring Sheet for each student.
- › Set up space for the toaster oven, and pre-heat it to 500°F.

### Flatbread Crackers

**Yield:** 55 1 ½-inch crackers

- 1 cup whole grain flour (whole wheat, spelt, etc.)
- 1/4 teaspoon salt
- 2 tablespoons + 2 teaspoons canola oil
- 1/2 cup water
- Sea salt
- 2 teaspoons minced rosemary, thyme, or other herb from garden (optional)

- Mix flour, salt, and oil with a fork until crumbly and mealy.

- Add 1/4 cup water, stirring while you add.
- Switch to kneading by hand when dough gets difficult to mix with a fork. Add water as necessary, until dough forms a firm ball. It should not be sticky.
- Flour rolling pin and roll out dough as thinly as possible. You should be able to see through the dough. Use cookie or biscuit cutters or a sharp knife or pizza cutter to cut crackers into desired shape.
- Reroll scraps and repeat.
- Sprinkle with choice of seeds and/or sea salt.
- Bake crackers for two to three minutes, until they puff up and brown, and then flip and bake them for one to two minutes more. They burn quickly and will still be pliable until they cool, so don't worry about underbaking them.

## ACTION STEPS

**1. Engage:** Pass out a wheat berry to each student, and ask whether they know what it is. If students answer that it's a seed, encourage them to guess what plant it grows into. Say, *We're going to make crackers today! What do you think we'd need to do to turn these into crackers?* Discuss students' responses. Explain, *This is called a wheat berry, and it contains the seed to plant a wheat plant, but it's also what we grind down to create flour for making bread and other baked goods.* Tell students they can chew on their wheat berries and eat them if they'd like to. **(5 min.)**

**2. Labeling a Wheat Berry:** Show students the Wheat Berry Diagram, saying, *Do you know that inside a seed is a tiny baby plant ready to grow? The baby plant is called the germ. A seed is very smart! It packs all the things it needs. The bran is the protective shell the seed wears like a raincoat. It has lots of fiber that*

helps with our digestion. The endosperm is like the plant's lunch bag. It has starch, which is a type of sugar. This is to give the baby plant a boost of energy when it's ready to grow. It has vitamins, minerals, and protein that the plant would rely on to grow bigger. All the different parts together have vitamins, minerals, and protein. When we eat white flour, it's made just from the endosperm, the starchy, energy-boost part of the grain, but that means it's missing some of the fiber, vitamins, and protein from the bran and the germ. When we say something is a whole grain or whole wheat, that means that when it was processed, all three parts of the seed were kept. Pass out the Wheat Berry Coloring Sheet, and have students label and color their own wheat berry diagram. Consider having them draw a coat or umbrella next to the bran, a lunchbox next to the endosperm, and a baby plant or sprout next to the germ, to help remember each part's function. **(10 min.)**

**3. Stations:** Have students rotate through stations, spending five minutes at each station. Tell students the signal you'll use, such as clapping, call-and-response, or a chime for when they should switch to the next station. Place yourself at the cracker-making station to guide students through this process. Students can work at the other stations independently with the classroom teacher supervising. **(20 min.)**

**a. Grinding Flour:** While introducing this station, say, *To make flour, people grind down grains. You can use a grinder or big machines, but today we're going to do it the simplest way we can.* Set out a mortar and pestle and one quarter cup of wheat berries for each group. Have students take turns using the mortar and pestle to grind

the wheat berries. You might consider giving students a song to sing for each person's turn, so they know when to switch.

**b. Flour Sensory Exploration:** While introducing this station, say, *There are flours made from different types of grain here. Feel them, smell them, just don't taste them. Count how many different colors you can find in each flour. Then see if you can figure out which are whole grains and which are white flour.* Set out bowls of 4–5 distinct flours that students can touch and smell. You can write the name of each flour on a separate index card, and have students try to match the labels to the flours. Perhaps have the question, *Which is a whole grain?* written as a prompt as well.

### **c. White vs. Whole Wheat Products**

**Scavenger Hunt:** While introducing this station, say, *Many products say "Made with whole grains!" on the package. The only way to know how true that is, however, is to read the Nutrition Facts. Look at each of these packaged foods, make a guess as to whether you'll find whole grains in the ingredient list, and check the list to see if you were right.* Display food packaging for different wheat products, and have students find the whole grain products versus white flour products.

**d. Making Crackers:** While introducing this station, say, *I've prepared a dough with whole grain flour for us to make flatbread crackers. When it's your turn at this station, you'll wash your hands and then roll out the dough as thin as you can get it and add seeds. Then we'll bake our crackers!* Set out cutting mats, rolling pins, cookie cutters,

and a couple small containers of flour for dusting. Give each student a small portion of the dough ball to roll out until it's so thin you can almost see through them. You can reroll the scraps and set them aside, or make extra if you have the extra hands and capacity. Give students the option of sprinkling seeds and/or sea salt, modeling so they don't add too much. Bake crackers for two to three minutes, until they puff up and brown, and then flip and bake them for one to two minutes more. They burn quickly and will still be pliable until they cool, so don't worry about underbaking them.

**4. Tasting:** Pass out crackers to each student. If students rotated within table groups, you can pass each group's crackers back to them.

**(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What was your favorite part of the activity?*
- *What was challenging about the activity? How could you work on that to make it better?*

### Check for understanding

- *What is the difference between whole grain flour and white flour?*
- *How do you make whole grain flour versus whole wheat flour?*

## ADAPTATIONS

**Matching Game Variation:** In addition to the sensory exploration, provide students with intact whole grains to match with their corresponding flours.

**Cooking Extension:** If you have the time and resources, consider baking bread with students.

**Science Extension:** If you have access to whole wheat plants, have students dissect wheat berries from the chaff.

**Classroom Extension:** After this lesson, have students create a cartoon or poster showing the cycle of how bread or crackers are made.

## ACADEMIC CONNECTIONS

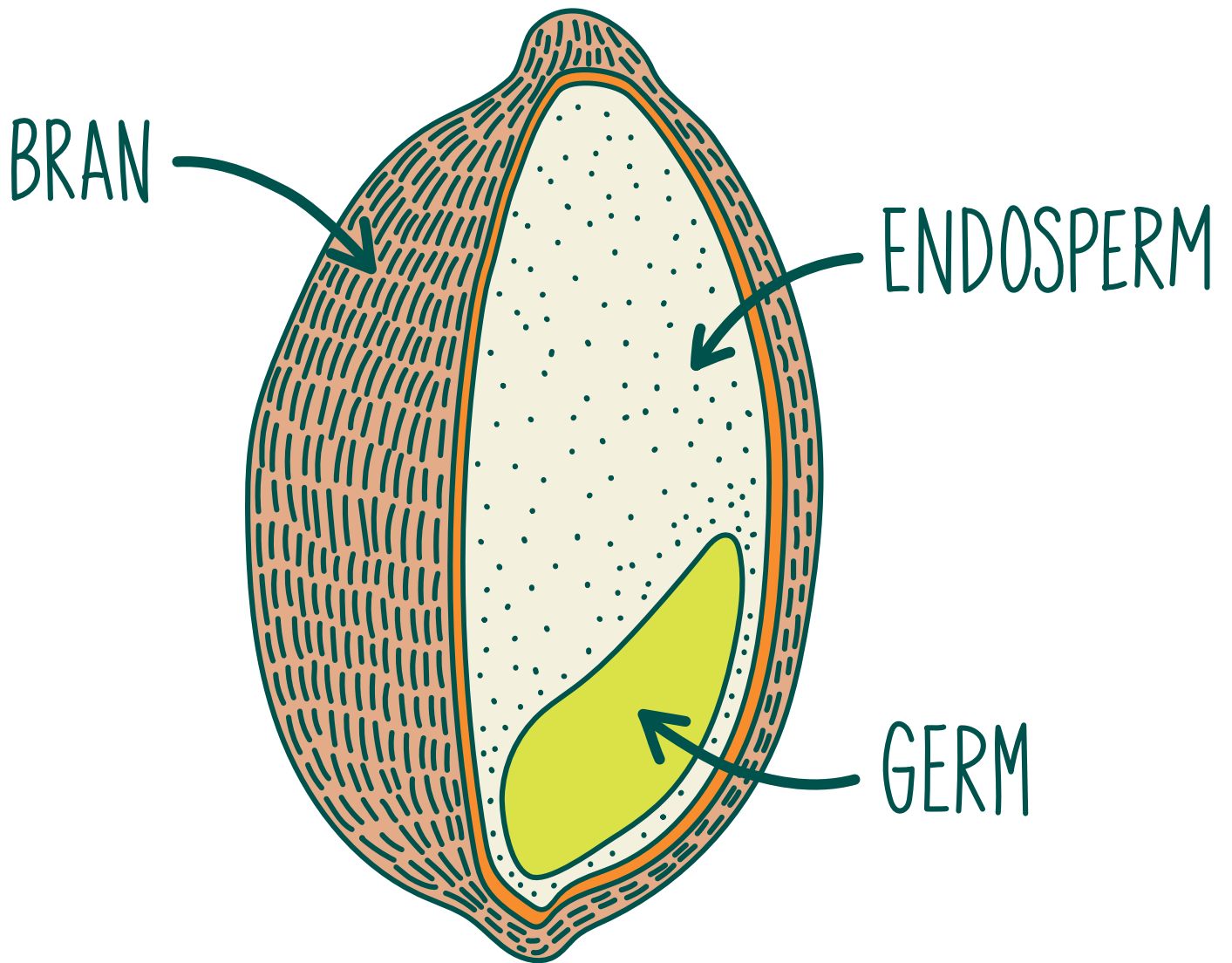
English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.SL.3.1

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 3 topics and texts*, building on others' ideas and expressing their own clearly.

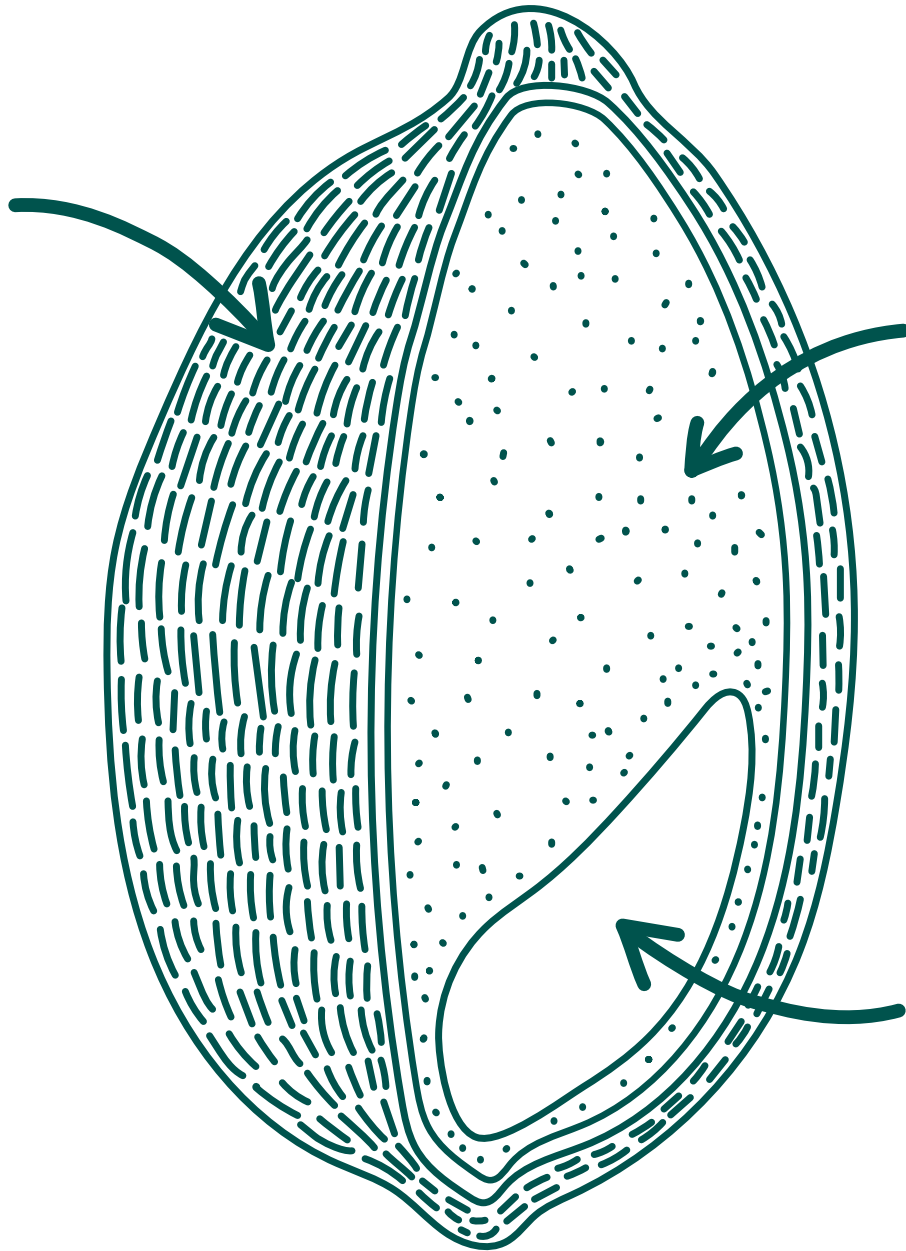


# Wheat Berry Diagram



# Wheat Berry Coloring Sheet

**Directions:** Color and label each part of the wheat berry.



# Life on the Farm

**THEME:** CONNECTING FOOD, CULTURE, AND COMMUNITY

3RD  
GRADE

45  
MIN.

SPRING

## ESSENTIAL QUESTION

*How are plants and animals involved in our lives every day?*

## LEARNING OBJECTIVES

- ✓ Students will be able to compare and contrast their lives to life on a farm.
- ✓ Students will be able to write rhyming poems.

## CONCEPTS

farm poetry rhyme

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher about students' level of familiarity with poetry. Together you can determine a realistic expectation for the final product.
- If possible, coordinate with the teacher to teach the lesson during National Poetry Month in April and/or during a poetry unit they've already planned.
- During Action Step 4, suggest that the teacher support students in writing their poems.
- During Action Step 5, suggest that the teacher help ensure pairs of students are sharing their poetry with each other.

## LESSON DESCRIPTION

In this lesson, students consider life on a farm, and they write a poem about the role of food, plants, and animals in their lives.

## MATERIALS

- *Summer Sun Risin'* by W. Nikola-Lisa
- Life on the Farm Poetry Worksheet (p. 406)
- Pencils

## PREPARATION

- › Write a model rhyming poem to share with students about food in your daily life, your own experience on a farm, or something inspired by the writing prompts below.
- › Photocopy the Life on the Farm Poetry Worksheet for each student.
- › Display writing prompts on the board or on chart paper.

## WRITING PROMPTS

A time you

- Visited a farm
- Planted seeds or a plant
- Helped in a garden
- Helped in the kitchen
- Took care of animals
- Ate a special meal
- Tried a new favorite food

## ACTION STEPS

**1. Engage:** Gather students in a circle and ask students to brainstorm the parts of their day that include food and animals. Make a list of responses on the board or on chart paper. Now ask, *What would your day look like if you lived on a farm?* Make a second column to record these responses. Have students compare the two lists and draw some conclusions. Say, *It seems like when you live on a farm, animals and plants are a big part of your everyday life.* If your students live in urban areas, ask them how this differs from their everyday life. If there are students who currently live on a farm, let those students share their experiences. **(5 min.)**

**2. Reading:** Explain that you're going to read a book that shows a day in the life of a young boy who lives on a farm. Read *Summer Sun Risin'*, stopping to ask questions and make observations to help them understand the connection between a farm and the food we eat. For example, say, *I noticed he's having milk and eggs for breakfast. I wonder where those foods are from.* Additionally, get students' ears primed for hearing and writing rhymes. At the end of each page, pause before saying the last word to encourage students to anticipate the last rhyme. After a few pages, ask, *What do you notice about the words in this book? How does it sound?* Briefly note the song-like quality to the story. After reading, look back at the list of activities you wrote for life on a farm, and see if you can add more from the book. **(10 min.)**

**3. Model:** Tell students that now they'll have a turn to write a rhyming poem based on any of the writing prompts (listed above), reading them aloud for students. Read your poem and

ask students if they can name the rhyming pairs of words. Pass out the Life on the Farm Poetry Worksheet, and say aloud each pair of rhymes as a class. Ask students to try to think of more rhymes beyond what's written. Then you might give them a few different whole lines to practice rhyming. For example, say, *What words rhyme with raspberries? So if I said, "I love to pick raspberries," what could be my next rhyming line? (But sometimes pollen makes me sneeze! I share the garden with the bees, etc.)* Encourage students to use these words in their poems or come up with their own. **(5 min.)**

**4. Writing Poems:** Explain to students, A poem tells a story or paints a picture in people's minds with the words the writer chooses. Poems often have a rhythm or beat, like a song. You can even encourage students to think of their writing as a song or rap, if that appeals more to them. Share the goal you've established with the classroom teacher, for example writing six lines. Remind students that they're writing a first draft, so they don't need to use perfect spelling. Circulate through the room, offering encouragement and guidance where needed. **(10 min.)**

**5. Sharing:** Have pairs of students find a special place in the room to read their poems aloud to each other. After about four minutes, announce that the second partner should share their poem, if they haven't already. Set aside time for students to share their poems with the whole class if they'd like. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: (5 min.)

### Social and emotional learning

- *Did you like writing your own poem?*
- *What were you most proud to share with your partner?*
- *Ask yourself: Was I a good listener to my partner when they shared their poem?*

### Check for understanding

- *What are the different chores that happen on a farm each day?*
- *Summer Sun Risin' is set in the 1950s. How do you think the story would be different today?*
- *What is a day in the summertime like for you compared to the boy in the story?*
- *What makes a poem a poem?*

## ADAPTATIONS

**Rhyming Game Variation:** If your students are comfortable with rhyming and to add some movement to your rhyming practice, turn it into a bean-bag toss game. Say a word and gently throw a bean bag (or some other object) to a student to come up with a new rhyme. You can tell students to put their hands up to show they're ready with a rhyme, so you don't put students on the spot. Once you've come up with all the rhymes for one word, have a student suggest a new word.

**Guest Extension:** Have a farmer, farmworker, or anyone with extensive experience working on farms visit the class to talk with students about a typical day on the farm. Find a farm

pen pal the class can write to. Plan a field trip to a farm.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.RL.3.6**

Distinguish their own point of view from that of the narrator or those of the characters.

### **CCSS.ELA-LITERACY.W.3.3**

Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences

### **CCSS.ELA-LITERACY.L.3.3.A**

Choose words and phrases for effect.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Life on the Farm Poetry Worksheet

**Directions:** Say the rhymes below out loud. Then come up with new rhymes.

## Pairs of Rhymes

sun	fun
fly	sky
hen	pen
tomato	potato
flower	shower
seed	
bees	
lunch	
grow	

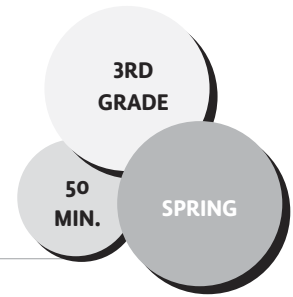
**Directions:** Use the rhymes above or others you think of to write your own poem about a time you . . .

- › Visited a farm
- › Planted seeds or a plant
- › Helped in a garden
- › Helped in a kitchen
- › Took care of animals
- › Ate a special meal
- › Tried a new favorite food

My Poem \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# Plant Families

**THEME:** EXPLORING THE ECOLOGY OF FOOD



## ESSENTIAL QUESTION

*How can we use observation to help us determine which plants might be related?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain that plant families share certain characteristics.
- ✓ Students will be able to identify characteristics that a particular plant shares with its family.

## CONCEPTS

characteristics observation plant families

### *Engaging the Classroom Teacher*

- During Action Steps 3 and 4, suggest that the teacher help students work on their worksheet and ensure it's complete before moving on to finding their leaf in the garden.
- During Action Steps 5 and 6, suggest that the teacher help students find their plant families and then work together to identify common characteristics.

## LESSON DESCRIPTION

In this lesson, students closely observe a plant leaf to determine its characteristics. Then they hunt in the garden for the plant the leaf belongs to, and then hunt for other classmates who have leaves in their same plant family. In groups, they determine the common characteristics of their plant family and share their findings with the class.

## MATERIALS

- Leaves from various plants in the garden that fall into four distinct plant families
- Pencils
- Plant Families Worksheet (pp. 411-412)
- Magnifying glasses (optional)

## PLANT FAMILY EXAMPLES

<b>Brassicaceae:</b> <b>The mustard family</b>	<b>Solanaceae: The</b> <b>nightshade family</b>	<b>Cucurbitaceae:</b> <b>The gourd family</b>
Kale	Potato	Cucumber
Collards	Tomato	Pumpkin
Cauliflower	Ground cherry	Squash
Broccoli	Tomatillo	Zucchini
Kohlrabi	Peppers	Melon
<b>Asteraceae: The</b> <b>sunflower family</b>	<b>Amaranthaceae: The</b> <b>amaranth family</b>	
Sunflower	Beets	
Zinnia	Lamb's quarter	
Calendula	Spinach	
Marigold	Quinoa	
Dandelion	Chard	

## PREPARATION

- › Photocopy the Plant Families Worksheet for each student.
- › Gather leaves from two or more plants from different plant families in your garden. Be sure to know how many plants you have represented from each family, so you can inform students.
- › Label the plants you'll be highlighting in the lesson out in your garden (i.e., put a big, visible label saying "Kale" in the kale patch). Do not include the name of the plant family on the label.

## ACTION STEPS

**1. Engage:** Gather students in a circle, and say, *Think of a breed or family of dogs and something they all have in common. Have students turn and talk to their neighbor and then share examples with the class. Explain, Dogs inherit physical traits or characteristics from their parents or ancestors, such as their color, or how long their legs are, or even what activities they like to do. They'll have certain things in common with their breed. But then a dog's environment, and how they're trained can make them different from other dogs in their dog family. Can you think of examples? (5 min.)*

**2. Relating to Plants:** Explain, *Plants we grow to eat are the same! They belong to families too. They share some characteristics with their family. Have students say aloud the word "characteristic." Continue, and plants have other characteristics that are unique, that they get from their environment. If you have them, hold up two different plants from the same plant family, such as a kale leaf and a collard leaf, and ask students to share with a neighbor: Do you*

*think these two plants are related? Why or why not? Ask pairs to share what characteristics the plants have in common. Then introduce the next activity: Today we're going to look at leaves that come from different plant families represented in our garden and work together to determine which plants are related. (5 min.)*

**3. Exploring Leaf Characteristics:** Pass out a leaf and a Plant Families Worksheet to each student. Walk students through close observation of each characteristic they should look for. Say, for example, *What is the texture of your leaf? Does it feel bumpy, smooth, fuzzy? What does your leaf's edge look and feel like? Is it jagged, round, frilly? What does your leaf look like? Is it spotted, speckled, striped?* Explain that once they've identified their leaf characteristics, they'll hunt for the plant their leaf is from in the garden, but before their hunt they must show you their completed worksheet. Have students work independently to fill out their worksheet, circulating to provide support and giving permission to hunt for their leaves once they've completed Step 1. If you're concerned you don't have enough plants to go around, have students work in pairs or groups of three. **(5 min.)**

**4. Finding Your Plant:** Have students hunt in the garden to find the plant their leaf comes from. Have students draw the plant and/or write the name of the plant once they've found it. **(5 min.)**

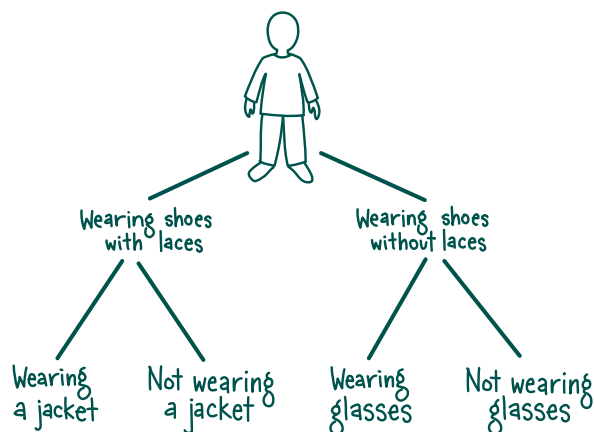
**5. Finding Your Plant Family:** Gather students back together and explain, *Now you're going to find your plant family. You'll go around to different classmates, talking with them and observing each other's leaves until you find*



someone whose leaf you think could be part of your same family. Maybe their leaf is much bigger, but it is also fuzzy and has a jagged edge, for example. Then the two of you will go and find other people in your plant family. Tell students the number of people in each group, so they'll know to stop looking for other members of their family when they've reached five people, for example. (5 min.)

**6. What Makes Us a Family?:** If students are struggling to find their plant family groups after five minutes, step in and assist them. Once students are in their groups, have them fill out Step 3 of their worksheet, determining what characteristics they all share. Circulate among the different groups, making sure they are discussing common characteristics. Guide students with open-ended questions such as, *How would you describe the shape of your group's leaves?* (15 min.)

**7. Whole-Class Sharing:** Come back together as a class, and have each group go around the circle and share the characteristics they determined their plant family had in common. Have groups also share a couple examples of plants they determined were in that plant family. Tell students the name of their plant family if they don't know it already. (5 min.)



## REFLECTION

Have students discuss the following questions in small groups, then share with the class: (5 min.)

### Social and emotional learning

- How well did your group work together?
- Ask yourself: Was I safe and respectful in the garden today?

### Check for understanding

- How do the characteristics of your plant family help it survive?
- How were you able to find your plant family?
- How do you think the garden environment changed your plant?

## ADAPTATIONS

**People Key:** You can introduce the concept of a dichotomous key by dividing your students into two groups based on an observable characteristic, such as “wearing shoes with laces” and “wearing shoes without laces” or zippers versus buttons. Focus on using articles of clothing, rather than on physical characteristics. Don't tell the class the characteristic you're using. Let them observe and guess. Then further subdivide each group, for example, by “wearing a jacket” and “not wearing a jacket.” Diagram these groups on the board and continue on. This activity is described in more detail in Shelburne Farms' *Project Seasons* by Deborah Parrella.

**Extension:** Test each group's knowledge of their plant families' characteristics by giving each group a bowl of a jumble of leaves from garden plants. They then must sort their plant family from the rest of the garden leaves.

**Tasting Extension:** Focus on one plant family,

and taste several different foods from that family, discussing how the flavors and textures are similar and different.

## **ACADEMIC CONNECTIONS**

Next Generation Science Standards, Life  
Science Disciplinary Core Idea

### ***NGSS LS3.A: Inheritance of Traits***

Many characteristics of organisms are inherited from their parents. (3-LS3-1)

Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. (3-LS3-2)

### ***NGSS LS3.B: Variation of Traits***

Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1)

The environment also affects the traits that an organism develops. (3-LS3-2)

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Plant Families Worksheet

**Step 1: Observe your leaf.**

**My leaf looks like this:**

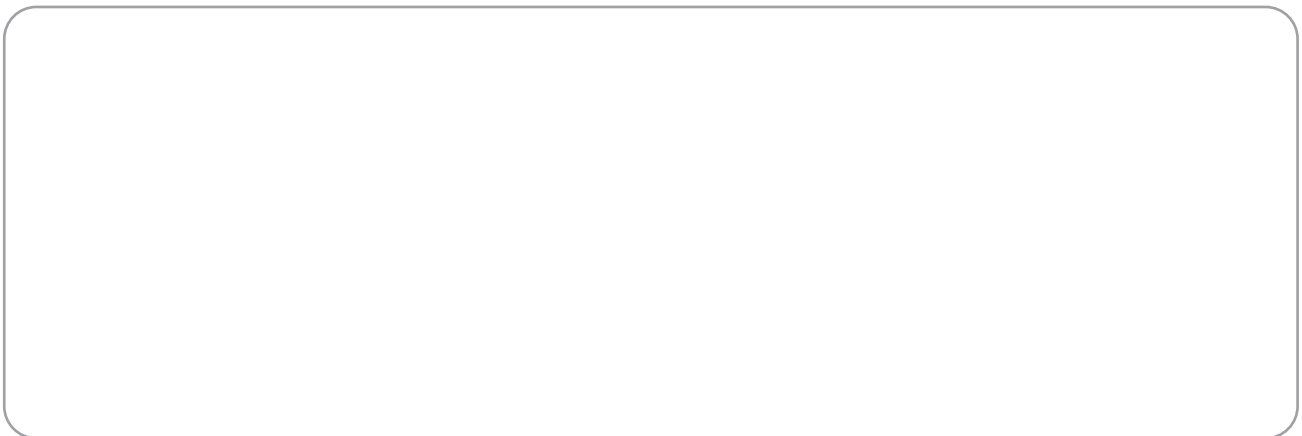


My leaf is unique because

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**Step 2: Find your plant.**

**My leaf comes from this plant:**



**Step 3: Find your plant family.**

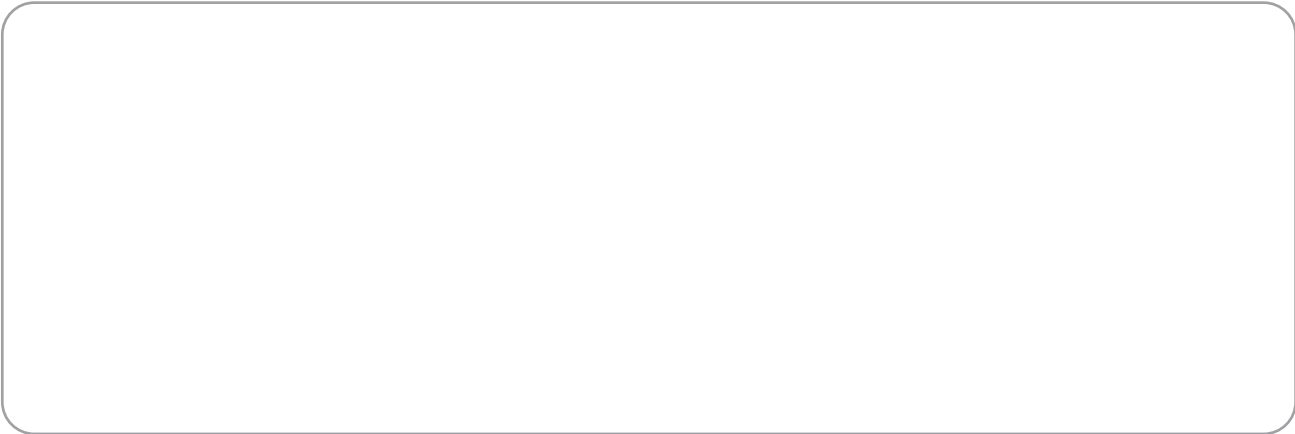
We are a plant family because we all have these characteristics:

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Name or draw the plant in your plant family:





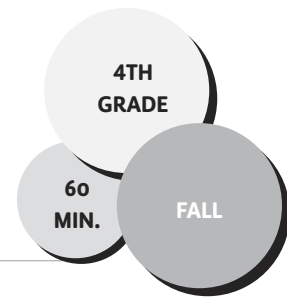
The background of the page is a light gray color with a repeating pattern of various fruits and vegetables. The items include watermelon slices, lemons, carrots, broccoli, grapes, and other produce, all rendered in a simple, line-art style. A large white circle is centered on the page, containing the main title text.

# Fourth Grade

**LESSONS**

# Food Memory Tourists

**THEME:** LIVING UP TO OUR FULL POTENTIAL



## ESSENTIAL QUESTION

*How does food influence our memories of life experiences?*

## LEARNING OBJECTIVES

- ✓ Students will be able to orally describe memories using sensory detail.
- ✓ Students will be able to write and revise narratives to incorporate sensory detail.

## CONCEPTS

description   five senses   freewrite

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher about students' familiarity with writing sensory description and sharing their creative writing in small groups.
- During Action Step 2, suggest that the teacher encourage students to add more sensory detail to their stories on their worksheets.
- During Action Step 3, suggest that the teacher be your partner while you model giving a sensory tour.

## LESSON DESCRIPTION

In this lesson, students use sensory description to write about a food memory, engage in guided sensory tours of their memories

with a partner, and share their memories with the class. Prior to this lesson, the kindergarten lesson Mindful Tasting can be adapted as a way to get students primed in describing the sensory experience of food.

## MATERIALS

- Paper
- Pencils
- Five Senses Poster (p. 56)
- Highlighters
- Food Memory Worksheet (p. 418)
- Food Memory Prompts to distribute or project

## PREPARATION

- › Write about your own food memory as a model (see below in Action Steps for details).
- › Display prompts on board or chart paper.

## FOOD MEMORY PROMPTS

- The first time you had your favorite food
- An event where you ate a dish important to your family or culture
- A time when someone you loved made you something delicious
- A time you ate/prepared something, and it didn't go as planned
- The first time you cooked something really tasty on your own
- A time when you tried a food you didn't think you'd like and were surprised

## ACTION STEPS

**1. Freewriting:** Explain that today we're going to be exploring and writing about food memories: *Food is important in our lives because we all eat, but we all have different ways that we make and enjoy food. Writing and sharing about food is important, too. Passing down food stories and recipes is an important tradition for many communities.* Say, *The idea of a freewrite is to let the ideas flow!* If students are unfamiliar with the concept of freewriting, model using a document camera for a minute or so. Encourage students not to lift their pencils from their papers for five minutes straight, but write whatever comes to mind relating to food and the prompts that you give them. Let them know that this won't be graded for grammar or punctuation. Read each prompt aloud, and tell students they can choose one or two to write about during the five minutes. If they finish their thoughts on one prompt, tell them to move on to another. Start the timer, and circulate through the room, encouraging students to keep writing or choose a new prompt if they've stopped **(10 min.)**

**2. Finding Sensory Detail:** Display the Five Senses Poster, and go over each one. Ask students, *What are sight words that might relate to a food memory? What are smell words or taste words?* Pass out highlighters, and have students highlight any details in their freewrite that relate to the five senses. Pass out the Food Memory Sensory Worksheet, and have students transfer the words they found and add new ones to their worksheet. **(15 min.)**

**3. Model:** Explain that students will be sharing

as much of their memory as they feel comfortable sharing with their partner, but instead of reading aloud their freewrites, they're going to share by taking their partner on a tour of a food memory that came up during their free write. Say, *You'll pretend that the classroom is the place where your food memory happened, and you'll guide your partner through the space. You'll have to use lots of description, and help your partner use their imagination to hear, smell, see, and taste all that you did when you had the experience.* Model by taking the teacher or a student volunteer on a guided sensory tour of your own food memory. For example, *We're in my grandma's kitchen. Here's the kitchen counter. It's a dark brown color. Can you smell the green dish soap my grandma always used?* **(15 min.)**

**4. Guided Sensory Tour:** Allow students to choose their own partner, asking them to make a responsible choice of someone they know they work well with. Tell partners that once they begin, they're free to use the space in the classroom (unless there are parts that are off limits, such as the teacher's desk) to take their tour, but they should be mindful of other students in the space. After five minutes, have pairs switch and the other partner give their sensory tour. **(10 min.)**

**5. Whole-Class Sharing:** Explain that now they'll have an opportunity to share their food memories with more students in the class. Say, *The food we like and the way our family eats feels personal. Remember to be open-minded and to listen attentively. In other words, "Don't yuck my yum!" and "One diva, one mic."* Have students share their story in small groups. Encourage every student to share, even if it's



just one paragraph or sentence. Give students the option to read their freewrite, share their worksheet, or tell the story. **(15 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did it feel to share your food memory?*

### Check for understanding

- *Why is food so important in our lives? How are your classmates' food memories similar to your own? How are they different?*
- *When you gave your sensory memory tour, what senses did you remember? Smells? Sights? Sounds?*
- *What helped you imagine someone else's memory?*

## ADAPTATIONS

**My Favorite Food Guessing Game:** As practice for coming up with sensory description, have students use the following writing prompt: "My favorite food smells, looks, tastes, feels, and sounds like . . ." Explain that they should keep the name of the food a secret. Then have students share these descriptions with a partner or in front of the class, and have them guess what their favorite food is.

### Creating a Food Memory Tasting Extension:

Consider cooking and bringing in the dish that you use as your food memory example to share with your students. This way you'll be creating a food memory together!

**At Home:** Have students write recipes that connect to their food memory. Collect the recipes and create a class recipe book.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

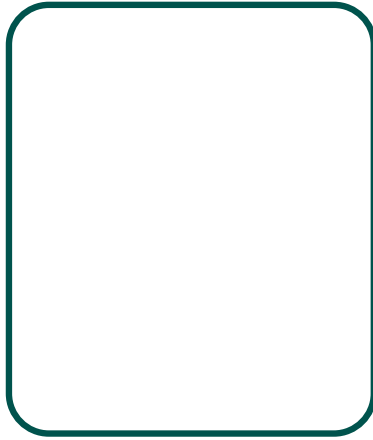
### **CCSS.ELA-LITERACY.W.4.3.D.**

Use concrete words and phrases and sensory details to convey experiences and events precisely.

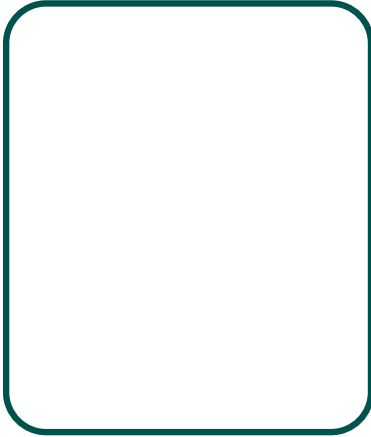
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# Food Memory Worksheet

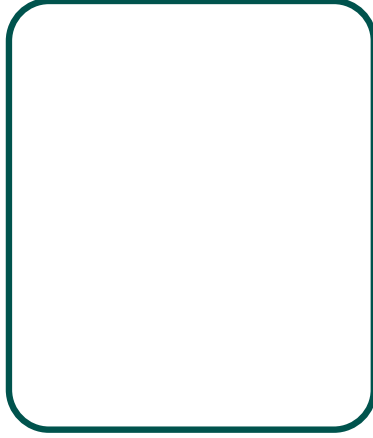
SMELL



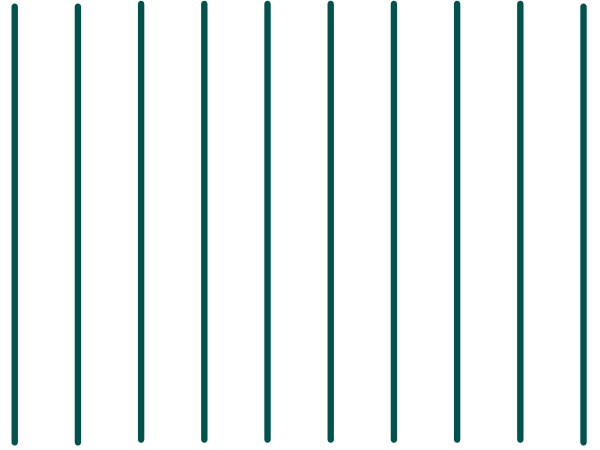
SIGHT 



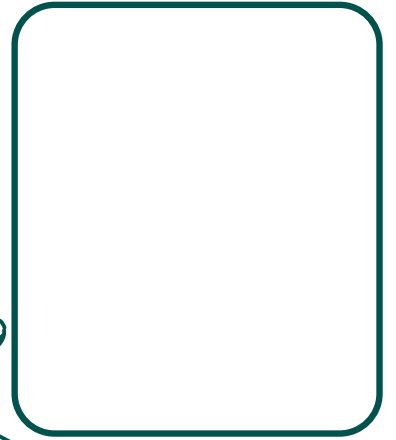
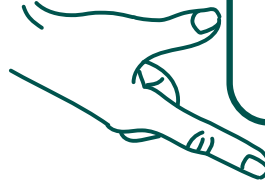
HEARING 



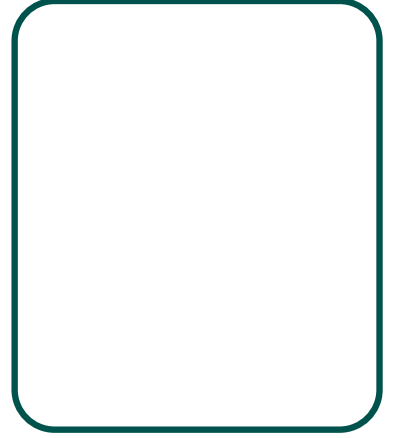
FOOD MEMORY:



TOUCH



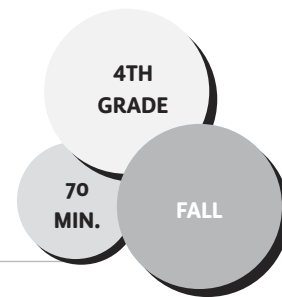
TASTE 



# Poetic Produce

**THEME:** MAKING HEALTHY FOOD CHOICES

(divided over two sessions)



## ESSENTIAL QUESTION

*How can our experience of food inspire creativity?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain that various fruits and vegetables, such as tomatoes, have different varieties.
- ✓ Students will be able to describe different produce varieties in detail.
- ✓ Students will be able to collaborate on a creative expression piece.
- ✓ Students will be able to define “preference,” identify tastes and textures that they prefer, and explain that different people have different food preferences.

## CONCEPTS

description   five senses   freewrite

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher about students’ familiarity with writing poetry and descriptive detail. If students have already been working on this writing skill, you and the teacher can determine whether there should be a Forbidden word bank (see preparation below).
- Ask the teacher if they have established groups that students will collaborate well in.

- For Action Step 5, ask the teacher if the class already has an established protocol for performing or presenting that you can use.
- During Action Step 2, suggest that the teacher circulate to the different stations, ensuring students are following directions and handling the food appropriately.
- During Action Step 5, suggest that the teacher help groups stay focused and work well with one another.

## LESSON DESCRIPTION

In this lesson, students mindfully taste and describe produce varieties at stations around the room. They then collaborate in groups to develop a poem, song, or skit incorporating all the descriptive words the class generated about each variety. After performing, the class will consider how everyone has different preferences that inform what they like to eat. The kindergarten lesson Mindful Tasting is a good lesson to adapt and teach prior to this lesson to foster students’ understanding of descriptive sensory words.

## MATERIALS

- Descriptive Food Words Poster (p. 423)
- Samples of 4–5 varieties of a single type of fruit or vegetable, such as varieties of apples, tomatoes, or salad greens
- Brown paper bags
- Toothpicks (at least 4 for each student)
- Slips of paper (at least 4 for each student)
- Bell (optional)

## PREPARATION

- › Slice produce into enough small pieces for each student to try each one.
- › Set up tasting stations around the room. If you have a large class, you might opt for five stations to limit the number of students in each group. Number each station, and display the name of the variety at the station. Each station will need a distinct produce variety, toothpicks, a brown paper bag, and enough slips of paper for each student to have one. Write the corresponding number and variety name on a slip of paper, and place it in the bag.
- › To stretch students' thinking, consider creating a Forbidden Word Bank with common words such as "sweet" that students can't use. Students will have to think of other unique sensory words instead.
- › Display Sensory Food Words Poster.

## ACTION STEPS

**1. Engage:** Gather students in a circle and say, *Have you ever heard the expression, We eat with our eyes? What do you think that means?* Discuss how eating something isn't just about how it tastes, but how it looks, how it smells, its texture, a memory it brings to your mind, or someone it makes you think of. Ask students, *What are the words we use to describe food?* Show students

the Descriptive Food Words Poster, and have them take turns reading aloud the various words. Explain that today they'll be having a tasting and doing creative writing about what they taste. Say, *We'll want to use as creative and unique words as we can!* Tell students, *I have different varieties of apples for us to try at different stations around the room. You'll visit each taste station, mindfully trying the slice of apple and paying close attention to the texture, flavors, and what it reminds you of. Then each of you will write a word or phrase, with a three-word maximum, on a slip of paper to describe your impression of that particular variety. When I say "switch," you'll move to the next station. (5 min.)*

### 2. Hand-Washing Break (5 min.)

**3. Taste and Describe Stations:** Remind students to only take one piece at each station and to only touch the slice they're going to eat. Assign groups of students to start at various stations—these will be students' working groups for the rest of the activity. After several minutes, call out "switch" or ring a bell, and have students rotate clockwise to the next station. Circulate to different stations, checking that students are following directions and supporting students who need guidance. (12 min.)



**4. Explain the Activity:** Once everyone has tried each variety, mix the bags around, and assign one to each group of students. Explain, *Your group will now create a written piece of art, using all the words in your bag. Feel free to write a poem, a story, an advertisement, or a skit; use any genre of writing. You can add additional words if you need to, but if a word like speckled has been written on five different pieces of paper, you'll have to include speckled five times in your written piece.* Explain that each group will perform their song, poem, or skit for the class, who will try to guess which variety they're describing. Therefore, it's important that they keep their variety a secret. **(3 min.)**

**5. Group Writing:** Tell students they'll have about fifteen minutes for writing and brainstorming and five minutes to do a couple rehearsals before sharing their piece. As students are working in groups, circulate through the room to check in and ensure they're on track. After fifteen minutes, ask them to get on their feet and practice their piece, making sure each member of their group has a role. **(20 min.)**

**6. Performing:** Have students return to their usual seats. Go over expectations for how to be a polite audience when their peers are performing. Have each group perform for the class, allowing the audience to guess which variety was being featured in each performance. Reveal the varieties after all groups have performed. **(15 min.)**

**7. Voting:** Remind students to consider that each person's unique perspective is represented in each poem. Ask, *Based on these poems, which variety seems most favored by the class? Which seems least favored?* Ask students to

define the word "preference," and consider their own preferred variety. Take a heads-down vote on which variety was their favorite, and discuss the findings. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did your group collaborate to create your poem, song, or skit?*
- *What challenges came up in your groups? How did you overcome them?*

### Check for understanding

- *Why is it important to try different varieties of a particular fruit or vegetable?*

## ADAPTATIONS

**Garden Variation:** Adapt this activity for students to hone their observation skills in the garden. Set up the writing stations at four different garden beds, herbs, or pollinator shrubs.

**Language:** Have students include words from different languages that they know, including the English version. For example, *rica*, "delicious." Later, when groups craft their poems, they'll have to use both words.

**Classroom Extension:** Have a station in the classroom where students will find a new, uncommon fruit or vegetable each week. Have them record their observations based on the five senses and then write a poem or story about it.

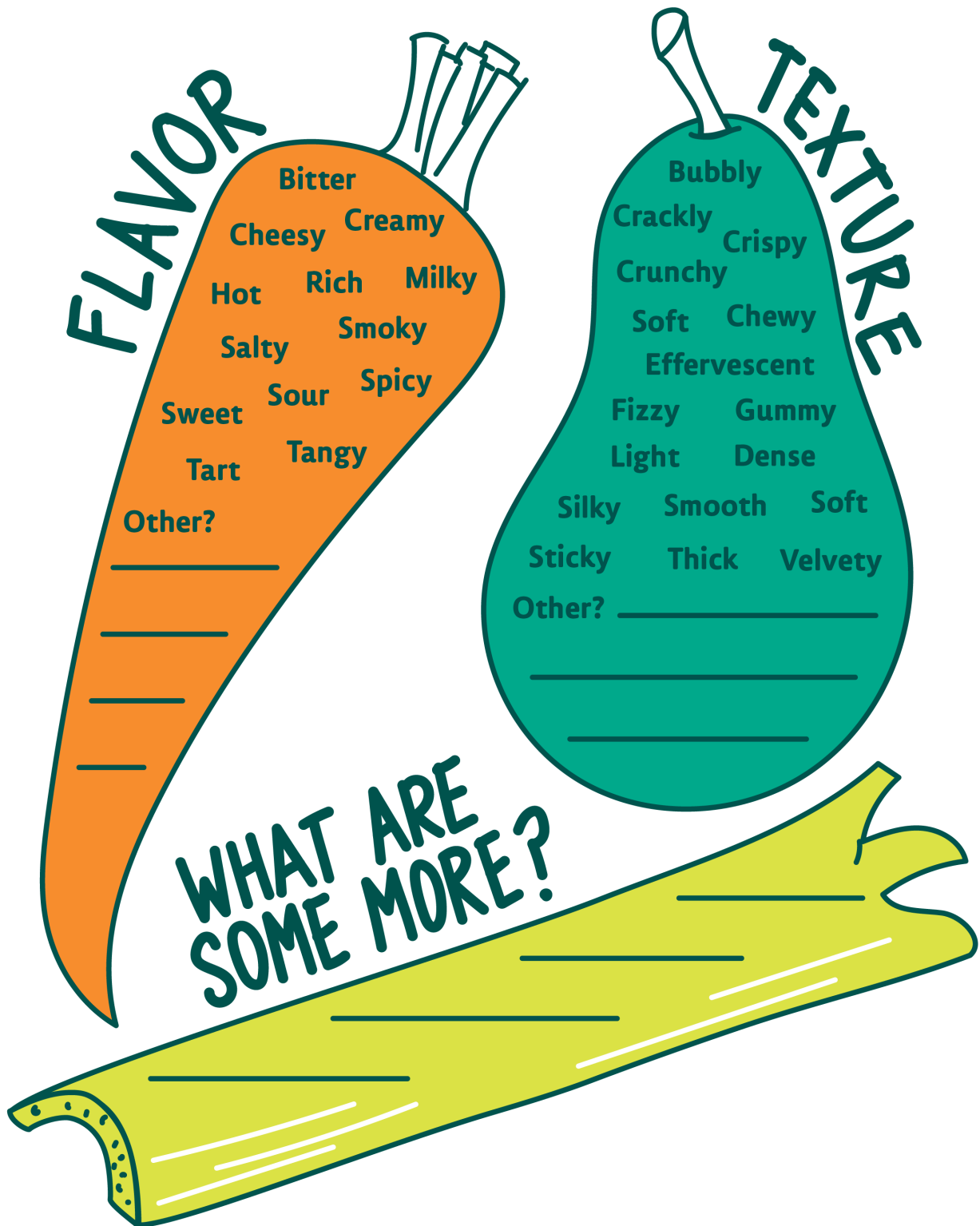
## **ACADEMIC CONNECTIONS**

English Language Arts Common Core State Standards

### ***CCSS.ELA-LITERACY.W.4.3.D***

Use concrete words and phrases and sensory details to convey experiences and events precisely.

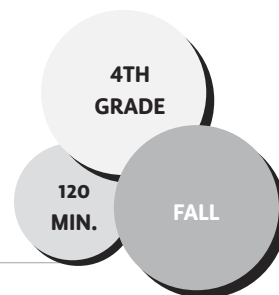
# Descriptive Food Words Poster



# Get to Know a Crop

**THEME:** EXPLORING THE ECOLOGY OF FOOD

(divided over multiple sessions)



## ESSENTIAL QUESTION

*How do we determine whether we should grow a crop in our climate?*

## LEARNING OBJECTIVES

- ✓ Students will appreciate the diversity of crops that make up our diets.
- ✓ Students will be able to compare and contrast characteristics of various crops and relate these to the climates in which the crops grow.

## CONCEPTS

crop germination region USDA zones

### *Engaging the Classroom Teacher*

- Prior to the lesson, determine with the teacher how many days you can devote to this lesson, and plan the product accordingly. The end product could range from a simple verbal argument for whether it should be grown, or a Harvest of the Month-style poster of the crop. You might plan with the teacher to include the extension of planning a garden or starting seeds of the researched crops.
- Discuss with the teacher whether students can choose their own groups or whether they have established groups

they already work best with.

- For Action Step 8, see if the teacher can share students' level of comfort and familiarity with presenting and whether they can share any protocols for presenting that are already established.
- During Action Step 1, if you have a large class, suggest that the teacher lead the game with half the class once you've explained the rules.
- During Action Steps 5 and 6, suggest that the teacher help support students as they're researching, and then help facilitate sharing the information they learned.

## LESSON DESCRIPTION

This is a research project, and the time can be split over multiple sessions or shared with the classroom teacher. In this lesson, groups of students think like a farmer and research a crop to determine whether they should grow it. After learning the crop's history and how it's grown and used, students prepare and present arguments to their classmates on whether this crop should be grown in their region. This lesson can be taught in conjunction with lessons Garden Grids, A Patchwork Garden Quilt, or fifth-grade lesson Seasonal Food Wheels.



## MATERIALS

- Horticulture reference books
- Computer lab and/or library and computer cart
- Group Role Cards (p. 428)
- Chart paper and art supplies (optional, if you want students to create a visual of their crop for presentations)

## PREPARATION

- › Connect with local native or indigenous community members about the plants that are meaningful to them. Inquire about traditional uses of these plants, and have this information ready to share with students.
- › A week before the lesson, ask the school librarian to pull some horticulture books and other resources that will help your students research crops. You may also want to reserve books from your local library.
- › Schedule a class visit to your school's library during class time and/or reserve computers.
- › Photocopy and cut out a set of Group Role Cards for each group of 3–6 students.
- › Display sentence starter: "If we were farmers, we would/would not grow this crop because \_\_\_\_\_."
- › Cue up a USDA zone map to show students.

## ACTION STEPS

**1. Growing a Farm Game:** Explain to students that they're going to play a game to think of as many fruit and vegetable crops they can think of. Define "crop" for students as a large amount of a fruit or vegetable a farm grows. Sitting in a circle, explain, *The first person to go says, "I have a farm and I'm growing" something that starts with an A like artichokes. The next person who goes will have to say, "I have a farm and I'm growing artichokes and ..."* then they add something that starts with a

B, like "blackberries." The game continues around the circle with every letter of the alphabet, and it becomes more of a challenge to remember all the other items on the farm. If you get stuck, you can ask the class to help you remember. If you have a large class, you might want to divide the class in half to play the game. **(15 min.)**

**2. Explain the Activity:** *Today I want you to think like a farmer and determine whether you'd grow a crop that you're interested in after you've researched and learned more about it. Ask, What do you think are good reasons for growing certain crops over others? Create a list together as a class. The list might include, taste, thrives in our climate, ease of growing and tending, ease of harvesting, is unusual, is well-loved/popular with customers, etc. Explain, With a group, you'll decide on which crop you'll research. Each member of the group will research something different—whether it can be grown locally, where it was first grown, its traditional uses, how it's prepared and eaten, its history, if it's sold locally, etc. Then you'll prepare an argument for why a local farmer should or shouldn't grow the crop you researched. Ask students to think of or write the name of a fruit or vegetable they'd like to research to bring to their group. **(5 min.)***

**3. Assign Groups:** Assign groups, or let them choose their own, and have students decide together in their groups what crop they'll research. You might have them select one of their individual choices at random out of a container if they're having a hard time deciding. Give each student or pair of students in each group a role card. If you have students who are English language learners, be sure to pair them with a student who can support their learning. **(5 min.)**

**4 Model:** Show students a USDA zone map and explain, *The different temperatures or climate in different parts of the country means it's easier to grow certain fruits and vegetables in certain places. For example, plants that love the heat might grow best where? Plants that really like the cold might grow best where? Your job today will be to learn all you can about your crop, including what kind of climate it grows best in.* Model researching one of the questions on the research role cards for students, thinking out loud and describing your process. Go more or less in depth with this, depending on students' comfort level using the internet to research.

**5. Researching:** At this point, you should either bring students to the library or computer lab, or provide access to a computer cart and the resources you've collected for them. Reassure them they might not find answers to all the questions, but they should write any information that helps. Circulate through the room, checking in with students, answering questions, helping them navigate web pages, and offering search terms if they are stuck. **(30 min.)**

**6. Preparing Arguments in Groups:** Have students meet with groups and take turns sharing the information they learned about their crop with each other. Give students the sentence starter, "If we were farmers, we would/would not grow this crop because \_\_\_\_\_." Ask them to have at least three reasons. If you have time, you might pass out chart paper and markers for students to draw a picture of the crop and list their three reasons. **(20 min.)**

**7. Stand Up If:** Explain that you're going to name a quality, and their group should stand up if it applies to them. Say things like, *I'm a*

*crop that thrives in cold weather. I'm a crop that is locally grown in our state. I'm a crop that is grown in our county. I'm a crop that is native to this land. I'm a crop that was historically grown in another country. I am often cooked into soups. I give you lots of vitamins and minerals.* For each group that stands up, have the group members name their crop so students are able to compare and contrast the crops. Then play the same game with statements that make connections between the crops they studied and the students themselves, such as, *I have eaten kiwis before, or I have never tried eggplant but I would like to, or Someone in my family cooks with carrots.* **(10 min.)**

**8. Sharing Arguments:** Have each group present why they would or wouldn't grow this crop, sharing their three reasons and visual, if they made one. **(25 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did your group work together today?*
- *What was a success your group had?*
- *What was a challenge? How did you resolve this challenge? How would you do it differently in the future?*
- *If you were one of these crops, which one would you be and why?*

### Check for understanding

- *What was the most interesting thing you learned about the crop you researched?*
- *What are the different factors a farmer should consider before growing a particular crop?*
- *If you were a farmer in our area, which crops*

would you grow and why?

- *What is a crop you learned about today that you have experience with? What is a crop that you would like to try?*

## ADAPTATIONS

**Guest Variation:** If you have a relationship with a farmer, you might assign groups particular local crops that they'll research. Arrange for the farmer to visit, bringing in the crops your students researched. Have the farmer explain why they chose those particular crops, what they like and dislike about growing them, how the crops did this growing season, etc.

**Garden:** Have students make a garden plan, start seeds, or plant the crops that they agreed would do well in their region in their school garden and observe them growing over time.

**Review from Prior Lessons:** For each crop researched, ask students which part of the plant people eat (i.e., carrots = roots; lettuce = leaves). Have students look at the colors of the crops they researched, and review the value of eating a rainbow of natural colors for overall health.

**Cooking Extension:** After each group has presented, challenge groups to think about all the crops they learned about and how they might be integrated into a dish. Groups can share recipe ideas and come up with a dish they'll make as a class, incorporating all ingredients.

**Field Trip Extension:** Plan a field trip to a local farm to learn about crops that are grown locally.

**Art Extension:** Show students sample Harvest

of the Month posters, and have them create a poster for their chosen crop.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.RI.4.9**

Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.

# Group Role Cards

How \_\_\_\_\_ Is Grown

YOUR CROP

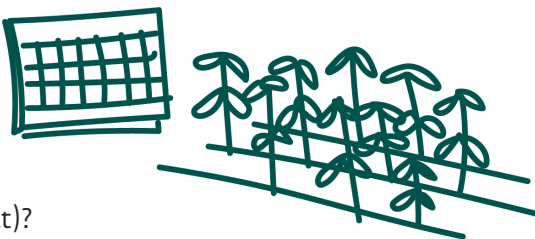
Is this crop a cool-weather or warm-weather plant?

What type of climate does this crop grow in?

What USDA zone does this crop grow best in?

How long does this crop take to germinate (or sprout)?

How long does it take for this crop to grow before it's harvested?



How \_\_\_\_\_ Is Prepared and Eaten

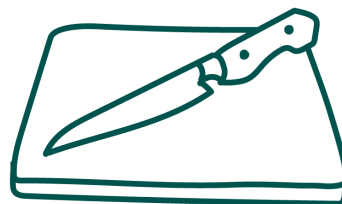
YOUR CROP

What steps do you take to prepare this crop to be eaten?

What are popular recipes that include this crop?

What is the nutritional value of this crop? (What vitamins does it contain? Is it a go, glow, or grow food?)

Does this crop have any other traditional uses? (e.g., is it a medicine?)



The History of \_\_\_\_\_

YOUR CROP

In what country and/or region was this crop first grown?

What group of people traditionally eats this crop?

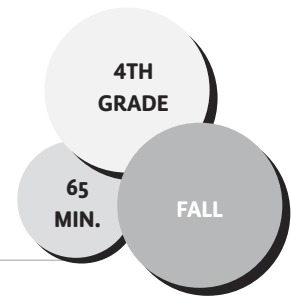
When was this crop first brought to our region?

Is this crop grown in our region today?



# Agents of Change

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*How can we be agents of change within our school?*

## LEARNING OBJECTIVES

- ✓ Students will be able to identify problems in their school and suggest possible solutions.
- ✓ Students will know that they can create change.

## CONCEPTS

action steps    activist    impact  
desired outcome    solution

### *Engaging the Classroom Teacher*

- Prior to the lesson, discuss with the teacher their level of commitment in having this be a true project-based learning experience for students. Determine how you will both support students in whatever ideas arise from this activity. Together you can decide on a realistic number of class sessions to devote to this project.
- During Action Step 5, ask that the teacher support students in getting into groups based on their topics of interest.
- During Action Step 6, suggest that the teacher circulate through the room, supporting groups in filling out their Action Plan Worksheet.

## LESSON DESCRIPTION

In this lesson, students hear about an activist who created change in the food system. They then brainstorm issues around food and health in their school community and work in teams to generate solutions and action steps they could take to be agents of change. This lesson is a springboard for student-initiated projects, and it is ideally led with significant input and support from the classroom teacher. It is important to have a plan for supporting students after the lesson with opportunities to take action on the projects they design, such as in a subsequent class period or during a lunchtime club when students can work together on tasks such as letter-writing campaigns, posters for the school, or action steps to instigate change.

## MATERIALS

- A picture book about a food activist such as *Harvesting Hope: The Story of Cesar Chavez* by Kathleen Krull
- Chart paper
- Tape (masking or painter's)
- Markers
- Action Steps and Outcomes Worksheet (p. 433)
- Action Plan Worksheet (p. 432)
- Action Group Log (p. 434)

## PREPARATION

- › Hang chart paper throughout the room, labeling each with different issues that might arise

in school related to food and health: Cafeteria Space, Lunch Food, Recess, Snack Program, Waste and Recycling, Physical Education, School Culture, Garden, and Other.

- › Photocopy the Action Steps and Outcomes Worksheet and Action Plan Worksheet for each team of 3–4 students.

## ACTION STEPS

**1. Reading a Real-Life Story:** Gather students in a circle, and explain that you’re going to read a story about someone who saw an issue in their community and took action. Read a book about a historical food activist, such as Kathleen Krull’s *Harvesting Hope: The Story of Cesar Chavez*. **(10 min.)**

**2. Brainstorming Issues:** Say, *If we were to focus on the issues at our school around food and health, what would they be?* Show students that you’ve hung chart paper throughout the room. Pass out markers and instruct them to add issues to the chart paper under the appropriate category. Demonstrate with an example, such as by writing, “There aren’t enough balls for everyone to play four square at recess” on the Recess poster. **(5 min.)**

**3. Identifying Action Steps and Outcomes:** Have students return to their desks and say, *It probably feels good to express some of those issues out loud, but we don’t just want to rant or complain. We want to figure out how we can do something about these issues.* Display the Action Steps and Outcomes Worksheet. Say, *Once we identify an issue, it’s important to figure out what we want to see happen instead. That would be our desired outcome.* Have students say aloud “desired outcome.”

Have pairs of students discuss real examples from the story they heard at the beginning of class. Have students identify the issue the activist saw, the steps they took, and the outcomes of their actions. Have students share what they discussed. Ask students to consider what would have happened if the activist had just immediately taken action instead of first considering their desired outcome. **(5 min.)**

**4. Practicing Finding Solutions:** Select one of the issues from the chart paper to examine as a class. Ask students to discuss in teams of three or four: *What would be your desired outcome?* Have teams share, and make note of their responses. Then ask, *What steps do we need to take to make that change happen?* Encourage students to think of concrete, immediate steps they can take. If students need guidance, you might ask *What’s causing this problem?* Or *Who in our school community needs to know about this problem?* But let the ideas for solutions come solely from students. **(5 min.)**

**5. Sorting into Teams:** Tell students now that they’ve practiced together as a class, they’ll have a chance to work on the issue they feel most strongly about. Have students self sort into teams based on the issue they’re most interested in. Explain that when you give the signal, they’ll get up and stand next to the chart paper that contains their issue. Give the disclaimer that there should be no more than four people in each group, and if they’re not self-sorted after three minutes, you will help them find a group. If more than four people want to work on one issue, have them divide into multiple teams, each with up to four students. These teams can work on the same issue. Give the signal, and set the timer. **(5 min.)**

**6. Finding a Solution:** Once students are settled into their groups, assign or have them self-select roles. Each group could have the following: a recorder to take notes, a time manager to keep the group on task, a facilitator to ask questions and make sure everyone's voice is heard, and a presenter to share information with the class. Have students determine the specific problem they'll be tackling. Then have them work together to fill out the Action Plan Worksheet. Say, *Make sure that everyone's voice in your group is heard. For instance, if you've just shared a lot about how you feel, it'd be nice to then ask someone on your team their opinion.* Circulate through the room, ensuring students are taking detailed notes and that all team members are getting air time. **(15 min.)**

**7. Sharing Action Plans:** Have each team report to the class. Have team representatives share the issue they decided to work on and what action steps they determined would lead them to their desired outcome. **(15 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What strategies did your team use to hear from everyone?*
- *How did your team agree on how to solve your problem?*

### Check for understanding

- *What other examples of citizens who've been agents of change can you think of?*
- *Why is it important to consider your desired outcome for a problem before taking action?*

## ADAPTATIONS

**Classroom Extension:** Have each team become an action group for their chosen issue. Have them meet once a week to check in on their progress toward their desired outcome, using the Action Group Log.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.SL.4.4

Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Action Plan Worksheet

**Directions:** Fill out the following with your team.

The problem we chose is

We chose this problem because

Instead of the current situation, we want to see

We believe what is causing the problem is

The first step we'll take is

The next step we'll take is

The next step we'll take is

We'll know we've made an impact when



Name: \_\_\_\_\_

Date: \_\_\_\_\_

# Action Steps and Outcomes

**PROBLEMS**

**ACTION STEPS**

**OUTCOMES**

	↓		↓		↓	
	↓		↓		↓	
	↓		↓		↓	

# Action Group Log

Names: \_\_\_\_\_ Date: \_\_\_\_\_ Week: \_\_\_\_\_

What have we accomplished since our last meeting?

What do we need to follow up on?

What goals do we have this week?

Who do we need to contact or get support from this week?

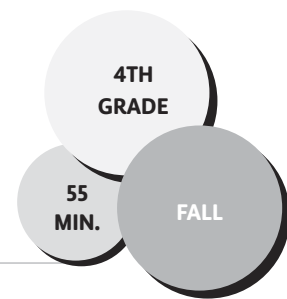
What resources do we need?

## TO DO:

- |    |                   |
|----|-------------------|
| #1 | Who will do this? |
| #2 | Who will do this? |
| #3 | Who will do this? |

# Choose-Your-Own-Flavor Popcorn

**THEME:** PREPARING HEALTHY FOOD



## ESSENTIAL QUESTION

*How can we balance flavors in a dish?*

## LEARNING OBJECTIVES

- ✓ Students will be able to identify the flavor profile of various herbs and spices.
- ✓ Students will be able to blend flavors to create a custom popcorn seasoning.

## CONCEPTS

collaboration   flavor profiles   ingredients

### *Engaging the Classroom Teacher*

- Prior to the lesson, discuss whether the teacher has an established way to divide students into groups of 4–6.
- During Action Step 3, suggest that the teacher circulate through the room as groups sort seasonings into different flavor categories.
- During Action Step 5, suggest that the teacher supervise as students come to a consensus for their groups' custom seasoning, reminding students to listen to one another.

## LESSON DESCRIPTION

In this lesson, students explore the five flavor profiles, identifying and sorting ingredients in teams and working collaboratively to create a

custom popcorn seasoning.

## MATERIALS

- Popped popcorn (see Popcorn recipe below)
  - Olive oil (for drizzling)
- A tray with the following for each group of 4–6 students:**
- 1 large bowl for popcorn
  - 1 small bowl for each student
  - Large spoon or tongs for stirring
  - Small paper tasting cups of individual herbs or spices, representing a sample of each flavor profile in the 5 Flavor Profiles table below, for example:
    - **Bitter:** finely chopped rosemary, grapefruit zest
    - **Sweet:** honey or brown sugar (choose one, and provide only a small amount in one tasting cup)
    - **Spicy:** chili powder, cinnamon
    - **Sour:** lime wedges
    - **Salty:** sea salt
  - 1 spoon for each tasting cup
  - Scratch paper and pencils
  - Flavor Profiles Poster (p. 438)

## PREPARATION

- Pop popcorn. Typically ½ cup of kernels produces about 16 cups of popcorn, so adjust the amount depending on your desired serving size.
- Just before class, drizzle the popcorn with olive oil, and distribute it into one bowl for each group of 4–6 students. Prepare trays for groups of students.

## Popcorn

**Yield:** About 30 servings, ½ cup

2 tablespoons high-heat oil such as canola or avocado

½ cup popcorn kernels

1–2 teaspoons salt, to taste

2 tablespoons olive oil for drizzling (optional)

- Heat oil in a large stockpot over medium high heat, adding 1–2 kernels right away.
- Once the kernels pop, add 1 cup of kernels or enough to evenly coat the bottom of the pot. Immediately cover the pot with a lid, gently shaking over the burner.
- Once the sound of kernels popping slows, remove the pot from the heat. As soon as popping stops, transfer into a bowl and add salt and seasonings of choice.

### Example Flavor Combinations

Salt, lime juice, and chili powder

Cocoa powder, honey, and chili powder

Salt, rosemary, and nutritional yeast

### 5 FLAVOR PROFILES

#### Salty/Umami

Dried seaweed

Nutritional yeast

Parmesan cheese

Sea salt

Soy sauce

#### Sweet

Brown sugar

Honey

Maple syrup

#### Bitter

Cocoa powder

Grapefruit zest

Peppermint

Rosemary

Thyme

#### Sour

Lemon or

lime juice

#### Spicy

Chili powder

Cinnamon

Cumin

Curry powder

Hot sauce

## ACTION STEPS

**1. Engage:** Tell students that today they'll be working with the five flavor profiles in cooking to create their own popcorn seasoning. Have students turn and talk to see if they can name all five. Share as a class. **(5 min.)**

### 2. Hand-Washing Break (5 min.)

**3. Exploring Flavors:** Explain that you've prepared different herbs, spices, and ingredients that fit the five different flavor profiles, and in teams they'll need to figure out which belongs in each profile group. Explain, *I'll give each team five scraps of paper. Your task is to sort the ingredients into five distinct groups. On each paper, write the flavor, such as bitter, and then all the ingredients you can identify that fall under bitter.* Demonstrate how to use a spoon to put a small pinch of one item into your hand without touching or licking the end of the spoon. Then smell, observe, and taste the ingredient to figure out what it is and what flavor profile it matches. Remind students that the spoons are to share, so they shouldn't touch the serving end. Also remind them to save some of each flavoring for their popcorn. Pass out trays and circulate through the room as students work in groups, asking guiding questions such as, *Does this herb smell familiar to you? In what dish have you smelled or tasted this spice before?* **(10 min.)**

**4. Discussing Flavors:** Go over each flavor profile as a class, having groups take turns sharing the identified herbs and spices. As you review ingredients, share information with students, such as how bitter herbs like peppermint can help your stomach digest foods. After you've gone over each flavor, discuss combining them. Ask, for example, *How would you balance sweetness in*

a *dish*? Discuss different popular flavor combinations students might be familiar with, such as sweet and sour sauce from Chinese restaurants or chili and lime on fruit in Mexican cuisine. **(10 min.)**

**5. Creating Custom Popcorn Seasoning:** Explain that student teams will now create their own custom seasoning for their team bowl of popcorn. Model with your own bowl (e.g., sprinkling salt, squeezing lime juice, and distributing a pinch of chili powder over your bowl). Stir with a spoon and sample, demonstrating how you adjust the flavor for your taste. Tell students they'll have five minutes to work with their team to create their seasoning. Pass out bowls of popcorn to groups of students, and have them prepare their own custom blend. **(10 min.)**

**6. Tasting:** Have students wait until you tell them to eat their popcorn. Encourage students to share some of their popcorn with other groups to taste a variety of combinations. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did your group decide what flavors to use on your popcorn?*
- *What challenges did you experience? How did you work to overcome them?*

### Check for understanding

- *What did you use for your seasoning? What were your favorite flavor combinations? How do some of your favorite dishes combine the flavor profiles?*
- *How would you teach someone else to make a flavorful popcorn seasoning?*

## ADAPTATIONS

**Garden Setting:** Split students into teams, and have them hunt for herbs and other items in the garden, finding as many of the flavor profiles as they can. Remind them only to taste with adult permission to ensure that they don't pick and eat anything poisonous.

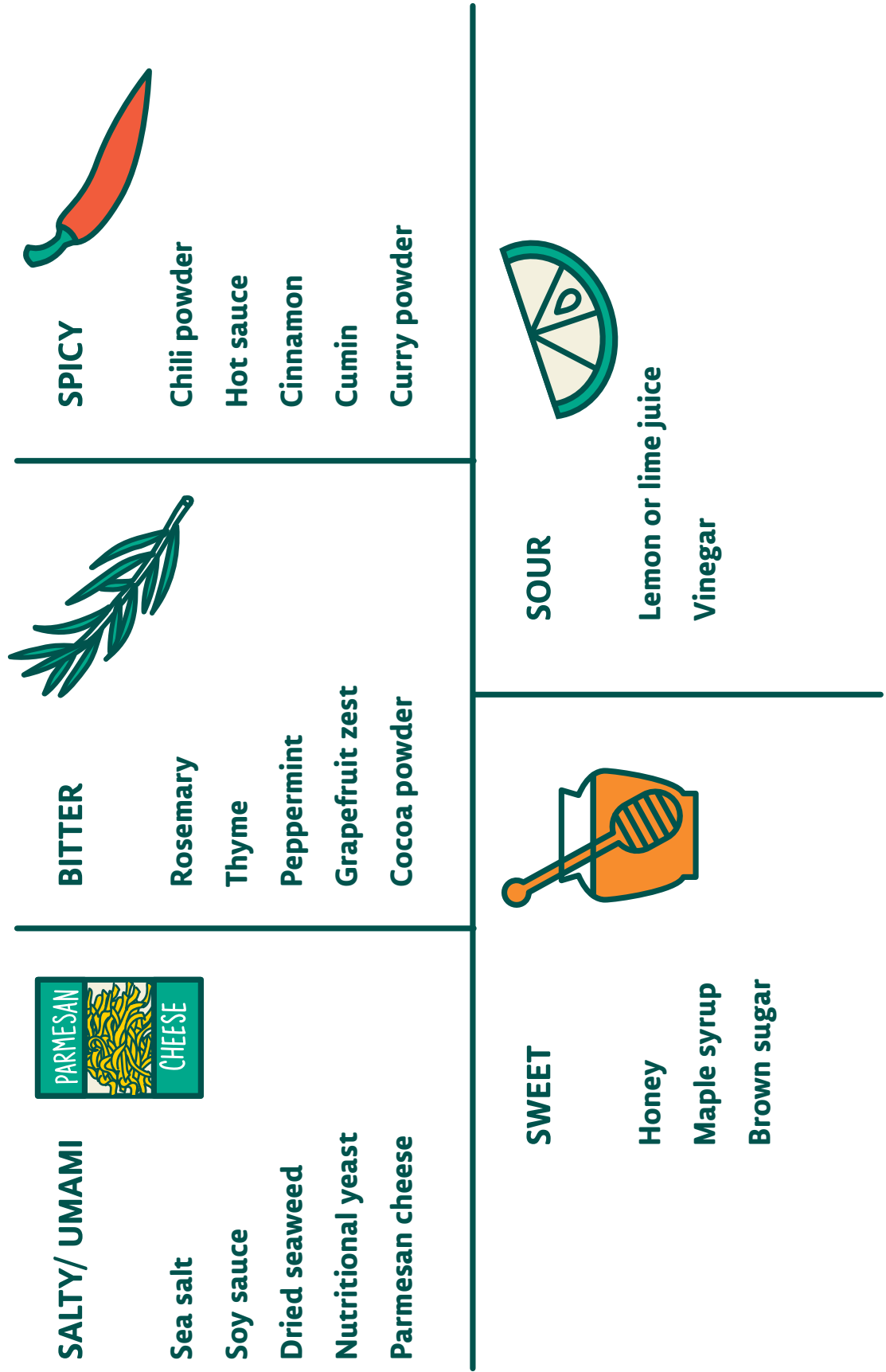
## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.L.4.5.C

Demonstrate understanding of words by relating them to their opposites (antonyms) and to words with similar but not identical meanings (synonyms).

# 5 FLAVOR PROFILES



# Getting to Know the Garden

**THEME:** LIVING UP TO OUR FULL POTENTIAL

4TH  
GRADE

65  
MIN.

FALL

## ESSENTIAL QUESTION

*How can we explore the garden respectfully?*

## LEARNING OBJECTIVE

✓ Students will be able to use their senses to familiarize themselves with features in the garden.

### CONCEPTS

expectations explorations  
five senses observation

### *Engaging the Classroom Teacher*

- Prior to the lesson, see whether the teacher is comfortable leading one of the stations during Action Step 5. Adjust your lesson and plan accordingly.
- During Action Step 2, suggest that the teacher circulate through the garden to support students during their bingo hunt.

## LESSON DESCRIPTION

This lesson serves as an introduction to the garden for upper grades, so adapt it accordingly for third or fifth grade. Students discuss expectations in the garden, play garden bingo, and then move through rotations of activities meant for them to thoughtfully engage with the plants and other living things in the garden.

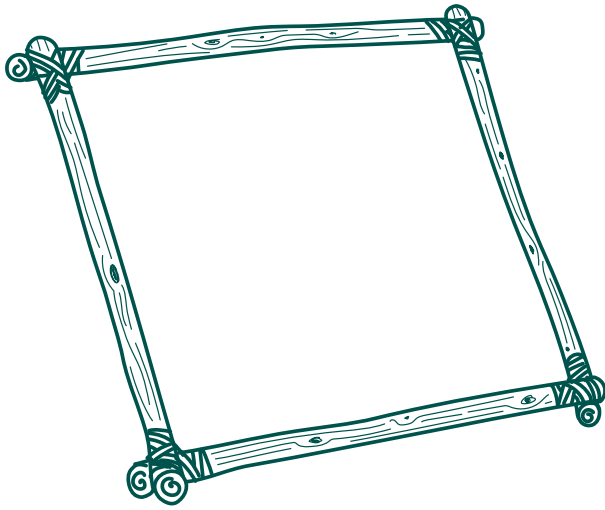
The lesson Garden Explorations serves as the introduction to the garden for younger grades. You're encouraged to mix and match stations and activities from both lessons for what will best meet the needs of your students.

## MATERIALS

- For each student:
  - Fall Garden Bingo Worksheet (p. 443-450)
  - Life in a Square Foot Worksheet (p. 451)
  - Clipboard
  - Pencil
- An empty 1 foot by 1 foot square, or quadrat (see Preparation)
- 4–5 trowels
- Full roll of painter's tape
- Yardstick, ruler, or measuring tape
- String
- Paint stirrers
- Magnifying glasses (optional)

## PREPARATION

- Photocopy full set of Fall Garden Bingo Worksheets, multiplying the amount so there's one for each student. Shuffle the sheets, so they can be handed out at random.
- Choose two or three Station Rotations from those listed below. Designate an area in the garden for each station.
- To prepare for Life in a Square Foot, create a quadrat by cutting a 1-foot-by-1-foot square out of a piece of cardboard. Alternatively, glue, tape, or tie long sticks together to create a 1-foot-by-1-foot square.



## ACTION STEPS

**1. Garden Expectations:** Gather students in a circle and say, *Today we'll get to explore the garden, which is our outdoor classroom. What are the expectations we can follow to make sure we can learn all we can and keep ourselves, the plants, and other living creatures safe?* Have students share expectations and collectively come to an understanding of how they should move about the garden. If this is your students' first time in the garden, refer to the Kindergarten Garden Exploration lesson for more details on how to establish group agreements for the garden. **(5 min.)**

**2. Garden Bingo:** Pass out a Fall Garden Bingo Worksheet to each student or pair of students. Explain that they'll explore the garden, crossing out squares when they discover them. Go over squares you anticipate students having questions about. For example, give a couple examples of pests, mammals, or root vegetables to set students up for success. Remind students how they can get a bingo (five horizontal, diagonal, or vertical squares in a row) and that they should call out bingo if they get it during exploration time. Whenever a student

wins, you can invite them to take a bow while the class applauds. Explain that you'll play a couple of rounds before returning together as a class, and be sure they know the strategy you'll use to get their attention, such as a call-and-response song or whistle. After a couple students get bingo, move on to playing all-star bingo, where they must try to find every object on the bingo board and star each one they find. **(10 min.)**

**3. Explain Rotations:** Gather students back together. Pick two or three of the following activities for students to rotate through. Nature Bracelets or Life in a Square Foot can work as self-directed stations, whereas they will need guidance for Meet a Plant or Human Camera, so if you don't have other adult support, set up stations accordingly. Explain each rotation to students and the signal for when they should switch and how. **(5 min.)**

### **4. Demonstrate Safe Tool Use (if including Life in a Square Foot):**

a. Demonstrate for students how to use magnifying glasses, demonstrating how to hold it up close to your eye, and then move the object you want to look at toward you until it comes into focus. Explain that magnifying glasses are delicate tools and that you are trusting students to use them responsibly.

b. Demonstrate for students how to use trowels to dig into the soil and look for insects and other critters safely, with the point aiming down, to avoid flinging soil upward toward their faces. **(5 min.)**



**5. Rotations: (30 min. total, 10 min. for each rotation)**

**a. Nature Bracelets:** Pass out a piece of painter's tape to each student, and have a neighbor help them secure it around their wrist with the sticky side facing out. Then let students know that they can go around collecting flowers and leaves to affix to their bracelet. Be sure to establish whatever parameters you'd like them to follow such as, *Only pick a leaf or flower if there are more than ten still left on the plant.*

**b. Life in a Square Foot:** Give a group of students a quadrat, and have them choose a location in the garden to place it down. Then they can use magnifying glasses and trowels to observe and record all the plants, weeds, and living creatures they see. Be sure to establish whatever parameters you'd like them to follow such as, *Only place the quadrat in an area outside the cultivated garden beds.*

**c. Meet a Plant or Human Camera:** (These activities are similar, so choose either i. or ii.)

**i. Meet a Plant:** Explain that, in this activity, students will get a chance to explore the garden using senses other than sight. Encourage them to explore how else their brains can receive information about their surroundings. Split students into pairs, and have one partner close their eyes, while their guiding partner leads them to a tree or shrub. The partner keeps their eyes closed while they touch and smell the plant. The guiding partner can direct their hands to interesting parts of the plant to explore. Then the guiding partner leads them back to the starting place, and the partner must find the tree they met. \*OR\*

**ii. Human Camera:** In this activity, one

person in the pair becomes a "camera" by closing their eyes. The guiding partner, the "photographer," brings their partner, the "camera," to a beautiful plant or view in the garden. Once there, the photographer positions the human camera as they'd like, perhaps guiding their chin up or down and has them open their eyes, like a shutter, to take a mental snapshot of what they see. The human camera should quickly close their eyes again, and the photographer can have them take a couple more pictures in different spots before they switch roles. Then have students open their eyes and try to find the spots where they took pictures. (Joseph Cornell, author of *Sharing Nature with Children*, developed this activity)

**6. Closing:** Gather students back together in a circle. Practice using a gathering song or call-and-response that students will always sing when it's time to come together again as a class. Then discuss the reflection questions. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What are you looking forward to learning about in the garden?*
- *Ask yourself: Was I safe and respectful in the garden today?*

### Check for understanding

- *What was the most interesting thing you discovered in the garden today?*

- Which senses did you use while exploring the garden today?
- How do you think this part of the garden will change over the season?

## ADAPTATIONS

### **Preselecting a Spot for Life in a Square Foot:**

If your garden is small, or you're unsure about letting students choose spots to dig up, you can instead preselect a location for Life in a Square Foot. In this case, turn the soil in an unplanted portion of a garden bed to unearth worms and other creatures. (If you have time to plan a few days in advance, you can cover this space with burlap or mulch.) Measure a square foot, and define the space with string and/or stakes before the lesson begins.

**Journal Extension:** Have students create garden journals in which they'll record all their observations, reflections, drawings, and measurements while in the garden. See Orientation Session in the *Sprouts Scouts Leaders Handbook* for more detailed instructions.

**Language:** Have students create plant tags and other signage in their home language and place the tags throughout the garden to identify various plants and garden features. You can use plant labels, popsicle sticks, or wooden signs painted with blackboard paint, which allow students to update the signs seasonally as you rotate your crops.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.SL.4.1**

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly.

Next Generation Science Standards






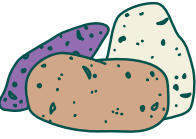



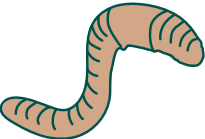

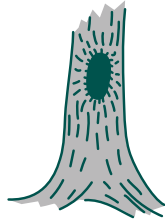


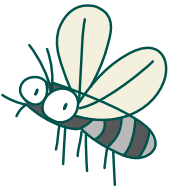
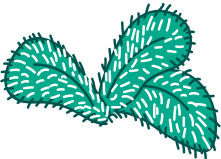


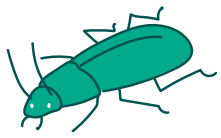


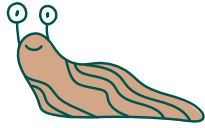


### **NGSS 4-LS1-2**

Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.


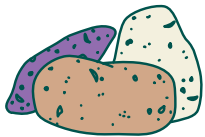


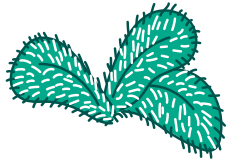


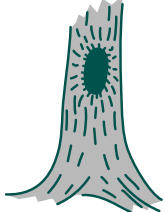
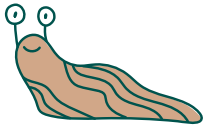
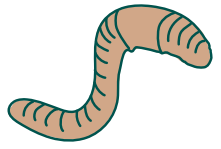



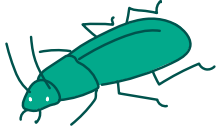

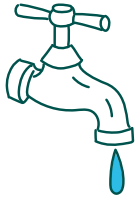


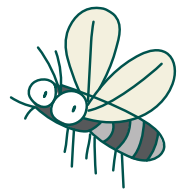





# GETTING TO KNOW THE GARDEN BINGO

 <p>A home for an animal</p>	 <p>Garden pest</p>	 <p>Spider or spider web</p>	 <p>Leaf you like to eat</p>	 <p>Plant</p>
 <p>Flower pollen</p>	 <p>A plant with thorns or spines</p>	 <p>A flower with bright colors</p>	 <p>Evidence of a mammal</p>	 <p>A plant with fuzzy leaves</p>
 <p>Fruit</p>	 <p>A weed</p>	<p><b>FREE</b></p>	 <p>Roly-poly</p>	 <p>Something that sparkles in the sun</p>
 <p>Flower you can eat</p>	 <p>Decomposing plant</p>	 <p>Dead leaf a plant dropped</p>	 <p>Seed pod</p>	 <p>Worm</p>
 <p>Vegetable that grows underground</p>	 <p>An insect that flies</p>	 <p>Compost pile</p>	 <p>A bird</p>	 <p>Water spigot</p>

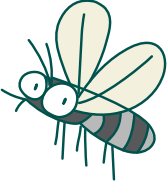
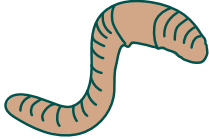
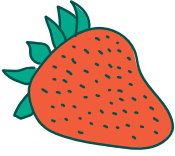



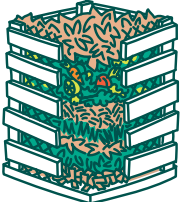




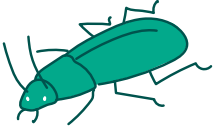




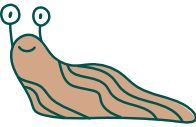



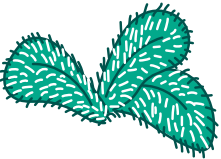
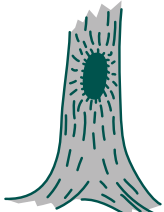
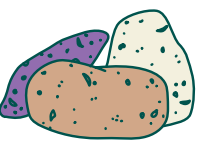

# GETTING TO KNOW THE GARDEN BINGO

 Seed pod	 Roly-poly	 Decomposing plant	 A bird	 Flower pollen
 Vegetable that grows underground	 Water spigot	 Dead leaf a plant dropped	 Fruit	 Worm
 Plant	 A home for an animal	<b>FREE</b>	 Spider or spider web	 Flower you can eat
 An insect that flies	 A plant with fuzzy leaves	 Something that sparkles in the sun	 A flower with bright colors	 An insect that crawls
 A plant with thorns or spines	 Evidence of a mammal	 Garden pest	 Leaf you like to eat	 Compost pile




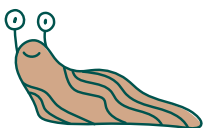



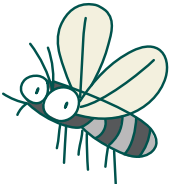
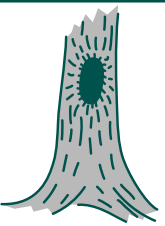



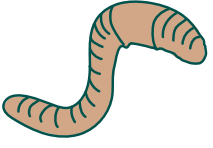







# GETTING TO KNOW THE GARDEN BINGO

 <p>A weed</p>	 <p>Vegetable that grows underground</p>	 <p>Seed pod</p>	 <p>Plant</p>	 <p>A plant with fuzzy leaves</p>
 <p>Something that sparkles in the sun</p>	 <p>Dead leaf a plant dropped</p>	 <p>A home for an animal</p>	 <p>Garden pest</p>	 <p>Worm</p>
 <p>Leaf you like to eat</p>	 <p>Roly-poly</p>	<p><b>FREE</b></p>	 <p>Evidence of a mammal</p>	 <p>An insect that crawls</p>
 <p>Compost pile</p>	 <p>Water spigot</p>	 <p>Flower pollen</p>	 <p>A flower with bright colors</p>	 <p>An insect that flies</p>
 <p>Fruit</p>	 <p>Flower you can eat</p>	 <p>Spider or spider web</p>	 <p>Decomposing plant</p>	 <p>A bird</p>

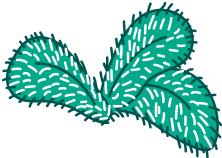

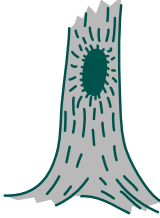
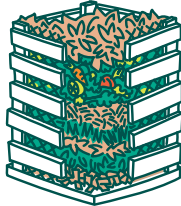







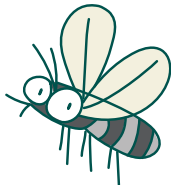

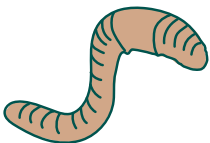



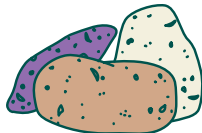

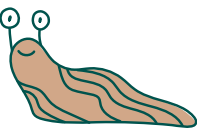

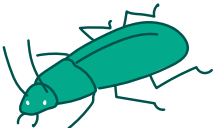


# GETTING TO KNOW THE GARDEN BINGO

 <p>An insect that flies</p>	 <p>Worm</p>	 <p>Fruit</p>	 <p>Evidence of a mammal</p>	 <p>Roly-poly</p>
 <p>A bird</p>	 <p>Compost pile</p>	 <p>Flower pollen</p>	 <p>Water spigot</p>	 <p>A flower with bright colors</p>
 <p>Flower you can eat</p>	 <p>An insect that crawls</p>	<p><b>FREE</b></p>	 <p>Seed pod</p>	 <p>A plant with thorns or spines</p>
 <p>Leaf you like to eat</p>	 <p>A weed</p>	 <p>Garden pest</p>	 <p>Plant</p>	 <p>Dead leaf a plant dropped</p>
 <p>Decomposing plant</p>	 <p>A plant with fuzzy leaves</p>	 <p>A home for an animal</p>	 <p>Vegetable that grows underground</p>	 <p>Spider or spider web</p>

# GETTING TO KNOW THE GARDEN BINGO

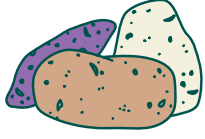

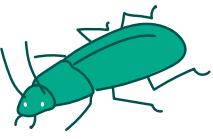








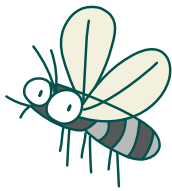
 <p>Evidence of a mammal</p>	 <p>Spider or spider web</p>	 <p>A flower with bright colors</p>	 <p>An insect that crawls</p>	 <p>Garden pest</p>
 <p>A plant with thorns or spines</p>	 <p>Fruit</p>	 <p>A bird</p>	 <p>Roly-poly</p>	 <p>An insect that flies</p>
 <p>A home for an animal</p>	 <p>A plant with fuzzy leaves</p>	<p><b>FREE</b></p>	 <p>Decomposing plant</p>	 <p>Vegetable that grows underground</p>
 <p>Water spigot</p>	 <p>Worm</p>	 <p>Flower you can eat</p>	 <p>Flower pollen</p>	 <p>Leaf you like to eat</p>
 <p>Dead leaf a plant dropped</p>	 <p>Something that sparkles in the sun</p>	 <p>Seed pod</p>	 <p>A weed</p>	 <p>Plant</p>

# GETTING TO KNOW THE GARDEN BINGO


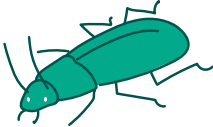
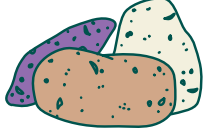
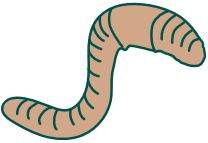



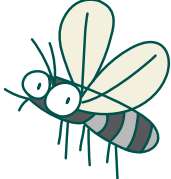


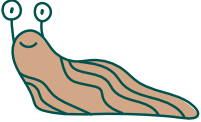


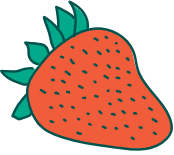









 <p>A plant with fuzzy leaves</p>	 <p>Flower you can eat</p>	 <p>A home for an animal</p>	 <p>Compost pile</p>	 <p>Dead leaf a plant dropped</p>
 <p>Water spigot</p>	 <p>A plant with thorns or spines</p>	 <p>A weed</p>	 <p>Leaf you like to eat</p>	 <p>Something that sparkles in the sun</p>
 <p>A flower with bright colors</p>	 <p>An insect that flies</p>	<p><b>FREE</b></p>	 <p>A bird</p>	 <p>Worm</p>
 <p>Spider or spider web</p>	 <p>Seed pod</p>	 <p>Roly-poly</p>	 <p>Vegetable that grows underground</p>	 <p>Plant</p>
 <p>Garden pest</p>	 <p>Evidence of a mammal</p>	 <p>An insect that crawls</p>	 <p>Fruit</p>	 <p>Decomposing plant</p>



# GETTING TO KNOW THE GARDEN BINGO

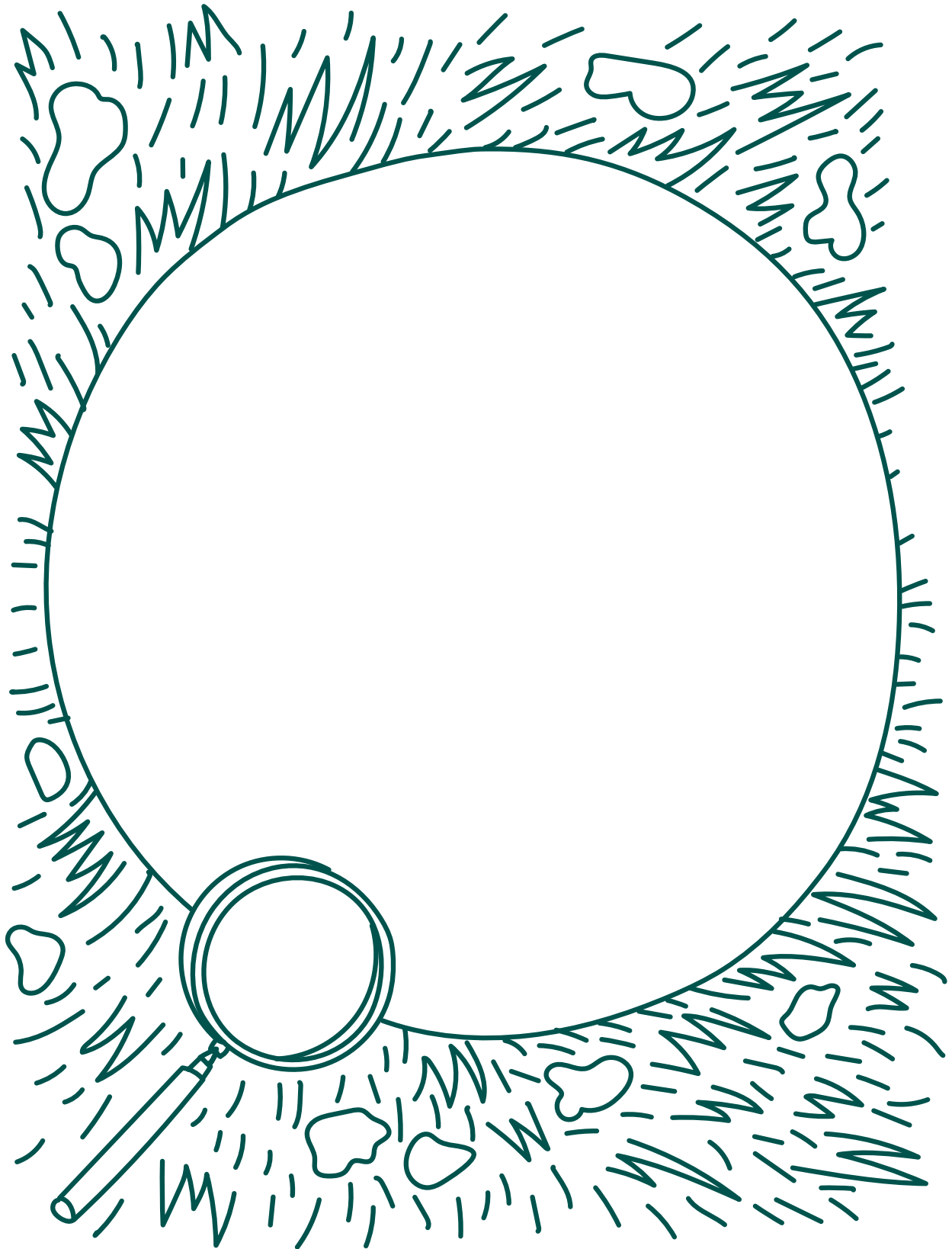
 <p>Water spigot</p>	 <p>Vegetable that grows underground</p>	 <p>A flower with bright colors</p>	 <p>Evidence of a mammal</p>	 <p>An insect that crawls</p>
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# GETTING TO KNOW THE GARDEN BINGO

 <p>Decomposing plant</p>	 <p>An insect that crawls</p>	 <p>Vegetable that grows underground</p>	 <p>Worm</p>	 <p>Flower you can eat</p>
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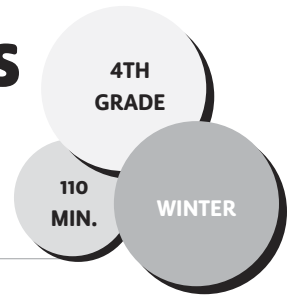
# Life in Square Foot Worksheet

**Directions:** Draw everything big and small you see!



# Becoming Cafeteria Mentors

**THEME:** MAKING HEALTHY FOOD CHOICES



Session 1: 65-min. planning period

Session 2: 45-min. final run-throughs and presentations to kindergarten and first grade classes

## ESSENTIAL QUESTION

*How can we create an engaging presentation to teach younger students about making healthy choices?*

- During Action Step 4, suggest that the teacher support students in preparing their presentations.

## LEARNING OBJECTIVES

✓ Students will be able to identify and communicate to younger students how to navigate the salad bar to build a balanced meal in the school cafeteria.

✓ Students will be able to identify and communicate to younger students how to be kind and thoughtful in the school cafeteria.

## LESSON DESCRIPTION

In this lesson, students will consider the best ways to navigate the cafeteria salad bar. Then, in groups, they'll brainstorm engaging ways to present this information to younger students with whom they'll establish mentor relationships. This lesson is designed to be taught in conjunction with the lesson *Rainbow at the Salad Bar*.

## CONCEPTS

healthy choices   mentor   salad bar

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher to help identify a younger grade classroom that they can present to.
- Determine whether the teacher can be flexible with timing in case students' preparation for presentations takes longer than planned. Plan together how many class sessions it'll take to complete the activity.
- Ask the teacher whether the class has established groups that students collaborate well in.

## MATERIALS

- Plates, cafeteria trays
- 10 copies of Salad Bar Sorting Cards (pp. 456-458)
- Bowls or containers to categorize sorting cards
- Peer Presentation Rubric (p. 459)
- Chart paper
- Markers
- USDA/FNS "Salad Bar Etiquette" handout (find online)

## PREPARATION

- › Coordinate with kindergarten and/or first-grade classroom teachers to determine a date and time that a group of fourth graders can come to teach about the salad bar. Plan the number of students in each group depending on how many classrooms you plan to visit.

- › Set up a meeting with a member of the food service staff ahead of time to learn about typical lunchtime offerings and serving styles; discuss this lesson with them; ask what they would like your students to emphasize when teaching kindergarteners and first graders about navigating the salad bar; and find out how else your class might be helpful, such as by creating visual aids for the cafeteria.
- › Photocopy the Salad Bar Sorting Cards.
- › In your classroom, arrange desks, or set up two long tables on opposite sides of the classroom to act as imaginary salad bars or lunch lines. Do your best to mimic the actual setup of your school salad bar (single line, two-sided line, etc.). You might see if you can borrow cafeteria trays for students to use during the simulation. Place a stack of these or plates at the end of the table where students will start. Place ingredient cards in different containers to act as salad bar or meal line components. Pick ingredients you know your cafeteria regularly has.

## ACTION STEPS

**1. Simulated Cafeteria Salad Bar:** Gather students in a circle and explain, *Today we're going to be thinking about the choices we make at the cafeteria salad bar.* Point out the pretend salad bars on either side of the classroom, and explain that they'll go through and take different cards to create a pretend lunch salad. Ask them to tell you what behavior expectations are when approaching the salad bar, and have them model these same behaviors (keeping your place in line, quiet voices, etc.). Then split the class in two, and have students form a line to go through the pretend salad bar to build a salad. **(10 min.)**

**2. Finding What's on Our Plate:** Have students return to the circle with their salad bar selections, and go through the different components. It might look like the following: *Give a thumbs up if you have more than five things on your plate. Give a thumbs up if you have more than three colors on your plate. More than four colors? Every color of the rainbow? The more diversity in our diet, the better because that way we're getting the different vitamins and minerals our bodies need. Thumbs up if you have protein on your plate like an egg, beans, or cheese. Protein helps build our muscles and maintain our organs. Thumbs up if you have something you've never tried before. Often we assume we won't like something, but if we're open to trying new things again and again, we discover new healthy food that we actually like to eat. Ask students whether, considering the different things you've discussed—diversity, eating the rainbow, incorporating protein, and trying new things—there's anything more they'd add to their plates. **(5 min.)***

**3. Explain the Project:** Tell students that they're going to teach younger students how to make healthy choices at the cafeteria salad bar. Ask students to turn and talk to a neighbor about what kindergarteners and first graders should learn about going through the salad bar or lunch line and about being in the cafeteria in general. Have partners share. Record responses on chart paper or on the board, creating a list together as a class. You might ask students, *What does it look like to be polite in the lunch line?* Show students the Salad Bar Etiquette handout from the USDA, and add anything they may have missed to your list. *What does it look like to be kind and thoughtful at the lunch table? What does it look like to be inclusive at lunch time? **(10 min.)***

### SAMPLE TOPICS

- Making Choices at the Salad Bar
  - Diversity/eating the rainbow
  - Picking protein
  - Trying new things
- Line Etiquette
  - Use utensils, not your hands
  - Cover your mouth with the inside of your elbow if you need to cough or sneeze
  - Take turns and keep bodies safe
- At the Table
  - Be kind
  - Be inclusive

**4. Creating Presentations:** Tell students that their challenge is to think of fun ways to share this information with students in a presentation that should be no longer than ten minutes. Say, *You can create a skit, a song, a game, or a presentation with a poster as long as it communicates the information we discussed.* Assign groups of four to five students, and have them work to create their presentation. Explain that they'll have to be ready to give their presentation to their peers. Say, *Your peers will be evaluating your presentation on four factors: that you project your voices and speak clearly, that you include three specific pieces of new information (these might be about healthy choices at the salad bar, being polite, specific things the food service staff asked you to highlight, etc.), that you make it fun, and that you make it easy to understand.* **(20 min.)**

**5. Practicing in Groups:** Pass out a Peer Rubric to each group. Explain, *One of the best ways to improve a skill is by receiving specific feedback.* To help improve our presentations, we'll be giving feedback to one another. Match groups to give presentations to each other and provide

feedback. Circulate through the room, ensuring students are on task. After ten minutes or so, have groups switch roles. **(20 min.)**

### REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

#### Social and emotional learning

- *How do you feel about presenting to the younger kids?*
- *What are steps we can take to feel confident and prepared?*

#### Check for understanding

- *Why is it important to try new things?*
- *Why is important to have variety on your plate? Why is protein important to eat?*
- *What are the important things to keep in mind when you're presenting to the younger kids?*

### ADAPTATIONS

**Extension:** Have students make food safety posters and other signage for the salad bar that cafeteria staff have deemed would be most helpful.

**Follow-Up:** Coordinate with kindergarten and first-grade teachers to assign fourth graders to be lunch buddies to their classes. Fourth graders can go through the lunch line with their younger peers, guiding them through the salad bar and eating together.

**Variation:** Consider using this lesson as a model for having students mentor one another on a variety of topics they feel passionately about.

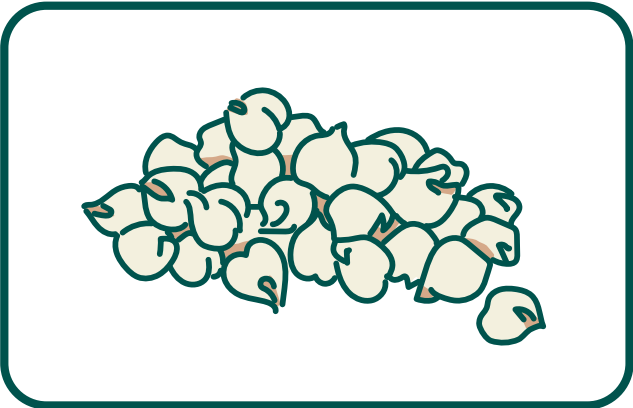
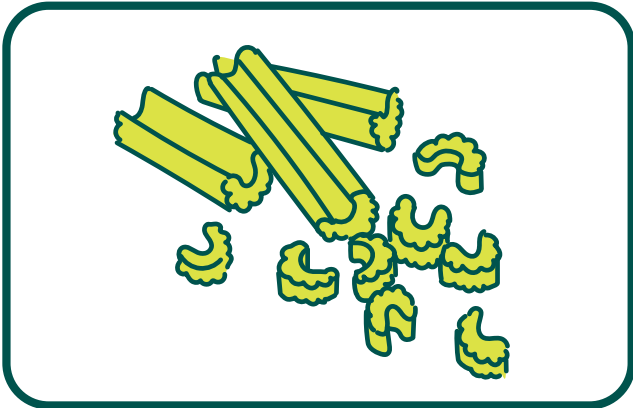
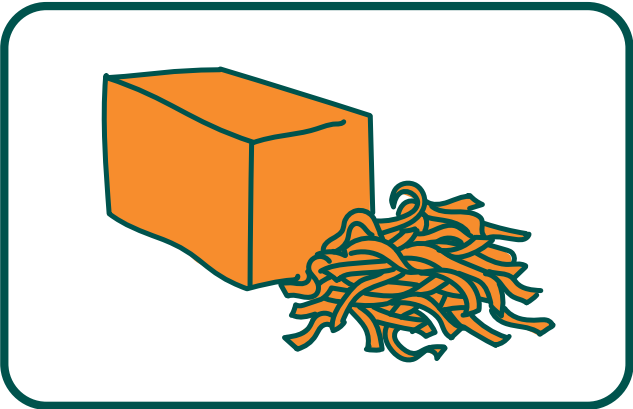
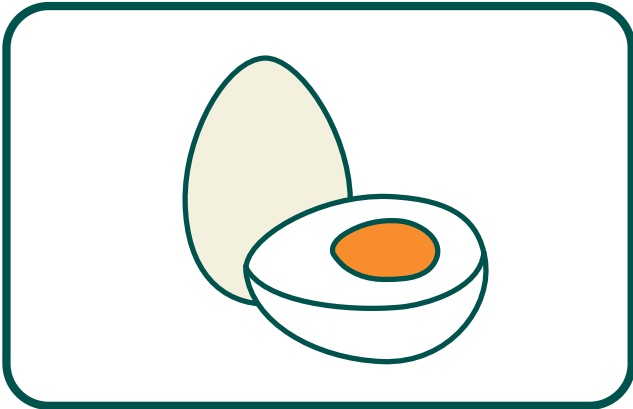
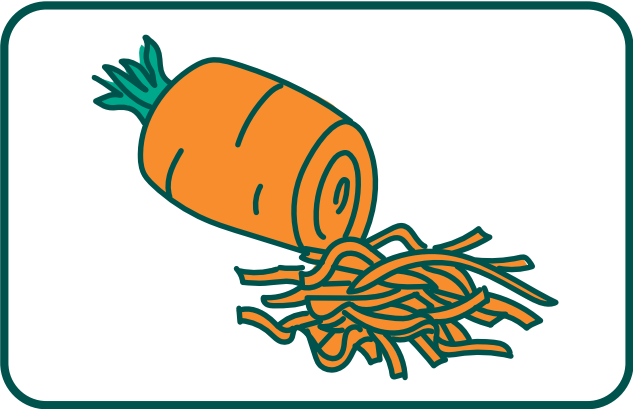
## **ACADEMIC CONNECTIONS**

English Language Arts Common Core  
State Standards

### ***CCSS.ELA-LITERACY.SL.4.4***

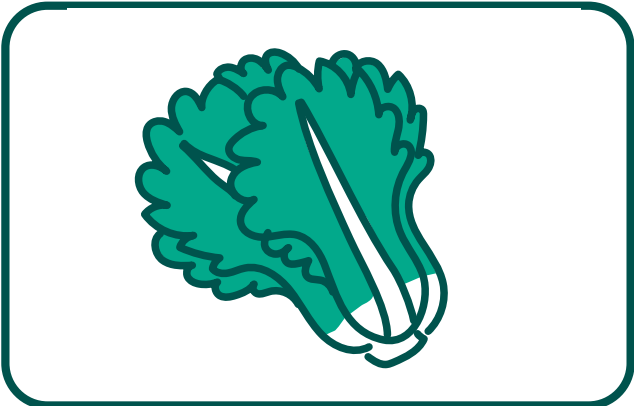
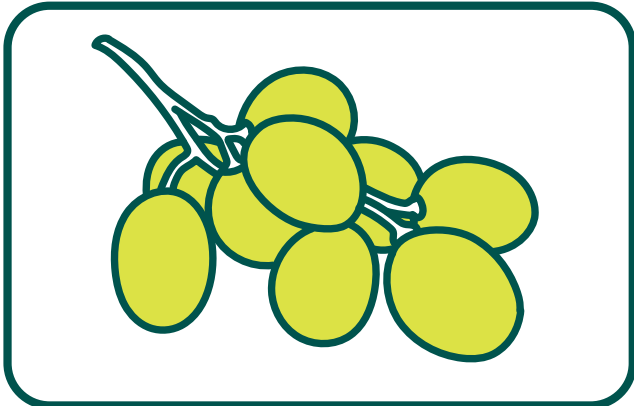
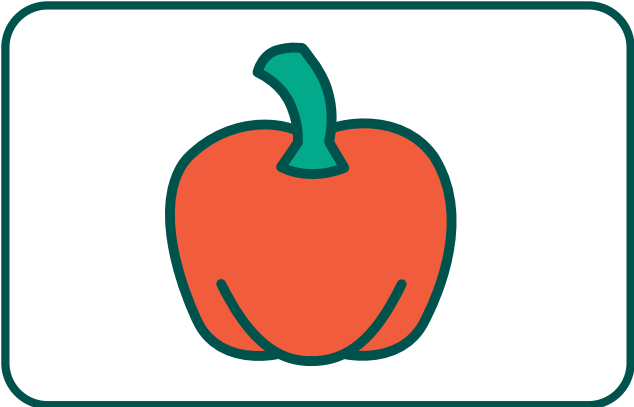
Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

# Salad Bar Sorting Cards

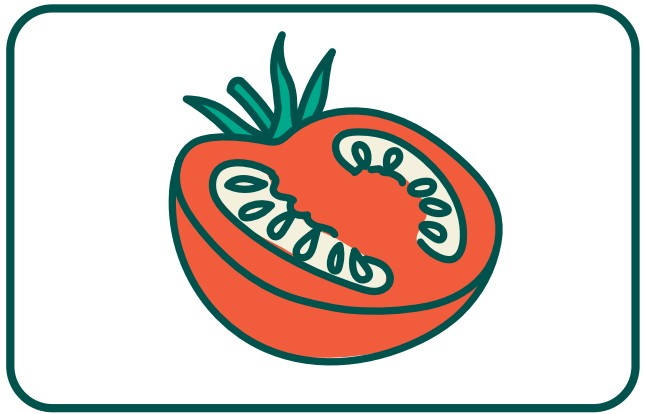
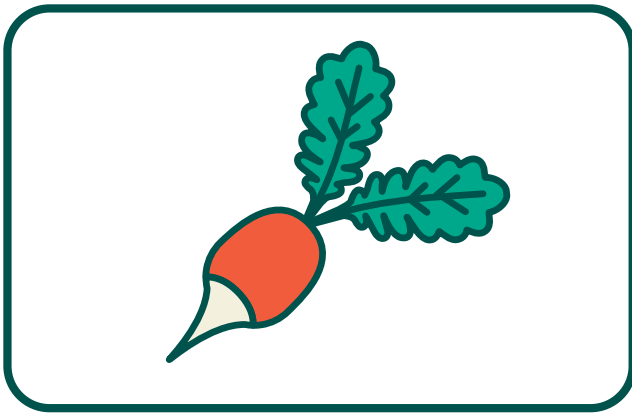




# Salad Bar Sorting Cards



# Salad Bar Sorting Cards



# Peer Presentation Rubric

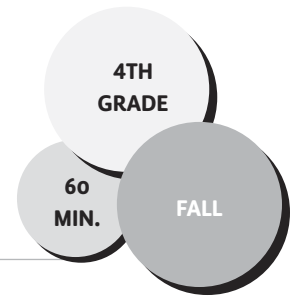
**Directions:** When another student is presenting, use this chart to write specific examples of things they say or do that worked well for you and things that you think could be improved. Be as specific as possible.

## PEER PRESENTATION RUBRIC

Did They . . . ?	Example of Excellence	Opportunity to Improve
<i>Example: Speak clearly and loudly.</i>	<i>Example: When you explained how to choose a protein, I heard every word clearly.</i>	<i>Example: When you were talking about eating a range of colors, you turned your back to us to look at your poster, and I wasn't able to hear what you were saying.</i>
Speak clearly and loudly.		
Provide all the information.		
Make it easy to understand.		
Make it fun.		

# The World Travels of Food

**THEME:** EXPLORING THE ECOLOGY OF FOOD



## ESSENTIAL QUESTIONS

*How does what we eat influence the environment?*

*Where does our food come from?*

## LEARNING OBJECTIVES

- ✓ Students will be able to calculate food miles for various apple-pie ingredients.
- ✓ Students will be able to create a scaled representation of the distance food travels.

## CONCEPTS

decimals   energy   food miles   scale

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher about students' level of familiarity with decimals and dividing large numbers. Together you can determine whether it'd be appropriate for the students to calculate the scale.
- Ask the teacher to co-teach or lead Action Step 4 in which you explain how to create the scale.
- During Action Step 5, suggest that the teacher support groups as they calculate the scale and measure their length of yarn.

## LESSON DESCRIPTION

In this lesson, students explore the concept of food miles through reading a book about a journey around the world to source ingredients. They then calculate a scaled representation of the food miles for the various ingredients and create a human graph to compare mileage.

## MATERIALS

- Local fruit to have as a snack (optional)
- *How to Make an Apple Pie and See the World* by Marjorie Priceman
- Globe or map to project
- Calculators (optional)
- 5–6 balls of yarn or string
- 5–6 pairs of scissors
- Measuring sticks
- Half-sheet copy of the Food Miles Chart for each student (p. 464)

## PREPARATION

- › Prepare local fruit for tasting, if using
- › Determine the number of miles from Vermont to your service site to add that information to the chart.
- › Photocopy the Food Miles Chart from *How to Make an Apple Pie and See the World*.

## ACTION STEPS

- 1. Engage:** Ask, *What is your favorite fruit to*

have as a snack? Take answers, and follow up by asking if students know where those fruits are grown. Introduce the concept of food miles. Explain, *The United States gets most of its bananas from Latin America. That means that when you eat a banana, it's traveled thousands of miles to get to you.* (Of course, you should modify this example to make sense for your region, especially if you live in Hawaii!) Ask students, *How do you think the food traveled that far? What's involved in shipping food?* Get to the idea of using energy—the gas used for the vehicle transporting the food, the electricity used for refrigeration, and the resources used to package the food. Ask students if they know of fruits that are grown in their town or region. Pass out a snack of a local fruit, and share with students where you got it. **(5 min.)**

**2. Reading:** Explain that you're going to read a book called *How to Make an Apple Pie and See the World*. During the read-aloud, have students make a list of the places the main character visited to gather ingredients. If you have a document camera, display a world map to point to each location. **(10 min.)**

**3. Discussing:** Ask students what they thought of the main character's journey. Ask, *What was realistic about it?* Discuss how it's true that we get a lot of our food from around the world, but that it's usually shipped to grocery stores. Ask, *What ingredients do you think she traveled too far to get?* Discuss how perhaps the eggs, butter, and wheat could have come from a local farm. **(5 min.)**

**4. Calculating Food Miles:** Provide students with the Food Miles Chart with the distance

in miles for each ingredient in the apple pie. Tell them you're going to use a scale to make a representation of how far the ingredients would have traveled. Explain that they'll need to divide their number of miles by 100 to figure out how many feet long to make their string. Model for students that that means they move the decimal point two places. Say several random large numbers, and have them turn and talk to a neighbor to practice figuring it out. If students are familiar with rounding, have them round up to the nearest foot. Otherwise, tell them not to worry about the numbers after the decimal. **(10 min.)**

#### FOOD MILE SCALE

4,567. miles  $\sim$  45.67  $\sim$  46 feet

Move the decimal two places to divide by 100

round up!

**5. Measuring Feet:** Put students in groups, and assign each group one ingredient. Provide string, scissors, and measuring sticks, and have them measure a length of string to represent the food mileage of their ingredient. You might choose to have one group at a time go out into the hallway to measure their lengths or already be outside for this step. **(10 min.)**

**6. Field Graph:** Walk students to the school's field, blacktop, or gymnasium. Explain to students that they'll be making a human bar graph to compare the distances each ingredient had traveled. Have each group stretch out their yarn from the same starting point. For example, you could have students tie them to a stake in the ground. Have group members take turns holding the string and walking around to see

the other group's mileage. To get to the idea of all the energy used, have the class travel the length of each piece of yarn, either skipping or hopping or some other activity that exerts energy. **(15–20 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What were successes and good strategies for working in your groups? What can you continue to work on?*
- *Ask yourself: How well did I work to support my group members*

### Check for understanding

- *How did seeing the field graph affect your thinking about food miles?*
- *Why do we have to purchase certain food staples from other countries?*
- *Why should we care where our food comes from? What impact do food miles have on the environment?*

## ADAPTATIONS

**Technology:** If your students have access to computers, you can have them research and calculate the food miles of each ingredient in a typical school lunch, using the website [www.foodmiles.com](http://www.foodmiles.com). In addition, you can have them research local farms, finding local alternatives.

**Physical:** Set up three different obstacle courses on the field, ranging in length. Have each obstacle course represent a fruit. For example, the short course could represent an apple or other fruit grown locally, the medium course could represent an orange

grown in the United States, and the long course could represent a banana grown in South America. This would vary, depending on your location.

**Cooking Extension:** Have students prepare a simple snack and calculate the food miles in each ingredient. For example, students could make the honey seed snacks in the lesson Sunny Honey Seed Snacks or the yogurt parfaits in Perfect Parfait. Alternatively, create something with all local ingredients and compare the food miles to that of the book's apple pie.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.RL.5.7

Analyze how visual and multimedia elements contribute to the meaning, tone, or beauty of a text (e.g., graphic novel, multimedia presentation of fiction, folktale, myth, poem).

Next Generation Science Standards,  
Disciplinary Core Idea

### NGSS ESS.3.C

Human Impacts on Earth Systems – Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.

Math Common Core State Standards

### CCSS.MATH.CONTENT.5.NBT.A.1

Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of

what it represents in the place to its left.

**CCSS.MATH.CONTENT.5.NBT.A.2**

Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Measuring Food Miles

**Directions:** The chart below shows the food miles for each ingredient in the book *How to Make an Apple Pie and See the World* by Marjorie Priceman.

Convert the miles into feet using the following scale: 1 foot equals 100 miles

**Example:** To calculate, add a decimal at the end of the number, and

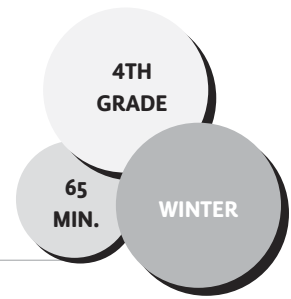
move it two places to the left.  $4,567 \text{ miles} \rightsquigarrow 45.67 \rightsquigarrow 46 \text{ feet}$

Ingredient	Location	Miles	Scale in Feet	Local Alternative?
Wheat	Italy	4,484		
Chicken eggs	France	3,831		
Cinnamon	Sri Lanka	8,941		
Butter from cow's milk	England	3,666		
Sugar	Jamaica	1,444		
Apples	Vermont			



# A Patchwork Garden Quilt

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*How can we effectively plan a garden?*

## LEARNING OBJECTIVES

- ✓ Students will be able to interpret a seed spacing guide to create a garden bed design.
- ✓ Students will be able to measure and apply a scale to create a garden bed design.

## CONCEPTS

feet inches measurement scale

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher about students' level of familiarity with converting measurements to scale. Together you can determine a realistic expectation for the final product.
- Ask the teacher whether they'd like to co-teach or lead Action Step 4 in which you explain the scale.
- During Action Step 2, suggest that the teacher ensure students are moving their bodies respectfully and responsibly during the role play.
- During Action Step 5, suggest that the teacher support students in creating their personal garden beds, helping them interpret the seed spacing guide and understand the graph measurements.

## LESSON DESCRIPTION

In this lesson, students learn to read a seed spacing guide and learn how to design a 5' x 5' imaginary garden bed using chart paper. Students then combine the individual squares into a paper "quilt" made to look like a garden! See lesson Garden Grids for more on square-foot gardening.

## MATERIALS

- Piece of graph paper for each student
- Rulers
- Pencils
- Markers
- Glue
- Large piece of butcher paper
- Seed spacing guide (see High Mowing Seeds Planting Chart online)
- Seed catalogs for inspiration
- Dry erase marker and whiteboard for each student (optional)

## PREPARATION

- › If your classroom doesn't have a document camera for you to display your graph paper, prepare a square grid on the blackboard.

## ACTION STEPS

**1. Introduction:** Explain to students that today they're going to create their own imaginary garden bed with some of their favorite fruits and vegetables. Have students sit in a circle. Say, *Now take two scoots in closer to the circle, so we're*

*all really close together.* Then ask students to lift their arms and stretch out. Ask, *Are you able to stretch as much as you'd like? Why not?* Now ask them to take three scoots back and try again. Ask if that feels better. Say, *Plants are just like us. They can't grow as big and healthy and happy as they'd like to if they don't have enough space away from their neighbors. This includes plants we didn't plant, which is why we weed, which means to remove unwanted plants. (5 min.)*

**2. Role Playing:** Gather students in a circle. Explain, *It's nice to have a diversity of plants in our garden. And like people, plants come in all different shapes and sizes and have different needs. So not all plants need the same amount of room.* Have students stand up turn the circle into a square. Say, *Let's pretend the space in the middle is one foot in a garden box. How many inches are in a foot? If I have to space lettuce every three inches, how many lettuce plants can I fit in my foot?* Have students calculate using whiteboards, if you have them. Ask for four volunteers to be lettuce plants and one to be a gardener. Have the gardener evenly space the four lettuce plants across the carpet. Then ask, *What if my garden box were three feet? How many more lettuce plants could I add?* Have students do the math, and have the gardener add more "lettuce plants." Then say, *I want to add tomatoes in the next row of my garden. Do you think I can add as many tomato plants as lettuce plants?* Discuss the answer. Then tell students that a tomato plant needs at least one or two feet of space. Ask, *So how many tomato plants can we fit?* Have the gardener plant one tomato plant, and have the student pretending to be a tomato stretch out their arms to show the space taken up. You may want to point out that the tomato could shade the lettuce, which would be a problem with other

plant varieties that are sun-loving, but that it's actually helpful for lettuce in hot weather. Have students orally summarize that in a 3' x 3' bed they planted one row of twelve lettuce plants and one row with just one tomato plant. Explain to students that farmers need to do this same kind of planning to get our food to us. **(10 min.)**

**3. Reading Seed Charts:** Have students return to their desks, and show them a seed spacing guide. Read one or two examples as a class, and check for understanding by asking comprehension questions. **(5 min.)**

**4. Modeling the Activity:** Explain to students that they're going to use the seed spacing guide to plan their own, imaginary 3' x 3' garden bed. Using a document camera or a graph on the board, draw your own 3' x 3' bed, with each graph square representing a 4-inch square and each 9-square cube representing one square foot. Model adding plants by illustrating them in the graph at the appropriate scale, using the seed spacing guide and the scale. Give students guidelines that ensure they'll put adequate thought into their square. Encourage thinking about plant diversity and variety, such as, *Incorporate at least three different colors of plants into your plan. (10 min.)*

**5. Making Personal Garden Beds:** Have student helpers pass out graph paper and materials. Circulate through the room, providing guidance to students who need it and asking probing questions. **(20 min.)**

**6. Sharing:** Have students clean up their spaces and bring their square to the circle. Have students lay them side-by-side, creating a large quilt of their garden beds. Then ask the reflection questions listed below. After class, glue the

squares together on large butcher paper or a bulletin board to create a square quilt. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What did you enjoy about creating your own garden bed?*
- *What was challenging during this activity? How did you handle it or come up with a solution?*

### Check for understanding

- *Why is it important to think about seed spacing when planning a garden bed? What other considerations do you have when planning?*
- *How does planting more than one type of food in our garden affect us?*
- *Our Garden Quilt represents our commonalities and also our diversity as a class. What are some things you see in common between different people's beds? What are some differences? What are some benefits to having diverse plants in a garden?*

## ADAPTATIONS

**Extension:** Share a companion planting chart with students, and ask them to consider plant “friends” and “foes” when making their plans. Incorporate more math practice by asking students to calculate the square footage in one garden plot and then the square footage in the total class garden. Bring in a compass, and mark the cardinal directions on your garden models. Then discuss planting tall plants on the north side of the beds so they don't shade the other plants.

**Garden Setting:** If you have a garden space, have students work in teams to take measurements of your garden beds and make real plans for spring planting.

## ACADEMIC CONNECTIONS

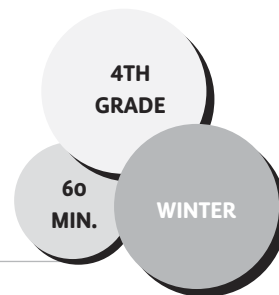
Math Common Core State Standards

### **CCSS.MATH.CONTENT.4.MD.A.1**

Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.

# Salad Dressing Challenge

**THEME:** PREPARING HEALTHY FOOD



## ESSENTIAL QUESTION

*How can we balance flavors in a dish?*

## LEARNING OBJECTIVES

- ✓ Students will be able to collaborate to prepare a salad dressing.
- ✓ Students will be able to develop their own salad dressing recipe.

## CONCEPTS

adjusting a recipe   balance   collaboration  
formula   ratio of ingredients

### *Engaging the Classroom Teacher*

- Prior to the lesson, decide whether the teacher or another adult, such as the principal or a specials teacher, will select a winning dressing in addition to the class vote.
- During Action Step 4, suggest that the teacher support groups as they decide on their ingredients while you interact with students who are obtaining ingredients for their groups.
- During Action Steps 5 and 6, suggest that the teacher circulate through the room, ensuring groups are working productively together.

## LESSON DESCRIPTION

After learning the basic formula for a dressing, students will collaborate in groups to develop a custom salad dressing, and they will vote on a class favorite.

## MATERIALS

- Salad Dressing Formula Poster (p. 472)
- A collection of a few dressing ingredients from the chart below; limit to just a few items, such as olive oil, 3 kinds of vinegars, salt, honey, mustard, and 2 spices or herbs
- 5–6 small bunches of greens (kale, spinach, lettuce, or whatever is available)
- Small pitcher of water (to thin dressing for students who use tahini or avocado)

### A set of the following for each group of 4–6 students:

- Salad Dressing Challenge Group Instructions (p. 473)
- Zip lock bags for kale or large mixing bowls for lettuce
- Measuring spoons
- Small bowls
- Kitchen tongs
- 1 small jar with screw-top lid (½ pint)

### For each student:

- Plate and fork
- Salad Dressing Recipe Cards (p. 474)

## PREPARATION

- › Set up a station of ingredients at the front of the room where students will shop. Ideally, you'll have several options from each column in the chart, so groups will have distinct

dressings. Choose what makes sense based on your comfort level, what's in season, and what you already have on hand.

- › Prepare a large bowl or zip lock bag of greens for each group as well as a small bowl for tasting.
- › Pour 2 tablespoons of olive oil or other fat into a mason jar for each group.
- › Display a chart of the list of ingredients you have on hand (on chart paper or on the board)
- › Photocopy and cut blank Salad Dressing Recipe Cards for each student.
- › Display the following Dressing Formula:  
2 Fat + 1 Sour + Small Pinch of Salty and Small amount of Sweet = Dressing!

#### POSSIBLE INGREDIENTS

FAT	SOUR	SALTY	SWEET
Avocado	Apple cider vinegar	Fish sauce	Honey
Olive oil	Balsamic vinegar	Kosher salt	Raisins
Sesame oil	Lemon/lime	Sea salt	Other dried fruit
Tahini	Mustard	Soy sauce	Apple slices
Yogurt	Orange		Other fresh fruit
	Rice vinegar		Sugar

### Massaged Kale Salad

**Yield:** 6 servings, ½ cup

- 2 tablespoons fat
- 1 tablespoon sour
- ½–1 teaspoon salty
- 1 teaspoon sweet (or ¼ cup dried fruit)
- 1 bunch kale

#### Example 1

- 2 tablespoons tahini
- 1 tablespoon water
- 1 tablespoon rice vinegar
- 1 teaspoon soy sauce
- 1 teaspoon honey

#### Example 2

- 2 tablespoons olive oil
- 1 tablespoon lemon juice
- ½ teaspoon salt
- ¼ cup dried cranberries

- Combine dressing ingredients in a mason jar. Seal and shake until incorporated. Taste and adjust seasoning. If using tahini or avocado, a tablespoon or two of water or oil may be needed to achieve a dressing consistency.
- Tear one bunch of kale into small bite-sized pieces. Put in a zip lock bag, and pour in a couple tablespoons of your custom dressing. Seal the bag, and massage the dressing into the kale through the bag. Taste and add more dressing or salt, if needed.

## ACTION STEPS

**1. Engage:** Have ingredients on display, and ask students to share which ingredients they know and like. Lead a discussion about students' favorites. Have students figure out the four different categories of ingredients. Ask, *What do each of these groups of ingredients have in common?* Have students discuss and share ideas as a class. Explain that any good dressing or sauce has a balance of these things: richness, sourness, saltiness, and perhaps some sweetness. The key to making a good dressing is balancing these flavors based on what you like and tasting as you go. Direct students' attention to the Dressing Formula: 2 Fat + 1 Sour + Small Pinch of Salty and Small amount of Sweet = Dressing! Say, *If you had eight tablespoons of a fat, how many tablespoons of a sour ingredient should you add? (10 min.)*

**2. Explain the Activity:** Say, *In groups you'll be coming up with your own dressing recipe. You'll be given a fat to start with (eight tablespoons already in your mason jar); and then you'll have to come to a consensus about what your sour, salt, and sweet will be. Be open-minded and open to compromise. Once you've each created your own salad dressing, we'll have a chance to try each other's and vote on our favorite!* Remind students that a little goes a long way; and especially when it comes to adding salt or soy sauce, for example, they'll want to add in pinches or dashes at a time. Demonstrate and show what a pinch or a dash would be. Discuss ways of tweaking a dressing (e.g., ask, *If my dressing tastes too sour because I added too much vinegar, what can I add?*) Discuss adding more of the fat or sweet ingredients. **(5 min.)**

### **3. Hand-Washing Break (5 min.)**

**4. Negotiating a Dressing Recipe:** Break students into groups of no more than five, and give them their group jar, a small bowl of leaves for tasting, and the Salad Dressing Challenge Group Instructions. You may want to assign a group leader who can give roles to each group member, such as recipe recorder, timekeeper, spokesperson, taste tester, etc. Have students negotiate and decide on their formula. Once each group has come to a consensus, have a group representative come to shop for ingredients with you at the ingredient station. **(10 min.)**

**5. Making Dressing:** Back at their tables, have groups add ingredients, shake their jars, and take a small leaf and dip it into the dressing. Remind them not to put a partially eaten leaf back into the jar. Ask how they can work together to improve the recipe. Say, *Talk with*

*your group about what you can taste the most of and what you might need more of. Give them time to adjust their recipes. (5 min.)*

**6. Dressing Salad:** Once each group is satisfied with their dressing, pass out bowls of greens. If you're making a massaged kale salad, pass out zip lock bags of kale for students to pour dressing directly into and then massage the leaves through the bag. **(10 min.)**

**7. Tasting and Voting:** Have groups bring up bowls of tossed salad to the front of the room. Then have students use tongs to take just a taste of each salad on their plates, buffet-style. Alternatively, have one representative from each group circulate through the room and serve students a taste. Taste together and encourage students to use descriptive words to describe the flavors. You could also invite them to share a "pro" (something they like about the dressing) and a "grow" (a suggestion for improvement). Students might enjoy having their classroom teacher or another staff member decide on the best dressing in addition to a class vote. **(10 min.)**

**8. Recipe:** Have each student write their ideal dressing recipe to take home. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: *(5 min.)*

### Social and emotional learning

- *How did it feel to negotiate in your groups?*
- *How did your groups determine what would go in your dressing?*
- *How did your ability to collaborate affect the taste of your dressing?*

### Check for understanding

- *Which dressing was your favorite?*
- *What ingredients surprised you?*
- *How did tasting other groups' dressings change your mind about your own dressing?*
- *How could you make this dressing at home?*

## ADAPTATIONS

**Garden Setting:** Have students harvest their own greens and fresh herbs to add to their dressing.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.SL.4.1**

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly.

# SALAD DRESSING FORMULA



**2 tablespoons Fat + 1 tablespoon Sour  
+ Small Pinch of Salty + Small amount of Sweet  
= DRESSING!**



# SALAD DRESSING CHALLENGE GROUP INSTRUCTIONS

1. Decide on your dressing flavor profile as a TEAM!



2. Add ingredients to your jar. Put the lid on and shake, shake, shake!



3. Take a leaf and dip it into the dressing to taste test.

4. Decide what your dressing still needs.



5. Pour some of your dressing over the greens in your zip lock bag. Seal the bag shut.



6. Massage the greens through the bag. Add more dressing only if needed.



# Salad Dressing Recipe Cards

**RECIPE:**  
\_\_\_\_\_  
\_\_\_\_\_

**INGREDIENTS:**

**FAT**  
\_\_\_\_\_  
\_\_\_\_\_

**SOUR**  
\_\_\_\_\_  
\_\_\_\_\_

**SALTY**  
\_\_\_\_\_  
\_\_\_\_\_

**SWEET**  
\_\_\_\_\_  
\_\_\_\_\_

**STEPS:**  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**RECIPE:**  
\_\_\_\_\_  
\_\_\_\_\_

**INGREDIENTS:**

**FAT**  
\_\_\_\_\_  
\_\_\_\_\_

**SOUR**  
\_\_\_\_\_  
\_\_\_\_\_

**SALTY**  
\_\_\_\_\_  
\_\_\_\_\_

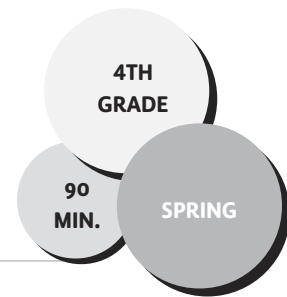
**SWEET**  
\_\_\_\_\_  
\_\_\_\_\_

**STEPS:**  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# Learning from Our Elders

**THEME:** MAKING HEALTHY FOOD CHOICES



Session 1: 45-min. planning period

Session 2: 45-min. session with guests

## ESSENTIAL QUESTION

*What can we learn from our elders about food traditions and healthy eating?*

## LEARNING OBJECTIVES

- ✓ Students will be able to articulate how one person's food preferences, experiences, and traditions have changed over time.
- ✓ Students will be able to compose thoughtful questions and conduct an interview with an elder in their community.

## CONCEPTS

elders interviews respect wisdom

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher for support in sending the message home and ensuring students interview someone outside of class. If necessary, see if the teacher is willing to make this lesson an official class assignment.
- During Action Step 4, ask the teacher whether you can interview them as a model for students.
- Discuss the Guest Interest Form Templates with the teacher, and determine together how the second session would be most successful.

## LESSON DESCRIPTION

In this lesson, students consider the elders in their families and communities and determine what they'd like to learn from them around the themes of food and healthy eating. Students learn about effective interviewing, generate a list of questions, and interview an elder they know. During the next class meeting, students share what they learned and have elder community members share their stories, wisdom, and recipes with the class.

## MATERIALS

- Nice paper
- Crayons, markers, or colored pencils
- Guest Interest Form Template (p. 479)
- Guest Notes Worksheet (p. 480)
- Cooking and tasting supplies (if guest plans to demonstrate a traditional skill or dish)
- Learning From Our Elders Worksheet (p. 481)

## PREPARATION

- › If some of your students don't have anyone in their immediate network to interview, make a list of adults in the community who they could interview. This list could include members of the school staff, volunteers, or others. Ask these people in advance if they would be open to being interviewed by students about cooking, eating, and healthy living.
- › Reach out to a local storyteller or elder from whom you'd like your students to learn;

schedule a class visit with this individual.

- › Photocopy Learning from Our Elders Interview Worksheet and the Guest Notes Worksheet for each student.

## ACTION STEPS

**1. Who Our Elders Are:** Explain why elders have so much to teach us about cooking, eating, and healthy living. *Our food supply has changed a lot in recent years. Elders have seen this change. Many elders have thought a lot about what they want to eat to be able to stay healthy. You can learn a lot from elders by interviewing them.* Ask students to brainstorm with a partner what makes someone an elder. Have students share as a class, identifying attributes such as being older than you or having wisdom or life experience to share. Ask students, *Who are the elders in your life? Who in your life do you feel you have something to learn from?* Have each student make a list of these people. **(5 min.)**

**2. Brainstorming Questions:** Say, *With these people in mind, what do you want to learn about them related to cooking, eating, and healthy living?* Have students generate a list as a class of things they'd like to know. **(5 min.)**

### SAMPLE INTERVIEW QUESTIONS

- What did you eat growing up?
- What's a food you used to not like that you like now?
- What does healthy eating mean to you?
- When you were a kid, what did you eat at school?
- What did you eat with your family?
- What traditional dishes from your culture were you taught to make?
- Do you have ways of preserving food?
- What's your favorite tool in the kitchen?

- What's your favorite recipe?
- What's a food or dish from your childhood that you recommend I try? Why?
- What's your all-time favorite food memory?
- When you were a kid, what did you eat on special occasions?
- Is there a recipe or traditional cooking method that you'd enjoy sharing with my class?

**3. Learning What Makes a Good Interview:** Tell students, *You will each be interviewing an elder. To gather as much information as possible, it's important to keep a few guidelines in mind.* Explain that while some yes or no questions are OK, open-ended questions encourage people to give details and tell more stories. Explain how it's always good to have follow-up questions prepared for yes or no questions but to also be flexible in the moment and think of follow-up questions to ask on the spot. Give students an example of a yes or no question, and ask them to revise it into an open-ended question. For example, "Did you have school lunch when you were a kid?" can become, "Describe what you ate for lunch when you were a kid." Have students write their own list of interview questions. Ask students, *What are ways that we can show respect and communicate that we're actively listening?* Discuss making eye contact, nodding their heads, and expressing genuine interest through their responses. **(10 min.)**

### WHAT MAKES A GOOD INTERVIEW?

- Asking open-ended questions
- Asking follow-up questions
- Being flexible
- Respecting someone's privacy
- Showing genuine interest
- Recording/writing important points

**4. Practicing Interviewing:** Demonstrate holding a practice interview with a volunteer student or with the classroom teacher. Model positive interview techniques by asking open-ended questions, making eye contact, and expressing genuine interest through responses. Have students give you feedback on what you did well and what you could have done to improve your interview. Then have students pair up and practice interviewing one other, keeping the good interview guidelines in mind. Circulate through the room, listening to students' exchanges and encouraging active listening where needed. After about seven minutes, have students switch so that each partner has a chance to be interviewed. Have partners provide each other with feedback on how they can be better listeners or how they can revise their questions to get more interesting responses. **(20 min.)**

**5. At Home:** Explain that students should capture their discussion, on the Learning From Our Elders Interview Worksheet, whether by taking notes during the conversation, summarizing it afterward, or recording the conversation on a device with the interviewee's permission and relistening later on. Let students know the date that you'd like to invite guests in to share stories, and tell them to be sure to ask their interviewee whether they'd like to be a part of the event. Pass out the Guest Interest Form

Template for students to share at home. **(5 min.)**

**6. (Next Meeting) Follow-Up Sharing:** Give students time to write a personal reflection or share what they learned from the elder they interviewed with a partner. Then gather as a class to do a round-robin where each student shares one interesting thing they learned. Tell students they'll have a time limit of 30 seconds. **(20 min.)**

### 7. Inviting Guests to Class:

- Facilitate a conversation where each student has a couple prepared questions to ask the guests. Students take turns asking a question and having all the guests who'd like to share a story or response. If you have three or more guests, set up this activity so that students are rotating among speakers in small groups. Have students use the Learning from Our Elders Worksheet to record interesting facts and questions about the guests.
- Have guests bring in a traditional cooking tool and demonstrate how to use it.
- Have guests bring in their favorite recipes and share memories of that food. Then compile a class cookbook of all the recipes.
- Ask elders to demonstrate traditional food cooking skills to the class. (Be prepared to provide support and supplies if needed. Depending on the level of involvement of the cooking project, this may need to be scheduled as a separate activity)

**8. Writing Thank-You Notes:** After guests of honor visit the class, have students write them letters of gratitude. Have students use their Learning from Our Elders Worksheet to

remember to share personal details about what they enjoyed learning. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did it feel to interview an elder?*
- *What are some things you do now that you think might be interesting to kids 50 years from now, when you are an elder?*

### Check for understanding

- *What was the most interesting thing you learned from your interview?*
- *How did what you learned from our guests compare with what you learned during your first conversation with an elder?*
- *How is your life similar to and different from the life of our elders when they were your age?*
- *How has the idea of healthy eating changed over the years?*

## ADAPTATIONS

**Field Trip Extension:** Plan a field trip to a senior center where pairs of students can engage in conversation with elders in the community using their prepared interview questions.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.W.4.4**

Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.)

# Guest Interest Form Template

Student Name: \_\_\_\_\_ Guest Name: \_\_\_\_\_

On \_\_\_\_\_, we'd like to invite you to our classroom to share your food traditions and cooking experiences.

Would you like to participate?

- Share a story and recipe about a food tradition you have
- Bring in a cooking tool and demonstrate how to use it
- Teach the class a traditional cooking skill
- Share an experience cooking and eating foods

If sharing a skill or food, please briefly describe it:

\_\_\_\_\_

What supplies would you need us to provide?

\_\_\_\_\_

Please return this form with your student by \_\_\_\_\_.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Guest Notes Worksheet

**Directions:** After listening to each guest today, write three interesting facts that you learned about the person or his or her experience with food. Write at least two questions you have about what the person shared.

Guest #1 Name \_\_\_\_\_

What I learned:

Follow-up questions I have:

Guest #2 Name \_\_\_\_\_

What I learned:

Follow-up questions I have:

Guest #3 Name \_\_\_\_\_

What I learned:

Follow-up questions I have:

Guest #4 Name \_\_\_\_\_

What I learned:

Follow-up questions I have:



Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Learning From Our Elders Worksheet

Who I will interview: \_\_\_\_\_

**Directions:** In the box below, write a list of the questions you'd like to ask.

## QUESTIONS TO ASK

**Directions:** In the box below, take notes during your interview of interesting facts and additional questions you have for the elder you're interviewing.

## NOTES

# Food Packaging

**THEME:** EXPLORING THE ECOLOGY OF FOOD

4TH  
GRADE

45  
MIN.

SPRING

## ESSENTIAL QUESTION

*How does the packaging of our food affect our environment?*

## LEARNING OBJECTIVES

- ✓ Students will be able to evaluate the pros and cons of certain materials used for food packaging.
- ✓ Students will be able to identify various materials and determine whether they are recyclable or compostable.

## CONCEPTS

biodegradable landfill  
packaging recyclable

### *Engaging the Classroom Teacher*

During Action Steps 2, 3, and 4, suggest that the teacher circulate through the room, supporting students and helping them remain on task.

## LESSON DESCRIPTION

In this lesson, students consider how an orange comes with its own perfect packaging, and they sort other food packaging to determine the materials used and whether they are recyclable or compostable.

## MATERIALS

- Clementine for each student
- Assortment of food packaging, from minimally packaged to highly packaged and some packaging made with postconsumer materials, such as beverage bottles or deli containers made from recycled plastic
- Small, soft ball (to toss among students)
- Food Packaging Source Materials Poster (p. 485)
- Local municipal recycling chart
- Several small bins for each group
- Vinyl tablecloth

## PREPARATION

- › You may want to start collecting cleaned food packaging several weeks before implementing this lesson to have a sufficient amount for sorting stations. One way to get a lot of items quickly is to set up a box in a shared space, such as a teachers' lounge, and email school staff asking them to bring in empty, rinsed food packages.
- › On an overhead, project a local recycling chart, or photocopy one for each group.
- › Prepare a set of four or more food packages for each group of 4–6 students. Make sure each set includes a variety of materials (e.g., cardboard, metal, glass, plastic, or natural) and ranges from minimally to highly packaged foods.
- › Photocopy Food Packaging Source Material Posters for each group of students.

## ACTION STEPS

**1. Perfectly Engineered Packaging:** Gather students in a circle, and pass around a small orange or clementine to each student. Ask students to think about the function of the orange's peel. Ask, *Why do oranges have a peel?* Field answers, and get to the idea that the peel protects the fruit and keeps it clean. Say, *The orange comes with its own packaging. How are other foods that we eat packaged?* Hear responses from students and then explain, *Today, we're going consider the different ways our food is packaged.* Divide students into groups of four to six, and provide each group with an assortment of food packaging. **(5 min.)**

**2. Sorting the Spectrum of Packaging:** Have groups of students sort their objects into a spectrum from those with the least amount of packaging to those with the most. As a class, discuss, students' observations and choices while sorting. **(5 min.)**

**3. Sorting by Where It Came From:** Next, hand out the Food Packaging Source Materials Poster, and go over each material. Have each group sort their objects by the materials used. **(5 min.)**

**4. Sorting by Where It's Going:** Next, project or hand out the recycling chart for your community to each group. Provide each group several small sorting bins or baskets. Or create one central waste-and-recycling center in the classroom. Have students sort materials again, this time by which are recyclable in your community, which can be composted, and which are destined for the landfill. **(5 min.)**

**5. Reducing Your Waste:** Once each group has their packaging sorted by where it's going, ask them to bring their landfill items to the vinyl tablecloth you've laid on the ground, making a big class pile. Have students make observations about the pile. Ask, *Are there any items you see here that we could avoid having in the landfill?* Discuss alternative approaches to reducing waste, such as using reusable bags and bulk bins. Ask, *What about objects that we recycled? Are there ways we can reduce sending objects to recycling facilities?* Hold up a plastic water bottle and ask, *What are other ways to get the water without the waste?* As you're discussing single-use plastics, you might introduce the story of the youth activist Milo Cress who started the Be Straw Free campaign when he was nine. **(10 min.)**

**6. Compost Hot Potato:** Explain how composting is another way to divert waste from landfills. Say, *Compost creates a free, organic "fertilizer" for our plants; it reduces waste that would otherwise go to the landfill; and it takes carbon from decomposing plants that would otherwise go up into the atmosphere and holds that carbon in the soil, which helps slow climate change!* Make a list of all the things that are biodegradable that they can think of and things you could add to a compost pile. Say, *We're going to play a game called compost hot potato. I'll toss the ball to someone and name something we could add to a compost pile. The person who is "it" will stand in the middle and try to tag someone before that person thinks of something new and tosses the ball to another person. If you get tagged before you think of something to add to the compost pile, you're it!* Play the game for several rounds. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: (5 min.)

### Social and emotional learning

- Ask yourself: Was I safe and responsible while we played the game?

### Check for understanding

- What are ways we can reduce our use of packaging?
- What did you learn today that you'd like to share with others?
- What types of packaging do you think are best?
- How does the use of food packaging affect our environment?

## ADAPTATIONS

**Classroom Extension:** Have students choose a food for which to design their own food packaging. Ask them to consider protecting and marketing the food as well as creating packaging that has the least environmental impact.

**Cafeteria Extension:** Explore the possibility of conducting a school-wide waste audit with students. Consult the USDA resource Guide to Conducting Student Food Waste Audits.

**Mentor Extension:** Use the lesson Becoming Cafeteria Mentors as a model for how fourth graders can teach younger students about food packaging and reducing waste.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.SL.4.1

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly.

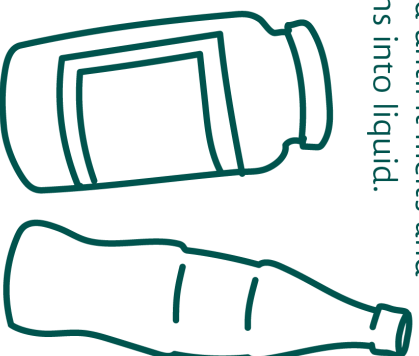
# Food Packaging Source Materials Poster

**PLASTICS** are typically made of crude oil and coal or natural gas.



**FOOD  
PACKAGING  
SOURCE  
MATERIALS**

**GLASS** is made by heating sand until it melts and turns into liquid.



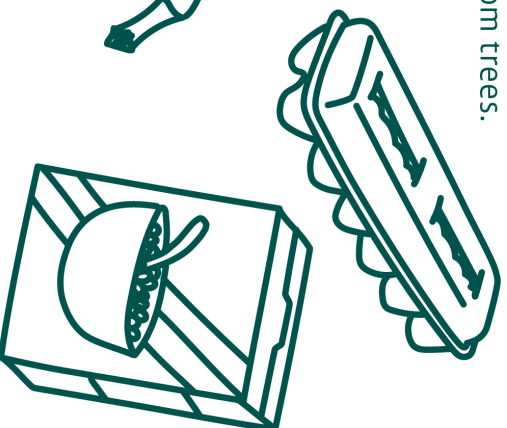
**METAL CANS** are made of steel or aluminum.



**NATURAL/BIODEGRADABLE** objects are anything that was once alive!



**CARDBOARD** is made of fiber from trees.



# Garden Grids

**THEME:** GROWING AND ACCESSING HEALTHY FOOD

4TH  
GRADE

55  
MIN.

SPRING

## ESSENTIAL QUESTION

*How do we plan, design, and plant garden beds?*

## LEARNING OBJECTIVES

- ✓ Students will be able to interpret plant spacing guidelines to plan a garden bed.
- ✓ Students will be able to use accurate measurements to plant a garden bed.

## CONCEPTS

grid inches measurement  
seed spacing square feet tool safety

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher about students' level of familiarity with area and multiplication. Together you can determine how much explanation students will need during Action Step 2.
- Also check in with the teacher about students using hammers and nails, encouraging the teacher to discuss this big responsibility with students beforehand.
- Ask the teacher whether they can supervise the Planning a Bed rotation during Action Step 5 while you're planting with students. Also discuss whether there is another staff member or volunteer who can supervise students doing the chore rotation, if using.

- During Action Step 7, suggest that the teacher help students while they are watering and labeling their new plantings.

## LESSON DESCRIPTION

In this lesson, students use the square-foot gardening method to practice measuring and multiplication. This lesson can be a follow-up to the lesson A Patchwork Garden Quilt by having students measure and plant the squares they designed.

## MATERIALS

- Sidewalk chalk
  - 30 Seed packets or seed-spacing guidelines (for students to use for planning)
  - Transplants or seeds students will plant during lesson
  - Ruler for each pair of students
  - String
  - 3 or more hammers
- For raised beds:
- Nails or tacks
- For in-ground beds:
- Stakes
  - Watering cans
  - Popsicle sticks
  - Several permanent markers
  - Planning a Square-Foot Bed Worksheet (p. 490)
  - Pencils

## PREPARATION

- › Learn or review how to use a hammer safely; practice it.
- › Get at least two varieties of crops that have distinctly different spacing requirements, such as kale and beets.
- › Determine which three beds in the garden your class will be planting in. If you have raised beds, you'll be creating a grid using string and nails or tacks. If you don't have raised beds, you can easily adapt for in-ground beds. To make your grid, put stakes in the ground every foot, and secure string around each stake.
- › Photocopy Planning a Square-Foot Bed Worksheet for each student.
- › Find and print out seed-spacing guidelines for vegetables grown in your region.
- › Prepare the beds by weeding, and if your soil is very dry, by watering until it is about as moist as a wrung-out sponge throughout.
- › If you have a large class, you might have three rotations of students (as described below). In this case, determine an area of the garden that needs weeding or some other project students can work on independently.
- › Display the plant spacing information students will need for planting.
- › Pre-fill watering cans for students to use.

## ACTION STEPS

**1. Four Square:** Have students gather around a four-square court on the playground, or draw one yourself with chalk. Ask, *What do we need to consider when we're planting in the garden?* Ask for four volunteers to pretend to be plants, and have each student occupy one square.

Then say, *I think I'd like a bigger harvest, and add four more students. Ask the class, What did you do to make room for more plants?* Keep adding students to get at the idea of overcrowding plants, and have students make observations about how the plants have to shift to make more space between them and others. **(5 min.)**

**2. Introduce Square-Foot Gardening:** Explain, *Square-foot gardening is a way to use plant spacing guidelines to plant our crops as closely together as possible without overcrowding them. This allows us to grow as many fruits or vegetables as we can in a small space. A four-square court is a grid. We're going to use string and tacks to make a grid on our garden bed that divides it into one-foot squares. If our bed is four feet by four feet, we multiply 4 by 4 to find out how many one-foot squares we would have. So how many squares do we have to plant in? (16) You might draw lines on your four-square court for students to count and visualize 16 square feet. Explain how that means you can plant 16 cabbages in your bed because plant spacing guidelines tell us to plant one per square foot. Ask students other questions to get them practicing area and multiplication (e.g., *If you can fit four lettuce transplants per square foot, how many lettuce plants would we have in this bed? How many inches are in a foot? So what is the area of a square foot in inches?*) **(5 min.)***

**3. Explain the Rotations:** Explain the rotations that you've established for students, and share the strategy you'll use to let them know it's time to switch, such as a call-and-response. Review tool safety with students. Divide students into three groups, and make sure each

student has a partner within the group. **(5 min.)**

#### **4. Station 1—Measuring the Bed:**

- a.** Have no more than six pairs of students at a garden bed with you at a time. Model for students how you use a ruler to measure one foot across the bed. Then talk about how to use a hammer safely. Finally, demonstrate this skill as you hammer a nail into the wooden edge of the bed at that spot. Do the same along the edge directly across the bed and then pull the string across. Explain that they'll be working with their partner across the bed, but the whole group will have to communicate and coordinate to make the grid and share tools.
- b.** Have students position themselves across the bed from their partners and supply hammers, nails, and string. If using in-ground beds, the group is working together to set up the stakes.
- c.** Once the grid is made, explain that each pair of students will have two different crops to plant in two different squares. Refer to the visual of the spacing for your crops. If using beet seeds, for example, show students that they need to be spaced three inches apart. Ask, *How many beet seeds can we fit into one square foot?* Show students how you can measure with your ruler, or find a twig, measure it against your ruler, and break it off at exactly three inches so it's the right length for spacing your seeds. Then show students how to transplant starts and/or how to sow the seeds. Pass out seeds and transplants, and support students as they're planting. **(10 min.)**

**5. Station 2—Planning Bed:** Students at this station will be working independently or in pairs on the Planning a Square-Foot Bed Worksheet. Be sure to have pencils, seed spacing guidelines, and seed packets at the station. **(10 min.)**

**6. Station 3—Garden Chore:** Weeding is a good option here. As motivation, you might make weeding a healthy competition between groups by having each group create a separate pile to compare at the end of the activity. **(10 min.)**

**7. Watering and Labeling:** After the station rotation, gather as a whole group to admire the freshly planted beds. Have each pair of students create a label for their seeds using a popsicle stick, marking the variety, the date, and their names. **(5 min.)**

### **REFLECTION**

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

#### **Social and emotional learning**

- *Ask yourself: Did I use tools safely and work well with my partner?*

#### **Check for understanding**

- *How do you think our plants would do if we didn't space them out?*
- *How do you think the square-foot method of gardening compares to other ways of gardening?*
- *What strategies did you find for setting up the square-foot grid with your group?*



## ADAPTATIONS

**Experiment Extension:** If you have the space, have students scatter leftover seeds at random in a small area of the garden, and hypothesize about how this garden bed will do in comparison to their carefully measured and spaced bed.

## ACADEMIC CONNECTIONS

Math Common Core State Standards

### **CCSS.MATH.CONTENT.4.MD.A.3**

Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

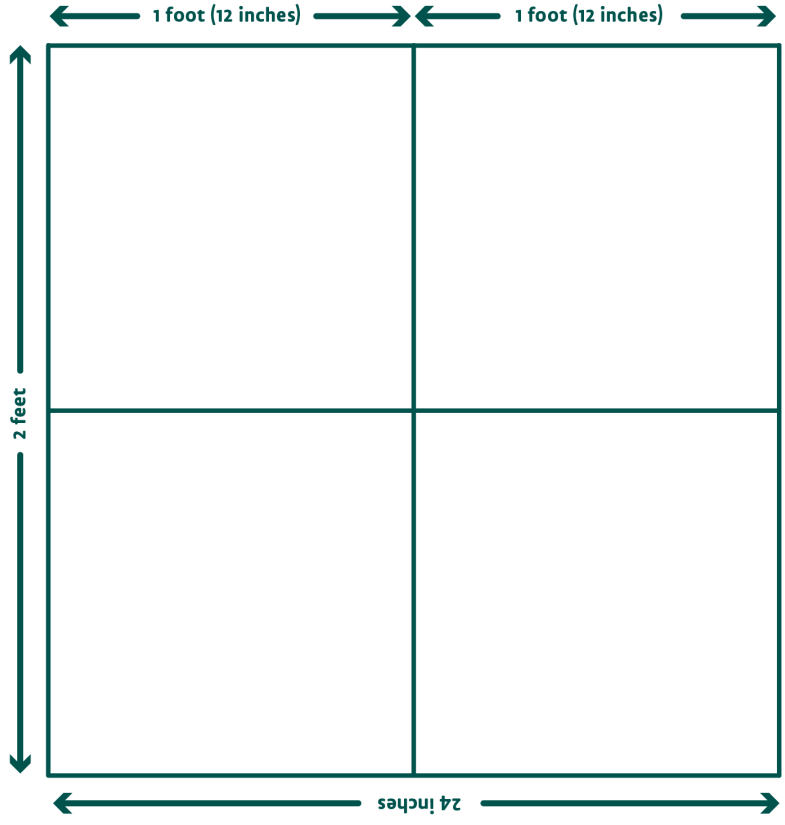
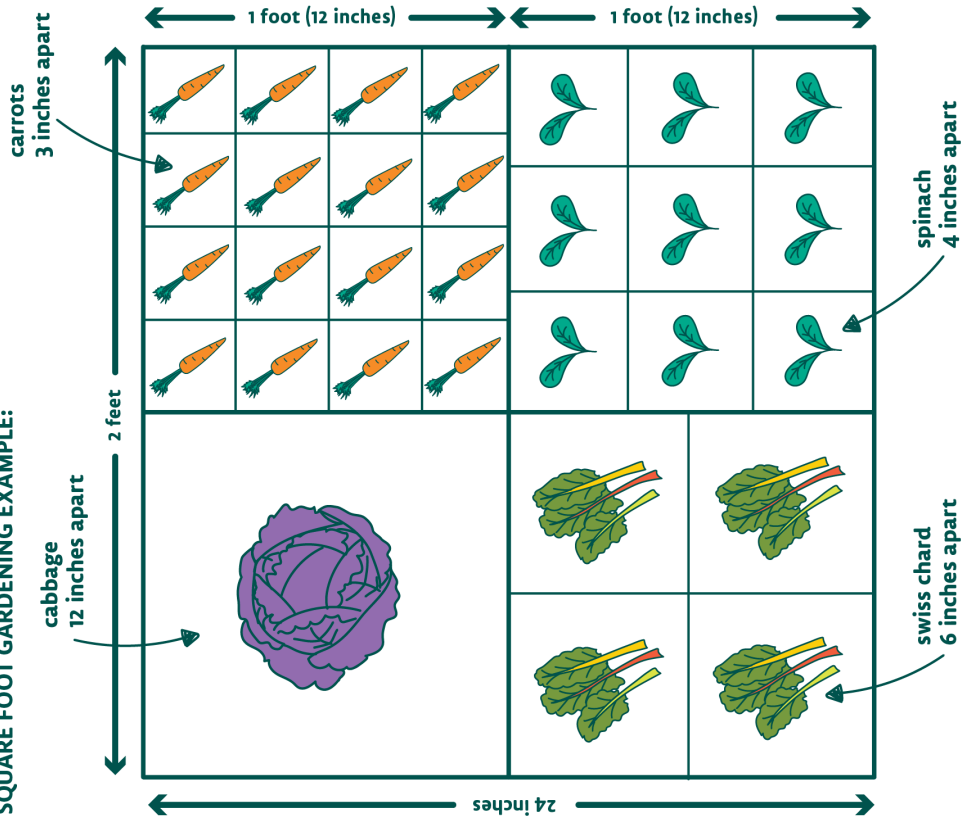
Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Planning a Square-Foot Bed Worksheet

**Directions:** Choose four different seed packets to plan a bed for. You have four different crops to plant, but only X square feet of space! Using the seed spacing guidelines on the packet, determine how many of each crop you can plant in each square.

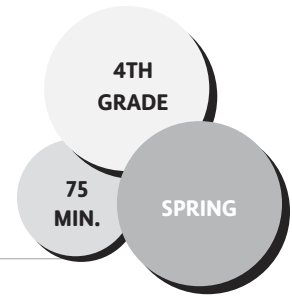
You have to plant \_\_\_\_\_ square feet.

## SQUARE FOOT GARDENING EXAMPLE:



# Reimagined Snacks

**THEME:** PREPARING HEALTHY FOOD



## ESSENTIAL QUESTION

*How can we reimagine our favorite snacks to make them healthier?*

## LEARNING OBJECTIVES

- ✓ Students will be able to identify the flavors and textures they enjoy in snacks.
- ✓ Students will be able to name whole or minimally processed foods that have the flavors and textures they enjoy.
- ✓ Students will be able to create a plan for incorporating whole and minimally processed snacks into their diets.

## CONCEPTS

flavor processed food snacks  
texture whole foods

### *Engaging the Classroom Teacher*

- During Action Step 6, suggest that the teacher supervise students stemming and preparing kale, while you help students at the spice station.
- During Action Steps 7–9, suggest that the teacher support groups as they brainstorm other reimagined snacks. If you're still baking chips, suggest the teacher facilitate students sharing their ideas with the whole class as you wrap up.

## LESSON DESCRIPTION

In this lesson, students consider their favorite snacks and what flavor and texture attributes make them desirable. The class then makes a whole-foods variation of spicy corn chips in the form of spicy kale chips. Students then brainstorm reimagined snacks, using whole or minimally processed foods and create plan to incorporate more of these into their snacks for the week.

## MATERIALS

- Toaster oven
- Extension cord
- Spicy Kale Chips ingredients (see recipe below)

**A tray of the following for each group of 4–6 students:**

- 4 small kale leaves
- Medium bowl
- Small bowl for mixing spices
- 1 tablespoon olive oil in small cup
- ½ lime
- Container for compost
- Several sets of measuring spoons
- 2 cooling racks or cookie sheets for transferring kale chips
- Pair of tongs
- Kitchen timer
- Paper towels
- Descriptive Food Words Poster (p. 495)
- Reimagined Snack Brainstorm Worksheet (p. 496)
- My Reimagined Snack Plan Worksheet (p. 497)
- Materials for cleanup

## PREPARATION

- › As you prepare to teach this lesson, keep in mind that the goal is not to shame students for liking store-bought, processed snacks, but rather to promote conversation and critical thinking about food choices.
- › If you don't have access to a toaster oven or extra hands to help bake the kale chips, try having students slice jicama to sprinkle their spicy mix on.
- › If making kale chips, procure a toaster oven! Use your own, borrow one from a friend, or check for one at a thrift store.
- › If making kale chips, procure a toaster oven! Use your own, borrow one from a friend, or check for one at a thrift store.
- › Photocopy My Reimagined Snack Plan Worksheet for each student.
- › Photocopy Descriptive Food Words and Reimagined Snack Brainstorm for each group of 4–6 students.
- › Wash and thoroughly dry kale leaves to prevent steaming in the oven.
- › Set aside a kale leaf to use as demonstration for students.
- › Prepare trays for each group.
- › Set up a station where you can plug in the toaster oven, and have space for trays of kale chips to cool on cooling racks.
- › Set up another station where representatives from each group can gather to measure spices. Put out spices and several sets of measuring spoons.

## Spicy Kale Chips

**Yield:** About 25 servings, 4 chips

1 pound kale  
1 tablespoon each  
Nutritional yeast  
Chili powder  
1 teaspoon each  
Garlic powder  
Salt  
½–1 teaspoon cayenne pepper, to taste  
Juice of 1 lime

- Preheat oven to 325F. (This temperature is tested in a regular oven. Temperatures will vary based on your toaster oven.)
- Strip the leaves from the stem and wash and dry well, using a salad spinner or rolling in dish towels. Tear large leaves into 2 to 3-inch bites.
- Toss kale by hand with olive oil, salt, and any spices you're using in a large bowl, being sure each leaf is evenly coated.
- Spread kale leaves evenly in a single layer on rimmed baking sheets, being sure not to crowd leaves so they don't steam.
- Bake for 10 minutes then check. If the chips aren't dark green and crisp, continue baking in 2-minute increments. They'll brown very quickly. Look at the underside when checking for doneness.
- Let cool for two minutes, and then transfer to a serving dish (or cool pan). If making ahead of time, re-crisp chips in the oven for one minute before serving.

## ACTION STEPS

**1. Discussing Favorite Snacks:** Ask students to discuss in groups, *What are your favorite snacks? Why do you like them?* Then pass out the Descriptive Food Words Poster, and have students circle or highlight the attributes of their favorite snacks. **(5 min.)**

**2. Discussing Healthy Snacks:** Ask students to discuss in groups, *What makes a snack healthy?* Discuss concepts students already know, getting to the idea of whole or minimally processed foods. Ask students for examples of whole or minimally processed foods, such as fruits and vegetables, popcorn, and whole grains. **(5 min.)**

**3. Reimagining Spicy Corn Chips:** Ask students, *Who here likes Takis? Why are they so popular? What descriptive words from the list would you use to describe Takis?* (spicy, crunchy, salty, cheesy) Explain, *Today we're going to think about how we can reimagine some of our favorite snacks to have the same flavor and texture attributes but to use whole or minimally processed foods instead. It won't be the same thing, but it's a way to make a snack that is similar.* Tell students that you're going to make spicy kale chips. **(5 min.)**

**4. Hand-Washing Break:** Preheat the toaster oven to 325F. **(5 min.)**

**5. Model:** Show students how they'll destem and break up the kale into small, bite-sized pieces. Then show how they'll massage the olive oil into the leaves. Explain that while most of the group is processing the kale, you'll pick a representative from each group to come up and measure the spice ingredients at the spice station. Once the student returns, they'll toss the spices in with the kale. **(5 min.)**

**6. Preparing Kale Chips:** Pass out trays of ingredients and materials to each group of students. Call up a student from each group to the spice station. If you have another adult, have them circulate and supervise kale processing while you facilitate students measuring spices. Have

students clean up their space before moving on to the next step. **(15 min.)**

**7. Brainstorming Reimagined Snacks:** Explain that while groups of students take turns baking their kale chips, they're going to brainstorm more versions of reimagined snacks. NOTE: Each batch of kale chips will take ten minutes to bake, so plan timing accordingly. Pass out the Reimagined Snack Brainstorm Worksheet to each group, and briefly go over the examples provided. **(5 min.)**

**8. Baking Kale Chips:** Meanwhile, call up a couple of students from one or two groups at a time to bake kale chips. Have students lay the kale pieces in one single layer and avoid crowding them. Set a timer for five minutes, but have a student keep an eye on the kale chips to make sure they don't burn. Once they're done, place the tray on a cooling rack, then transfer to a large cookie sheet to free up the toaster oven tray. **(20 min.)**

**9. Sharing:** Have each group share aloud one reimagined snack, noting the snack it's based on and what flavor and texture attributes they were looking to replicate. **(5 min.)**

**10. Tasting:** Have a volunteer pass out a paper towel to each student. Then go around the room using tongs to pass out a couple chips to each student. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class:

*(5 min.)*

### Social and emotional learning

- *What strategies helped for working in your groups?*

### Check for understanding

- *Why do we crave certain snacks?*
- *How do you define a whole food? How do you define a minimally processed food?*
- *How would you describe our snack? How does it compare to the snack it was inspired by?*
- *Which snacks would you want your family to reimagine? Why?*

## ADAPTATIONS

**Goal-Setting Extension:** Have students complete the My Reimagined Snack Plan Worksheet. Follow up with students during your next session to see how well they followed through on their set goals.

**At Home:** Have students interview family members about their favorite snacks and brainstorm whole-foods snacks together.

**No-Heat Sweet Recipe Variation:** To reimagine a cookie or granola bar, try the recipe for Honey Seed Snacks, which doesn't require a heating source.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.SL.4.1**

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly.

### **CCSS.ELA-LITERACY.L.4.6**

Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., quizzed, whined, stammered) and that are basic to a particular topic (e.g., *wildlife, conservation, and endangered* when discussing animal preservation).

# Descriptive Food Words

**FLAVOR**

Bitter  
Cheesy Creamy  
Hot Rich Milky  
Salty Smoky  
Sweet Sour Spicy  
Tart Tangy

Other? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**TEXTURE**

Bubbly  
Crackly Crispy  
Crunchy  
Soft Chewy  
Effervescent  
Fizzy Gummy  
Light Dense  
Silky Smooth Soft  
Sticky Thick Velvety

Other? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**WHAT ARE SOME MORE?**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Reimagined Snack Brainstorm Worksheet

SNACK	FLAVOR	TEXTURE	REIMAGINED SNACK
Example: Soda	sweet	fizzy	Bubbly water + splash of juice
Example: Spicy corn chips	spicy	crunchy	Spicy kale chips
Example: Cookie	sweet	chewy	Energy bite



Name: \_\_\_\_\_ Date: \_\_\_\_\_

# My Reimagined Snack Plan

**Goal:** Reimagine a snack using whole or minimally processed foods.

**Steps:** Create a reimagined snack that will have the flavor and textures of a snack you typically eat.

To create a new habit, try eating your reimagined snack a few times this week.

**Draw:** Your typical snack

== FLAVOR



TEXTURE ==



**Draw:** Your reimagined snack

## TRACK HOW YOU DO!

Date I made and ate my new snack:

Date I made and ate my new snack:

Date I made and ate my new snack:

# Mealtime Traditions Around the World

**THEME:** CONNECTING FOOD, CULTURE, AND COMMUNITY

4TH  
GRADE

50  
MIN.

SPRING

## ESSENTIAL QUESTION

*Why do cultures create traditions and habits around eating food?*

## LEARNING OBJECTIVE

✓ Students will be able to compare and contrast the mealtime traditions of various cultures.

## CONCEPTS

culture mealtime tradition

### *Engaging the Classroom Teacher*

- During Action Step 3, suggest that the teacher support groups as they work at and move from each station in the gallery walk.
- During Action Step 4, suggest that the teacher share their mealtime traditions alongside the class.

## LESSON DESCRIPTION

In this lesson, students learn about mealtime traditions from other cultures by taking a walking tour of the world.

## MATERIALS

- Mealtime Traditions Posters from five different regions around the world (pp. 501–505)
- 5 pieces of chart paper
- Tape
- Post-it notes (5 for each student)
- Marker or pencil for each student
- Chime or bell (optional)
- Map or globe (optional)
- Tasting of one of the cultural foods mentioned (optional)

## PREPARATION

- Print the Mealtime Traditions Posters, and tape each to the center of a piece of chart paper. Consider adding more information or images to enrich students' understanding of that country or culture (e.g., the countries' flag, a map image, or examples of other food that is eaten).
- Display the following guiding questions:

### GALLERY WALK GUIDING QUESTIONS

- What was something that was unique or surprised you about the mealtime tradition of this country?
- Were there any foods that you would like to try?
- What is one question you have about this tradition?

## ACTION STEPS

**1. Engage:** Explain that today you'll be discussing some mealtime traditions from different cultures around the world. Explain, *A culture is a particular group that shares similar beliefs, habits, or traditions. Explain that the culture could be based on a particular place like Mexican culture or it could be based on a mutual interest like the culture of fans of one sports team.* Ask students, *What are some traditions or habits your family or culture has around mealtime?* Discuss student responses, and explain that they'll have an opportunity to share more later in the activity **(5 min.)**

**2. Explain the Activity:** Explain, *You'll be going on a world tour today. In teams, you'll travel to a particular region of the world. Together, you'll read about the mealtime customs in that region, and reflect on what you learn.* Explain that some families in the US also eat these ways because immigrants have continued their traditions. Remind students that it is important when discussing culture to be respectful of differences. **(5 min.)**

**3. Gallery Walk:** Have students count off from one to five to make even teams. Then send each team to a different photo. Have students work together to read the information, look at the image, and discuss it based on the guiding questions. Then have each student write a reflection using one of the guiding questions. Students can write directly on the poster, or if you'd like to reuse the posters with multiple classes, have them write their comment on a Post-it note. Give groups 4-5 minutes at each station, and then have them switch to the next station **(20–25 min.)**

**4. Tasting and Discussion:** Have students return to their desks. Pass out the tasting you've brought, reminding students what culture it comes from. As students are eating, ask them to share more about their own mealtime traditions. Ask questions such as, *Are there certain foods you eat on certain days or at certain celebrations? Are there things you say or do, ways you sit, or utensils you use that are unique to your tradition?* **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did you work together in your group?*

### Check for understanding

- *What surprised you when learning about mealtime traditions from around the world? Did you notice anything different from your own traditions?*
- *What are similarities among different mealtime traditions? Did you notice anything similar to your own traditions?*
- *Why do you think cultures create traditions and habits around eating food? What is the purpose of these traditions?*

## ADAPTATIONS

**Extension:** Students brainstorm their own mealtime traditions to adopt in the cafeteria at lunchtime or in their classroom during snack or FoodCorps lessons.

**Research:** Have students research lingering questions about the cultures in the countries they learned about. One approach could be

connecting with community members to learn more about specific mealtime traditions.

## **ACADEMIC CONNECTIONS**

English Language Arts Common Core State Standards

### ***CCSS.ELA-LITERACY.RI.4.1***

Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

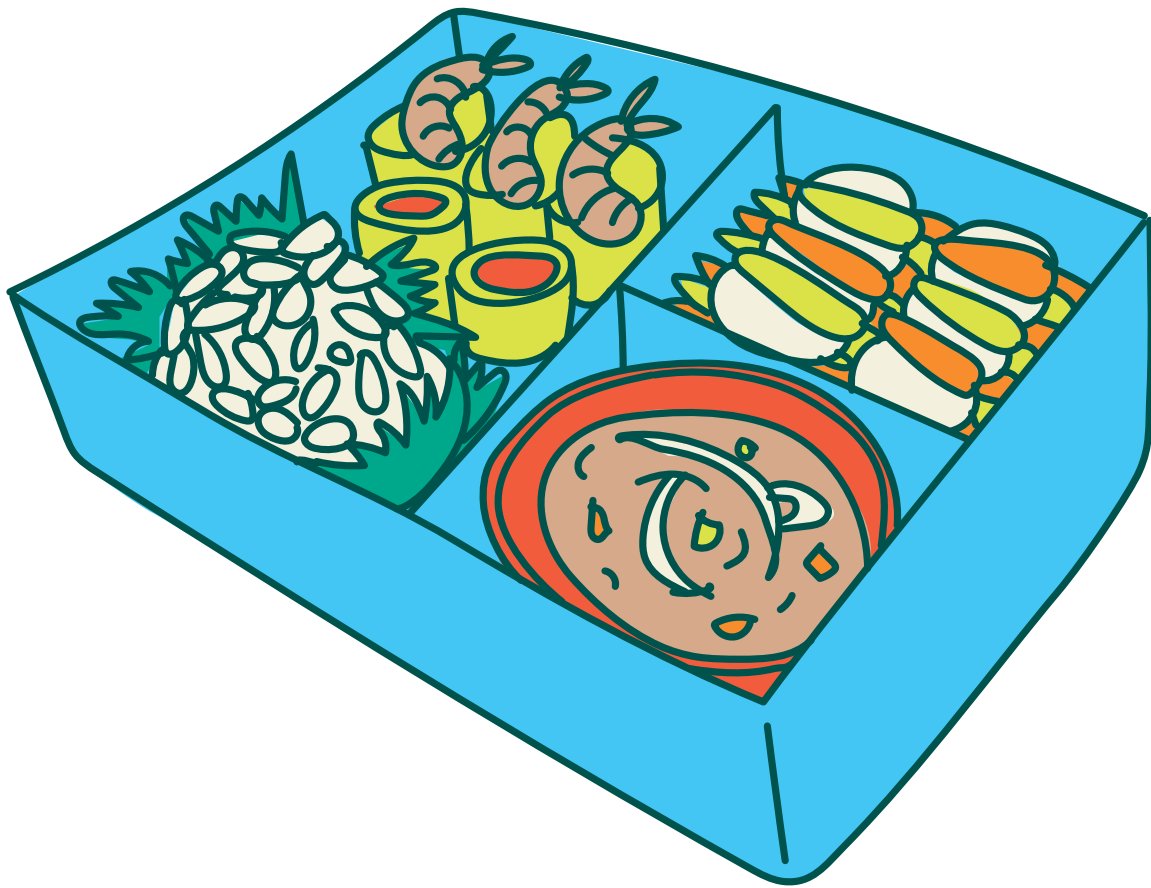
# MEALTIME TRADITION EXAMPLE

**Ethiopia:** In Ethiopia, people eat food with their right hand only, usually with a piece of bread called *injera*. Everyone eats from one really big sharing plate in the middle of the table, instead of having their own plates. You should eat what's closest to you on the plate instead of reaching across the table.



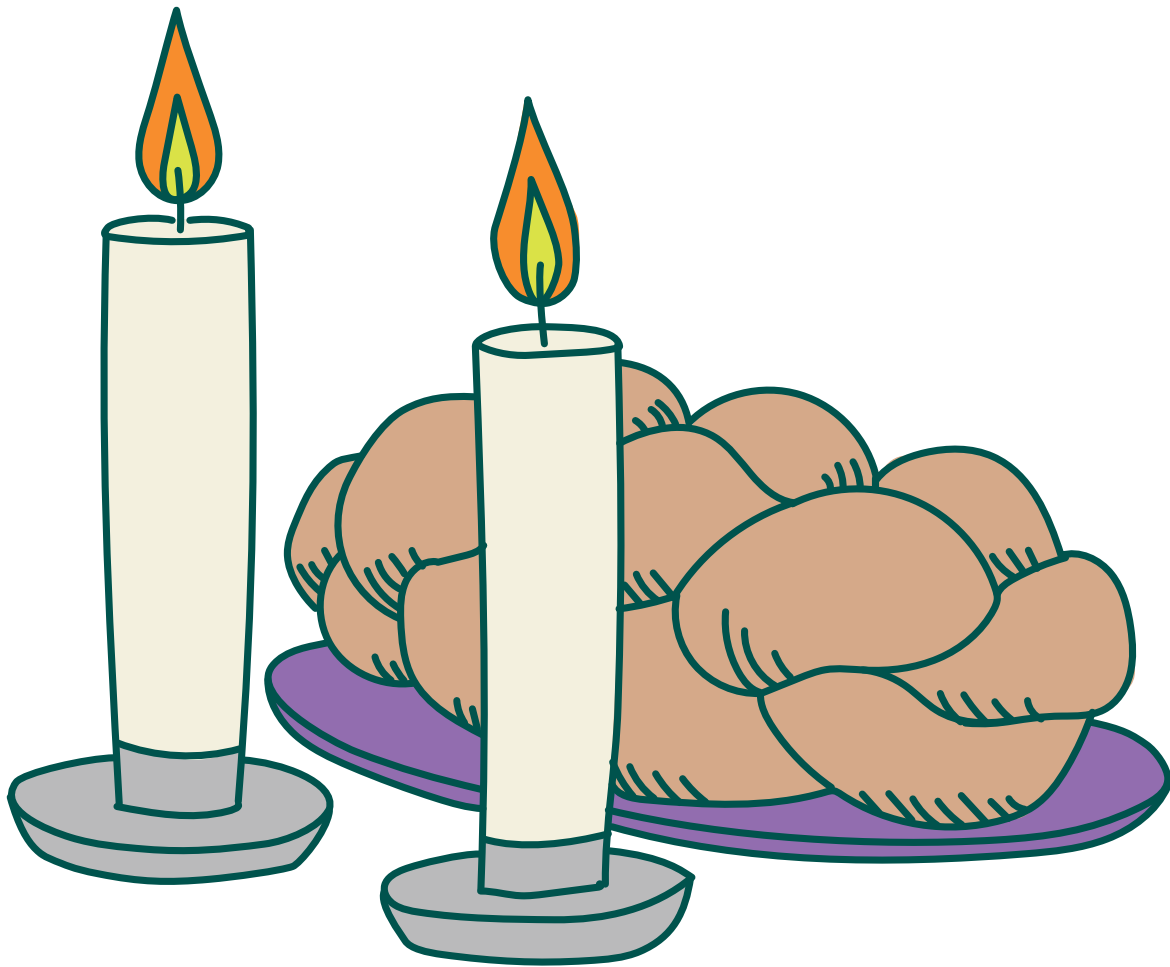
# MEALTIME TRADITION EXAMPLE

**Japan:** In Japan, people prepare *bento*, a box-shaped container, for lunch. It has fish or meat, vegetables, and rice in separate compartments. It's popular for parents to make bento boxes for their children's lunch at school and shape the food into cartoon characters. When eating a hot noodle soup, it's OK to make slurping sounds.



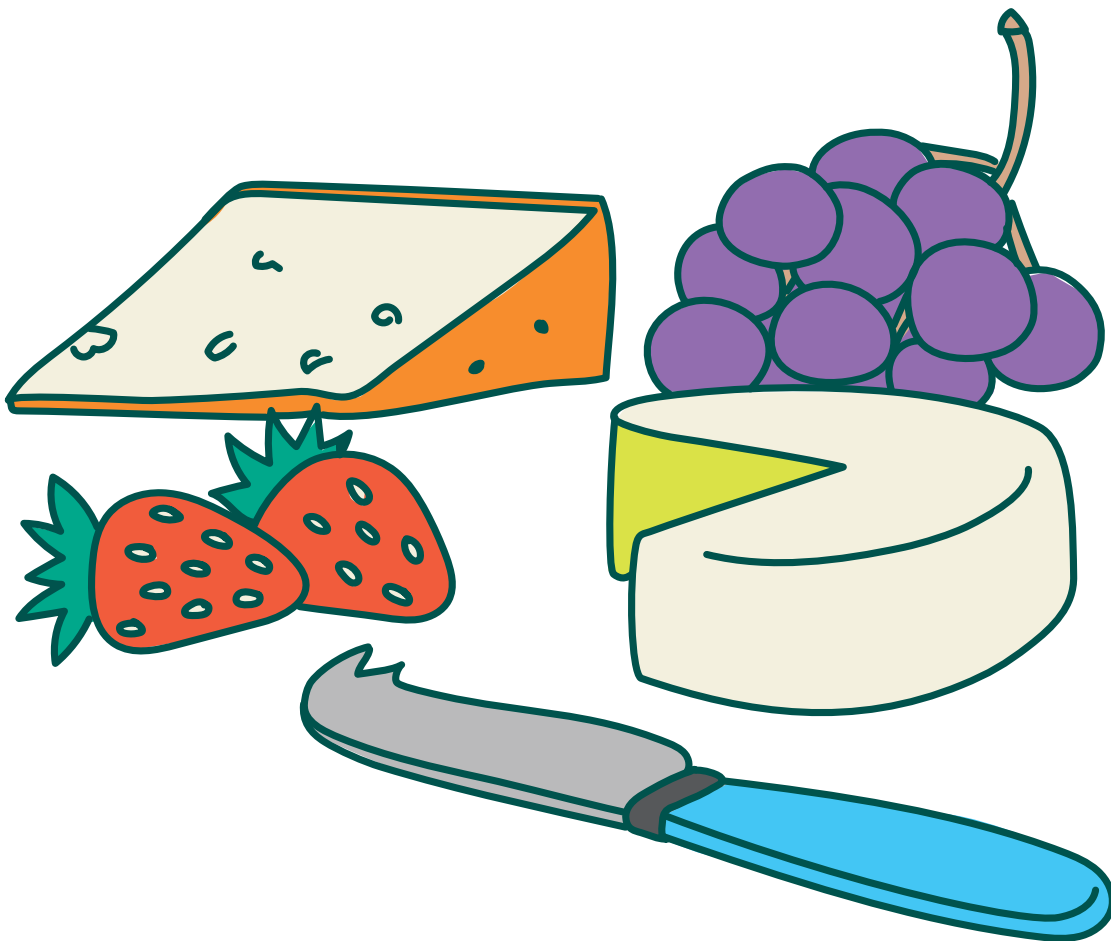
# MEALTIME TRADITION EXAMPLE

**Israel:** In Israel, people who are Jewish honor *Shabbat*, which is from sundown on Friday to sundown on Saturday. During that time people are expected to rest and not use any technology. Dinner includes *challah*, a light egg bread, and is a time to connect with friends and family over candlelight.



# MEALTIME TRADITION EXAMPLE

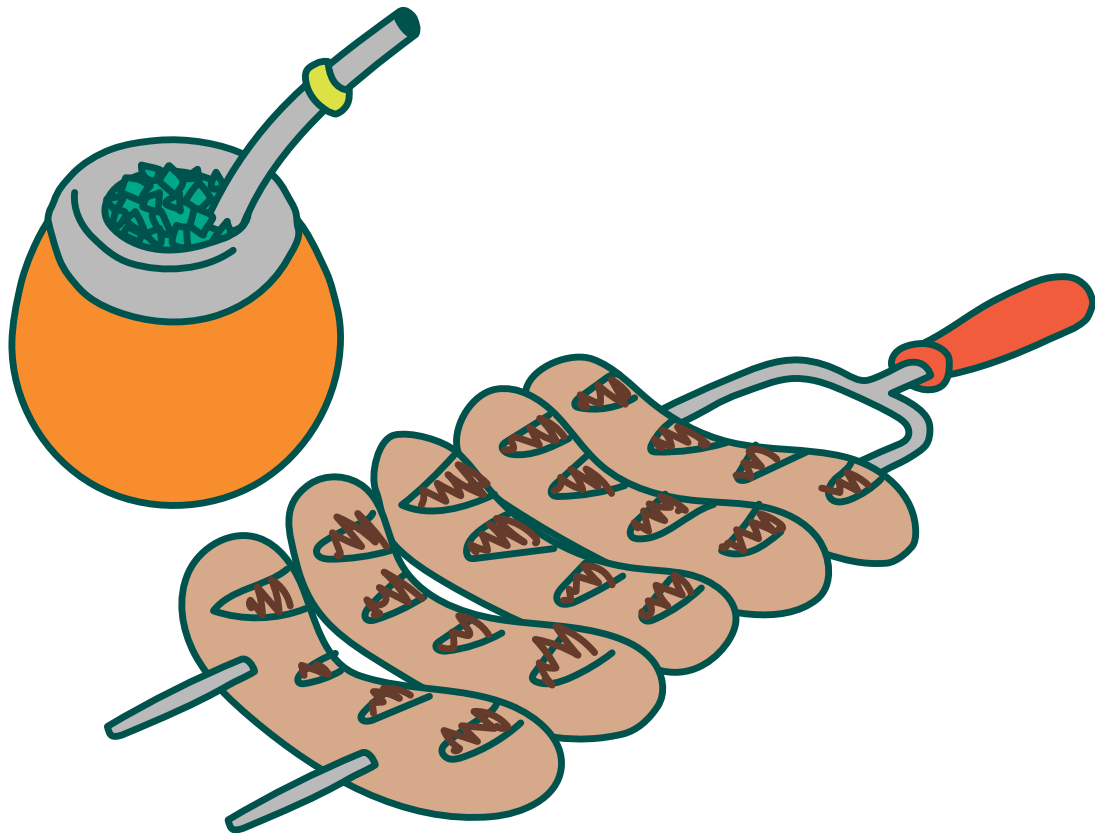
**France:** In France, people like to eat a nice long meal together. Usually meals are a communal time that lasts at least one hour, and families and friends talk and enjoy each other's company. You should always keep your hands above the table. French people often eat cheese and fruit as dessert.





# MEALTIME TRADITION EXAMPLE

**Argentina:** In Argentina, people often eat dinner late in the evening. A popular meal to have is called *asado*, which is a barbecue of all different kinds of meats made on a grill called a *parilla* over an open fire. Another tradition is for people to share a tea drink called *mate*. Friends will drink mate from a gourd cup and pass it around, sharing a straw called a *bombilla*.



# Plant a Salsa Bed

**THEME:** GROWING AND ACCESSING HEALTHY FOOD

Step 6 Follow-Up after two weeks: 10 min.

4TH  
GRADE

50  
MIN.

SPRING

## ESSENTIAL QUESTION

*What actions and intentions can we set today that will benefit us in the future?*

## LEARNING OBJECTIVES

- ✓ Students will be able to transplant a seedling in the garden.
- ✓ Students will be able to set intentions for the future.

## CONCEPTS

future selves    intention setting  
salsa    tool safety

### *Engaging the Classroom Teacher*

- Prior to the lesson, discuss whether the teacher feels comfortable leading the art project in Action Step 3 while you lead the planting. Determine whether there is an additional adult volunteer who could support the lesson.
- Ask the teacher if they have a way to easily divide the class into four groups for Action Steps 3 and 4.
- During Action Step 5, encourage the teacher to create their own intention to share with students during Action Step 5.

## LESSON DESCRIPTION

In this lesson, students plant starts for a salsa garden bed that they will harvest and enjoy as fifth graders. They also “plant” intentions for their future selves that they can revisit at the start of the next school year. This lesson is designed to be taught in the spring prior to the fall fifth-grade lesson What’s in My Salsa?.

## MATERIALS

- Chart paper or whiteboard
- Permanent markers
- 4–5 starts of each of the following:
  - onion
  - tomato
  - pepper
  - cilantro (or seeds)
- Digging fork
- Trowels
- Watering cans
- Hose for filling watering cans
- Wooden paint stirrers, wide horizontal blinds that you can cut up or any other material you can use as plant markers that are wide enough to write on
- Permanent markers of various colors
- Newspaper or tablecloth to protect table (optional)

## PREPARATION

- › Enlist the help of the classroom teacher or parent volunteer to supervise the art project while you supervise the planting station.
- › Get onion sets, tomato and pepper starts,

and cilantro seeds or starts. Determine the number of starts you'll need, considering the amount of space in your garden bed and the number of students in your class.

- › Write the following sentence frame on chart paper or a whiteboard where everyone can see it: "Intention: Today I will \_\_\_\_\_, so that in the future I can \_\_\_\_\_."
- › Create a model of an Intentions plant stake that is colorful and includes a personal intention on one side, using the sentence frame above, and the name of one of your crops on the other.
- › Choose an appropriate area to establish your salsa bed. You'll want to plant in a space that gets maximum sunlight for heat-loving crops.
- › Prepare the soil for planting by clearing debris and weeds and loosening soil if needed with a digging fork.
- › Set up a station for students to work on their Planting Intentions craft project, including permanent markers and wooden paint stirrers.

## ACTION STEPS

**1. Engage:** Gather students in a circle and say, *Today we're going to be planting a gift for ourselves to enjoy this fall. These will be our ingredients. Can you guess what we'll be making in the fall?* Show them your various plant starts and seeds, and have them guess what they're all for (salsa!). **(5 min.)**

**2. Explain the Activity:** Reiterate to students how any time we plant something in our garden, we're being kind to our community and our future selves. Say, *When we plant these plants, we're setting an intention of*

*creating a delicious meal for ourselves and others. What are other things we do now that benefit our future selves?* Ask students to turn and talk to a neighbor and then share as a class. Students might say brushing their teeth, eating healthy food, doing well in school, practicing a sport or musical instrument, learning a new hobby, or saving money. Explain, *Eating healthy food is an example of a favor we can do for our future selves. Today, in addition to planting our ingredients for salsa, we'll also be planting intentions for things we can do today as a favor to our future selves! To write out your intention, you can complete this sentence: "Today I will \_\_\_\_\_, so that in the future I can \_\_\_\_\_."* For example, *"Today I will eat lots of vegetables, so that in the future I can be healthy and strong enough to play my best soccer game!"* Ask, *What's something you can do now or in the next few months that will help your future self?* Explain that you'll be pulling groups one at a time to plant. Split students into different groups based on what start each group will plant (i.e., have an onion group, a tomato group, a pepper group, and a cilantro group). **(5 min.)**

**3. Writing Intentions:** Help students get started on their Planting Intentions project by showing them your example. Set expectations for how students will be sharing and using supplies. Explain how when you call their group, they'll temporarily leave their project, do their planting, and then get right back to working on their Intention plant stake. **(25 min.)**

**4. Planting Starts:** Meanwhile, call one group up at a time. Show students the start their

group will be planting, and briefly explain that plant's unique needs and planting requirements. Demonstrate how to properly transplant, modeling proper tool safety. Then have groups of two or three students plant and water the transplant. **(6 min. each)**

**5. Planting Intentions:** Have students clean up their projects, and then have a mini ceremony where students share their intentions aloud and “plant” their intentions in the ground. **(10 min.)**

**6. Follow-up:** Return to the garden a few weeks later to check on their starts, and invite students to reflect together: *How have you been following through with your intention? Are there any obstacles getting in your way? How can we support our classmates in following through on their intentions?* **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- Ask yourself: *What can I do to make sure I follow through on the intention I planted in the garden today?*
- Ask yourself: *Was I safe and respectful in the garden today?*

### Check for understanding

- *How will our garden bed help us in the future?*
- *How will our garden bed help the garden ecosystem?*
- *We talked today about things we can do to benefit our future selves. What can we do to benefit other people in the future?*
- *When do you think our plants will be ready to harvest?*

## ADAPTATIONS

**Cooking Extension:** See the lesson *What's in My Salsa?* for a recipe to make salsa with students.

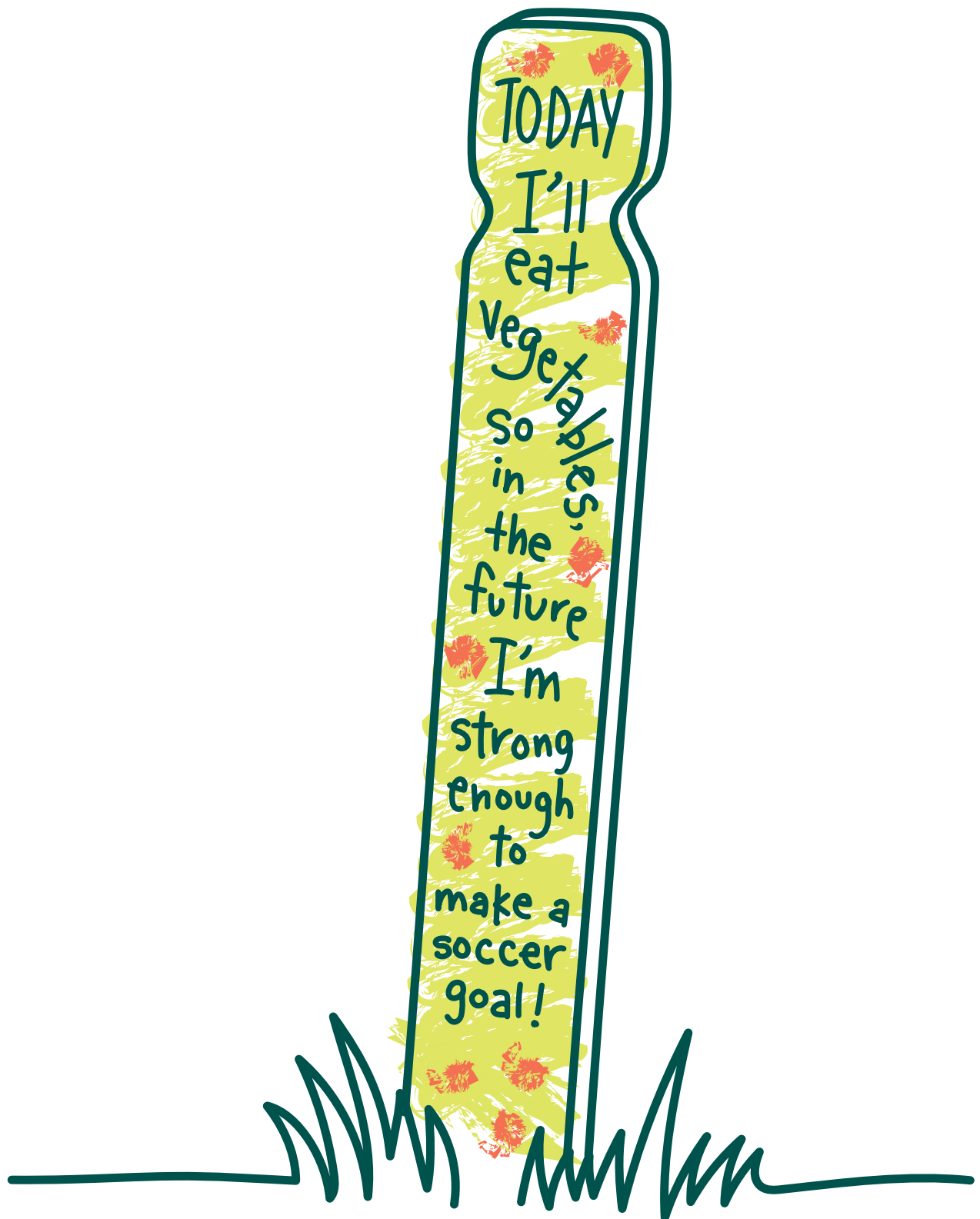
## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.RL.4.1

Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

# Sample Intention Plant Stake





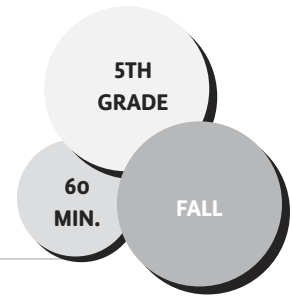
The background of the page is a light gray color with a repeating pattern of various fruits and vegetables. The items include watermelon slices, lemons, carrots, broccoli, grapes, and other produce, all rendered in a simple, line-art style. A large white circle is centered on the page, containing the main title.

# **Fifth Grade**

## **LESSONS**

# Full Potential Manifesto

**THEME:** LIVING UP TO OUR FULL POTENTIAL



## ESSENTIAL QUESTIONS

*What does living up to your full potential mean to you?*

*How can a manifesto help you live up to your full potential?*

## LEARNING OBJECTIVES

- ✓ Students will be able to define what living up to their full potential means to them.
- ✓ Students will be able to identify achievable steps to work toward living up to their full potential.

## CONCEPTS

goals    manifesto    potential

### *Engaging the Classroom Teacher*

- During Action Step 4, suggest that the teacher circulate through the room, supporting students as they work on their manifestos.
- During Action Step 5, suggest that the teacher circulate through the room, encouraging partners as they're sharing with each other.

## LESSON DESCRIPTION

This lesson, which could work well as a new-year or beginning-of-school-year activity, guides students in writing personal wellness manifestos through which they explore what it means to “live up to your full potential.” This lesson is highlighted in the culminating lesson Gratitude Feast.

## MATERIALS

- Piece of large paper for each student
- Markers, crayons, or other drawing supplies
- Old magazines
- Glue sticks
- Scissors
- Crafting Your Full Potential Manifesto Worksheet (p. 515)

## PREPARATION

- › Create your own full potential manifesto to share as a model for students.
- › Search for “personal manifesto” on YouTube, and select an inspiring and age-appropriate video to share with students. There are many spoken-word videos that fall under this category.
- › Photocopy the Crafting Your Full Potential Manifesto Worksheet.
- › Display the 1917 US Food Administration Poster “Food, Don’t Waste It.”



## ACTION STEPS

**1. Engage:** Tell students that today they're going to think about the promises they want to keep to themselves to be their best self. Show students the personal manifesto video you've selected. Afterward, ask for reactions. **(5 min.)**

**2. Defining Full Potential:** Say, *Today we're going to think about what it looks like to live up to our full potential.* Ask students to share with a partner what comes to mind when they think about the phrase "living up to your full potential." Explain, *your potential is what you're capable of, so part of living up to your full potential is getting better at things over time.* Give a personal example, such as *To reach my full potential, I want to get better at or learn another language.* Then have students work in pairs to complete the following sentence for themselves: "To reach my full potential, I want to get better at \_\_\_\_\_." Have pairs share their sentences, and record students' responses on the board. They might include pursuing interests or hobbies, being active, eating food that is nutritious, standing up when they see bullying, keeping promises to themselves, reaching academic goals, etc. **(5 min.)**

**3. What's a Manifesto?:** Tell students, *Today we're each going to create a personal Full Potential Manifesto. A manifesto is when someone writes something down to publicly declare it or to let everyone know, "This is what I intend to do, and this is how I feel!"* Explain that during World War I the US Food Administration published a manifesto about food. Display the 1917 poster, and instruct students to discuss their impressions with their partner. Ask, *What*

*views are reflected in the statements on this poster?* Explain to students that their manifestos can include the types of foods they'd like to eat, a new activity they'd like to try, and something new they'd like to learn. Encourage students to think about their own manifestos as encompassing their whole self. Ask, *What's a goal related to your brain? What's a goal related to your heart? What's a goal related to moving your body and eating healthfully?* **(10 min.)**

**4. Creating Manifestos:** Pass out the Crafting Your Full Potential Manifesto Worksheets, and go over the guidelines of the project, explaining they can use words or images or a combination of the two. Explain that they will be sharing their manifestos with at least one other student in the class. Have students work on drafting their manifesto for ten minutes before passing out paper and art supplies. Remind them to work neatly and carefully. Circulate through the room, supporting students who need guidance. After another 20 minutes, ask students to clean up their spaces. Students may need another work session to complete their manifestos. **(30 min.)**

**5. Sharing with Partners:** Have students find an aspect of their Full Potential Manifesto that they feel comfortable sharing with a partner. Put students in pairs and have them share. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: (5 min.)

### Social and emotional learning

- *How did it feel to create a personal manifesto?*

### Check for understanding

- *How will you make sure you are doing the things you expressed in your Full Potential Manifesto?*
- *How can we ask for friends and family members to support us in carrying out our manifestos?*
- *How can we support our friends in living up to their full potential?*

## ADAPTATIONS

**Follow-Up:** Assign or have each student choose a classmate to be their accountability buddy. Record which students are paired so that you can remind them next time. They can have regular check-ins, for example monthly, to reflect together on how well they are fulfilling the goals expressed in their manifestos. You can also have them revise their manifestos periodically, such as at the beginning of a new semester, to highlight that this can be a living document that will grow along with them as they learn more about wellness over time.

**Class Manifesto Variation:** You might consider creating a class manifesto that all students contribute to before tackling personal manifestos.

**Extension:** You might have students create a school food or wellness manifesto modeled after the 1917 US Food Administration poster, laying out the tenets they'd want their school to live by. They can then come up with actionable steps for how to implement changes in their school environment.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.RI.5.3

Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

### CCSS.ELA-LITERACY.W.5.4

Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Crafting Your Full Potential Manifesto Worksheet

**Directions:** Use your full piece of paper to create your own manifesto that demonstrates how you intend to live up to your full potential this year.

**Format:** Your manifesto can be a poem, list, collage, drawing, or comic. To convey your intentions, use whatever format you would like.

**Requirements:**

- Include words or images to show how you want to feel.
- Include words or images to show what you want to accomplish.
- Use the whole paper. If you're mostly using words, write big and bold! If you're mostly using images, be sure to not leave a lot of white space on the page.
- Include the following sentences:

To reach my full potential, I want to get better at

---

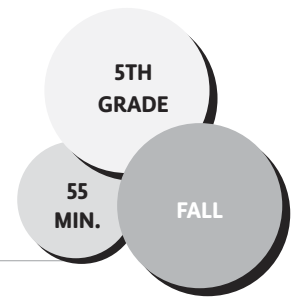
To help me do that, here are some health-promoting foods I can eat

---

**Write or sketch your rough draft below:**

# What's in My Salsa?

**THEME:** MAKING HEALTHY FOOD CHOICES



## ESSENTIAL QUESTION

*What informs our food choices?*

## LEARNING OBJECTIVES

- ✓ Students will be able to interpret nutrition labels.
- ✓ Students will be able to compare and contrast homemade and store-bought salsas.

## CONCEPTS

knife safety    preservatives  
reading nutrition labels    shelf-stable

### *Engaging the Classroom Teacher*

- If these students planted the salsa ingredients the prior year, schedule a time prior to the lesson for students to harvest the ingredients.
- During Action Step 5, suggest that the teacher help pass out materials to students and then circulate through the room, ensuring groups are working productively together.

## LESSON DESCRIPTION

In this lesson, students compare and contrast homemade and store-bought salsas by reading nutrition labels and making their own salsa. This lesson is designed to be taught in conjunction with fourth-grade lesson Plant a Salsa Bed! with the idea that the students who plant the

ingredients for salsa the prior school year can enjoy making it at the start of the new school year.

## MATERIALS

- Salsa Ingredients (see recipe below)
- 2 jars of store-bought salsa
- Spoon for mixing
- 1–2 bags of tortilla chips
- Nutrition labels for one store-bought, shelf-stable salsa (the more processed, the better) and one store-bought, refrigerated salsa
- Salsa recipe (p. 519)
- Materials for cleanup

### Tray with the following for each group of 4–6 students:

- Washed and portioned ingredients (see recipe)
- Cutting mats
- Knives
- Bowl of chips
- Bowl for salsa
- Bowl for store-bought salsa
- Container for compost

## PREPARATION

- › As you prepare to teach this lesson, keep in mind that the goal is not to shame students for liking foods that are store-bought and include preservatives, but rather to promote conversation and critical thinking about food choices.
- › Find, print, and photocopy salsa nutrition label samples.
- › Display the salsa recipe on the board or chart paper.

- › Prepare trays of materials and ingredients for each group. Scale the recipe ingredients according to how many students and groups you have. You can always share leftovers with custodial, nutrition, or administrative staff!

## Salsa (Pico De Gallo) Recipe

**Yield:** 30 servings, 4 tablespoons

### Dressing

- 6 medium tomatoes, chopped
- 2 small onions, finely diced (about 1 cup)
- 2/3 cup cilantro, finely chopped
- 3 cloves garlic, minced
- 1 small jalapeno, finely chopped (optional)
- Juice of 1–2 limes, to taste
- 1/2 teaspoon salt, more to taste

Mix all ingredients together in a bowl. Taste and adjust seasoning with lime juice and salt.

## ACTION STEPS

- 1. Discussing:** Gather students in a circle and ask, *Do you know what this is? Why do you think there are nutrition labels on your food?* You might consider sharing that, in 1990, the US government created a law requiring companies to put nutrition labels on food. *What does the nutrition label tell you? How does reading the label influence any choices that you make?* Have students turn and talk with each other for a minute, then share with the whole class. Explain that, today, students will get a chance to make their own salsa and compare it to store-bought salsa. **(5 min.)**
- 2. Comparing Ingredients on Nutrition Labels:** Pass out the sample nutrition labels for your two different types of salsa. Have students

read the labels in pairs and make observations. Provide guiding questions, such as, *What differences can you spot between the ingredients lists? Which has more ingredients? Are there any ingredients in the list that surprise you or that you've never heard of?* Share observations as a class and explain, *One of these is shelf-stable, which means it's made to last on a shelf for a long time, and the other is refrigerated. Can you guess which is which?* Discuss how we consider the shelf-stable one more highly processed, but the refrigerated ones sometimes have preservatives to make them last longer as well. Explain, *Preservatives are chemicals that are added to foods to prevent them from growing mold or spoiling. Instead of adding preservatives, we preserve fresh foods we've made at home by putting them in the fridge or freezer and eating them quickly. Salt and sugar are natural preservatives that help food stay fresh longer. Companies use these natural preservatives too. But that's why food that's prepared fresh and meant to be eaten in a few days needs less salt and sugar than shelf-stable food.* Have students preview the salsa recipe you'll be making together. Ask them to compare the ingredients to those listed on the store-bought nutrition labels. **(10 min.)**

### 3. Hand-Washing Break (5 min.)

### 4. Knife Safety Demonstration (5 min.)

**5. Making Salsa:** Assign team leaders in each group whose job will be to read the recipe and give roles to each person in the group. Pass out trays of ingredients and materials; (setting aside tortilla chips for now) and circulate through the room, making sure students are being safe; provide support where needed. Give

students a two-minute warning, and then have them clean up their spaces. **(15 min.)**

**6. Tasting:** Remind students that they're not going to eat until you say, then pass out bowls of chips and bowls of store-bought salsa. Remind students not to double-dip chips and to use a napkin rather than lick their fingers. Before having students taste, ask them to make observations of how the salsas look and smell.

**(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *Ask yourself: Was I cooperative and helpful with the classmates in my group?*

### Check for understanding

- *What words describe the taste of our homemade salsa? How about the texture? How is it different from the store-bought salsa or salsas you've had in the past?*
- *What other ingredients would make our homemade salsa tasty?*
- *Do you think you're more or less likely to read nutrition labels after today's lesson? Why?*

## ADAPTATIONS

**Harvesting Extension:** If students planted the ingredients for the salsa you'll be making today, give them the satisfaction of harvesting their efforts! Perhaps schedule the harvest a day or two before this lesson.

**Literacy Extension:** Have students draw Venn diagrams, and fill them in to show the

similarities and differences between the store-bought salsa and the one they made.

**Garden Setting:** Have different groups make different salsas, depending on what's in your garden. You could have salsa that includes spicy peppers, a salsa that replaces tomatoes with sweet fruits like strawberries, a salsa made from tomatillos, or even green tomatoes that never had a chance to ripen!

**Food Product Variation:** Use this lesson as an outline to investigate a different food product that may be of interest to students.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.RI.5.7

Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

## **Salsa (Pico De Gallo) Recipe**

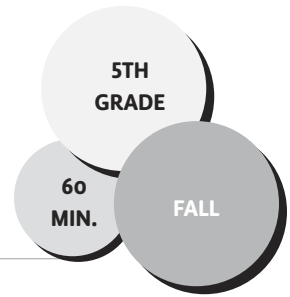
Yield: 30 servings, 4 tablespoons

- 6 medium tomatoes, chopped
- 2 small onions, finely diced (about 1 cup)
- $\frac{2}{3}$  cup cilantro, finely chopped
- 3 cloves garlic, minced
- 1 small jalapeno, finely chopped (optional)
- Juice of 1–2 limes, to taste
- $\frac{1}{2}$  teaspoon salt, more to taste

Mix all ingredients together in a bowl. Taste and adjust seasoning with lime juice and salt.

# What Do Plants Eat?

**THEME:** EXPLORING THE ECOLOGY OF FOOD



## ESSENTIAL QUESTION

*How does the process of photosynthesis affect us as humans?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain the process of photosynthesis.
- ✓ Students will be able to explain how the process of photosynthesis benefits all animals, including people.

## CONCEPTS

carbon dioxide (CO<sub>2</sub>)    oxygen (O<sub>2</sub>)  
photosynthesis    sugar as energy

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher about students' level of familiarity with atmospheric gasses such as carbon dioxide and the process of photosynthesis. If this lesson will be students' introduction to photosynthesis, consider having groups practice and perform the prewritten script because they will not have enough knowledge to create their own.
- Ask the teacher whether there are established groups that will collaborate well together. If not, ask for guidance in creating groups.

- During Action Step 2, suggest that the teacher circulate through the room, checking in with different groups who might need support solving the puzzle.
- During Action Step 4, suggest that the teacher support groups while they create their own skits, or rehearse the pre-written script.
- During Action Step 5, suggest that the teacher help ensure students are being a respectful audience to their peers who are performing.

## LESSON DESCRIPTION

In this lesson, students work in groups to put together a puzzle of the photosynthesis process. Then, after checking for understanding as a class, the groups make the process come alive by creating and performing photosynthesis skits.

## MATERIALS

- A simple, plant-based food for students to taste, such as slices of fruit or cubes of whole wheat bread
- Photosynthesis Poster (p. 526)
- Bin of props and costumes for skits (optional)

For each group of 4–6 students:

- Photosynthesis Puzzle Kit, which includes images of a plant, the sun, a CO<sub>2</sub> molecule, water, and IN and OUT arrows (p. 525)
- Brown paper bag



## PREPARATION

- › Prepare food for students to taste.
- › Photocopy and cut out components of Photosynthesis Puzzle Kit for each group, and put components in brown paper bag to conceal them.
- › Photocopy and cut out Photosynthesis Role Cards for each group of 4–6 students.

## ACTION STEPS

**1. Food as Matter and Energy:** Gather students in a circle and share a tasting. Give each student a slice of fruit or a cube of whole wheat bread. Ask, *Why do we need to eat?* As students share, explain that food is what gives us matter, or substance, to grow and energy to do things. Then ask, *If we get matter and energy from eating food, how do plants get their matter and energy to grow?* Accept any answers. *Did you know plants get their matter from air and water, and their energy from the sun?* Tell students that the name of this process is photosynthesis. Have them say the word aloud. Ask them to imagine if they could photosynthesize. Say, *Any time you were tired or hungry, you could just go out and stand in the sun to feel energized and full. That's what the plants do!* **(5 min.)**

**2. Solving Photosynthesis Puzzle:** Explain to students that you have a photosynthesis puzzle for them to solve in groups to determine how plants make their own food. Say, *You'll be racing against other teams to see who can solve it first. When your group thinks you've solved it, have everyone raise their hands, and I'll come*

*over and check.* Pass out a kit to each group of students, and ask them not to open the bags until you give the signal. Then have students race. Circulate through the room, keeping an eye out for group members who raise their hands. Have groups keep going until the last group has solved it correctly. **(10 min.)**

**3. Photosynthesis Model:** Display the Photosynthesis Poster, and go over the process as a class. Say, *The plant takes in the sun's energy through its leaves. It takes in carbon dioxide from the atmosphere through the leaves. Water travels through a plant's roots and up through the stem to the leaves. Inside the cells of the plant's leaf, the energy from the sunlight allows the plant to turn water and CO<sub>2</sub> into sugar. The plant then lets out oxygen.* Give students time to rearrange any objects or arrows on their puzzles to make them accurate. **(5 min.)**

**4. Creating Skits:** Say, *Now imagine if these different parts of the process could speak! We're going to create skits to help explain how a plant makes its own food.* Explain that in groups they will develop dialogue to help demonstrate how these ingredients work together. (If it's helpful, you can reference the Sample Photosynthesis Skit at the end of this lesson for ideas about what this might look like.) Pass out a set of Photosynthesis Role Cards to each group. If they have additional people in their group, encourage them to create extra roles that tie in to the process. Have students work on writing the script for the first ten minutes, and assign groups to different areas to stand up and rehearse it. Circulate through the room, encouraging students to incorporate as much physical movement as they can. **(20 min.)**

**5. Performing:** Have a couple groups volunteer to perform their skits for the class. Remind students to project their voices and include as much physical movement as they can. Remind the rest of the class to be a respectful audience by remaining quiet and attentive during the performance. Ask students, *While watching the skit, what did you learn about photosynthesis that you didn't realize before?* **(15 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What went well working in your group?*
- *What did not go well in your group? How did you solve these problems?*

### Check for understanding

- *How is a plant's process of getting energy different from that of animals?*
- *There are many people, including adults, who may not remember exactly how photosynthesis works. How would you explain the process of photosynthesis to someone else?*
- *What do you think might happen if a plant doesn't get enough water or sunlight?*
- *What environmental issues affect photosynthesis?*

## ADAPTATIONS

**Noncompetitive Race Option:** For the photosynthesis puzzles, if you think racing against other teams might present a management challenge, you can instead have the teams race against the clock, saying something like, *I'm giving teams puzzles to put together. My challenge to you is to see if every team finishes their puzzles in less than five minutes!*

**Performing a Pre-written Skit:** Depending on the specific academic needs and abilities of the students in your class, you might have students perform the Sample Photosynthesis Skit provided at the end of this lesson in their groups rather than writing their own skit.

**Climate Change Extension:** Ask students, Do plants increase or decrease CO<sub>2</sub> in the atmosphere? Do plants increase or decrease O<sub>2</sub> in the atmosphere? Then discuss carbon dioxide's role in climate change and how plants have the power to help in consuming all this CO<sub>2</sub> that accumulates in the atmosphere.

## ACADEMIC CONNECTIONS

Next Generation Science Standards

Life Science Disciplinary Core Idea


### **NGSS.LS1.C.**

Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. Plants acquire their material for growth chiefly from air and water.

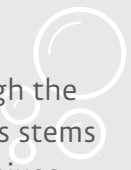
# Photosynthesis Role Cards



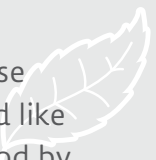
**You're the sun.** The energy you emit through your rays of sunshine help the plant make its own food.




**You're carbon dioxide,** also known as CO<sub>2</sub>. The plant breathes you in through its leaves.



**You're water.** You travel through the plant's roots and up through its stems to the leaves where the plant mixes your molecules (H<sub>2</sub>O) with Carbon Dioxide (CO<sub>2</sub>) to make sugar.



**You're a plant.** You can choose whichever type of plant you'd like to be! You make your own food by capturing energy from sunlight and using water (H<sub>2</sub>O) and (CO<sub>2</sub>) to make sugar in your leaves.



**You're an animal.** You breathe in oxygen that plants release through the process of photosynthesis. To get your energy, you also eat plants and animals that eat plants.

# Sample Photosynthesis Skit

**CHARACTERS:** Plant, Sun, Atmosphere, Water | **NONSPEAKING CHARACTERS:** Sugar, Carbon Dioxide

**Plant:** [waking up and stretching] I am hungry! Lucky for me, Sun is out today. Good morning, Sun!

**Sun:** Good morning!

**Plant:** Would you mind shining some of your light on my leaves here?

**Sun:** Going to cook some food for yourself? I'm happy to help.

[Sun hands over rays of light to Plant]

**Plant:** Thanks. Now I need to find CO<sub>2</sub> in the air.

**Plant:** [shouts toward sky] Yoo-hoo, Atmosphere. I can't see you, but I know you're out there.

**Atmosphere:** Morning, Plant. I'm here. Same as usual? You need some CO<sub>2</sub> molecules?

**Plant:** Yes, please!

[Atmosphere gives Plant a handful of CO<sub>2</sub> molecules.]

**Plant:** Thank you, Atmosphere. Remember, I'll have some leftovers to give you soon.

**Plant:** [looks down at ground] One more ingredient for my breakfast. Hi, Water. Are you down there? I think I saw you raining from the sky yesterday.

**Water:** Hi Plant. Yup, I'm just resting here in the cool ground. Feel free to drink me up through your roots.

**Plant:** Thanks so much. Gulp. Gulp. Gulp. I'm going to send this water through my stems into my leaves where the cooking magic happens!

**Plant:** OK, time to mix these ingredients together. [Plant mixes ingredients and produces sugar.]

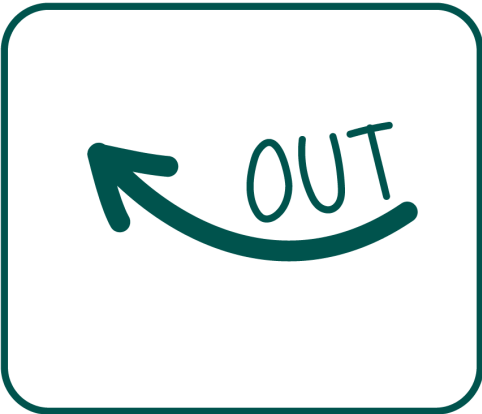
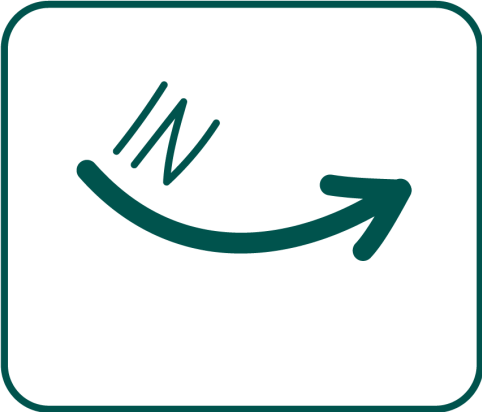
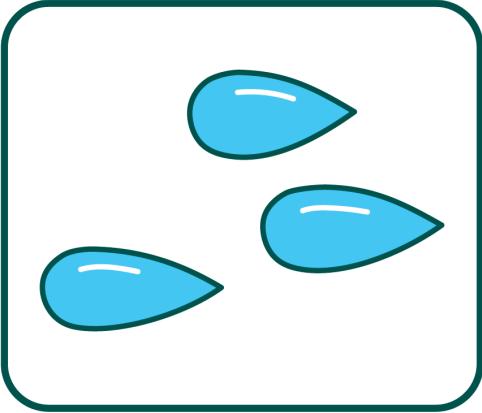
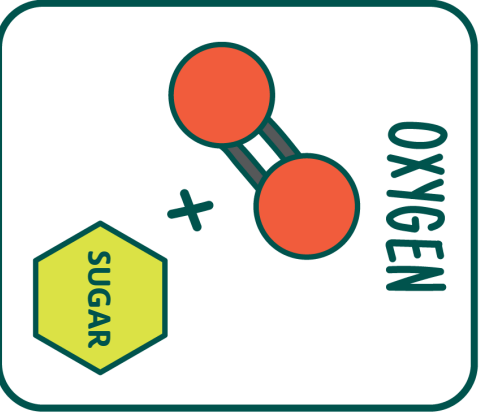
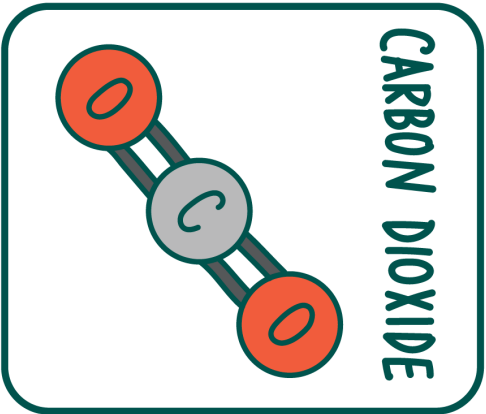
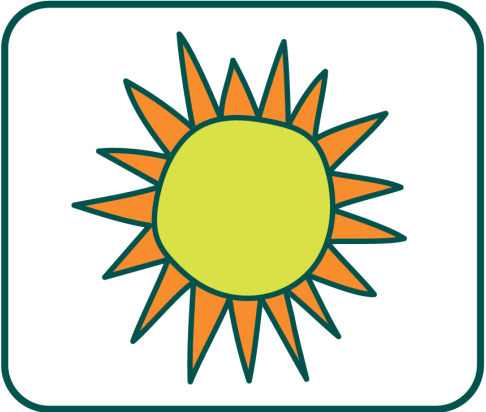
**Plant:** [to Atmosphere] Thanks for the carbon, Atmosphere, but I don't need this oxygen. Please share it with all the animals who live around here.

**Atmosphere:** My pleasure! Enjoy your breakfast.

[Plant eats the sugar it produced and grows one inch taller.]

**Plant:** Ahhh! Feeding myself takes some work, but I'm pretty lucky all the ingredients I need come from the sun, air, and water!

# Photosynthesis Puzzle Kit

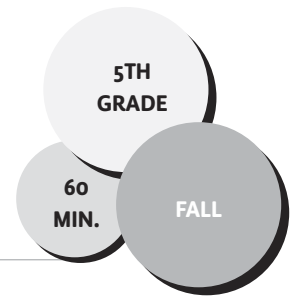


# Photosynthesis



# Seasonal Food Wheels

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*How do we determine what and when to plant?*

## LEARNING OBJECTIVES

- ✓ Students will be able to interpret information from seed packets and growing guides.
- ✓ Students will be able to synthesize information to determine what can be harvested in their region each season.

## CONCEPTS

harvest    optimal soil temperature  
seasonal    six plant parts    USDA zones

### *Engaging the Classroom Teacher*

- During Action Steps 2 and 4, suggest that the teacher ensure students are moving safely and responsibly through the space and support students in finding their sorting group.
- During Action Step 6, suggest that the teacher support students in creating their Seasonal Food Wheels, helping them correctly interpret the information from seed catalogs or packets.

## LESSON DESCRIPTION

In this lesson, students sort seed packets according to plant parts and growing season and learn which fruits and vegetables are in season in their region. They then create their own Seasonal Food Wheel to inform when to harvest food plants grown in their USDA zone.

## MATERIALS

■ A collection of seed packets or printed copies of seed packets, including at least two examples of each plant part; suggested list:

- Roots—radishes, carrots, beets, etc.
- Stems—celery, swiss chard, chives, asparagus, etc.
- Leaves—spinach, lettuce, arugula, collards, etc.
- Flowers—borage, nasturtium, broccoli, cauliflower, calendula, etc.
- Fruits—melons, tomatoes, eggplant, cucumbers, etc.
- Seeds—sunflowers, poppies, pumpkins, beans, etc.

### For each student:

- Reading a Seed Packet Worksheet (p. 531)
- Thick paper
- Seasonal Food Wheel Template (p. 530)
- Brass fastener (for fastening spinning arrow)
- For each group of 4–6 students:
  - Scissors
  - Glue

## PREPARATION

- › Compile resources such as local planting charts and seed catalogs for students to use when making their wheels.
- › Create a model Seasonal Food Wheel to share with students.
- › Photocopy a Reading a Seed Packet Worksheet for each student.
- › Prepare a full-year calendar to project or a photocopy to pass out.

## ACTION STEPS

**1. Engage:** Gather students in a circle and say, *Today we're going to think about the different fruits and vegetables that grow each season in our area. Ask, What is growing and being harvested right now?* Have students turn and talk to their neighbor for a minute and then share with the class. **(5 min.)**

**2. Sorting Seed Packets by Plant Part:** Hand out a seed packet to each student, and explain that when you give the signal, they're going to get up and group themselves according to which part of the plant we grow that crop for: roots, stems, leaves, flowers, fruits, or seeds. *For example, we grow carrots for the roots.* You can designate parts of the room to be meeting spots to add a bit of structure, or let students communicate and problem-solve on their own for more of a team-building activity. Once they are sorted, call on students to share what plant they are and what part of the plant their team represents. Once you've shared at least one from each group, have students sit down. **(10 min.)**

**3. Seed Packet Reading:** Project and pass out Reading a Seed Packet Worksheets, and read the packet together as a class. Briefly go over the information they can find on the packet, such as planting time, optimal soil temperatures, and harvest date. Share with students your local USDA zone and average first and last day of frost temperatures for packets that rely on knowing that information. Project or hand out a full-year calendar for students to reference. As a class, determine in which season the sample seed would be grown, in which season it would be harvested, and then have students figure out the same for their own seed packets. **(10 min.)**

**4. Seed Packet Harvesting Sort:** Have students sort themselves again by plant parts. Once they're grouped, ask them to now sort themselves by the season in which they can be harvested. You can designate one corner of the room for each season. Go season by season, and ask a couple students to share what fruit or vegetable they are. Ask students, *Do you see any familiar faces from your plant part group in your season group?* Help students make a connection between the life cycle of a plant and the weather. Say, *Fruiting crops like melon and tomatoes need long periods of warm soil and high temperatures to produce fruit, but roots and leaves like carrots and spinach grow best in cooler temperatures.* **(10 min.)**

**5. Explain the Activity:** Tell students they're now going to make a seasonal food wheel, divided into the four seasons and depicting the crops that are harvested during that season. Show them your model, and show them the resources they'll use to create their own. Explain that they can cut out pictures from the



seed catalogs, or they can draw. **(5 min.)**

**6. Make Seasonal Food Wheels:** Pass out art materials and resources, then circulate through the room, providing guidance and asking probing questions to check for understanding. Give students the option of cutting out an arrow and fastening it in the center to point at the current season. Then clean up before discussing reflection questions. **(15 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What was challenging about sorting yourselves into the different groups? Did you figure out ways to make it easier?*

### Check for understanding

- *Think about any gardens or farms you might have seen around here. What are the crops growing in our region right now? What are the crops that are currently harvested? What parts of the plant are growing right now? What parts of the plant will be growing next season?*
- *When we eat things that are not in season, how do we get them? What are the effects on the environment of eating fruits and vegetables when they are out of season?*
- *What tips would you give someone for reading a seed packet?*

## ADAPTATIONS

**Cooking Extension:** Have students choose a season and, using their wheel, create a menu centered around whatever is in season in your region.

**Sowing Extension:** Have students create an outer concentric circle for when crops can be sown by season.

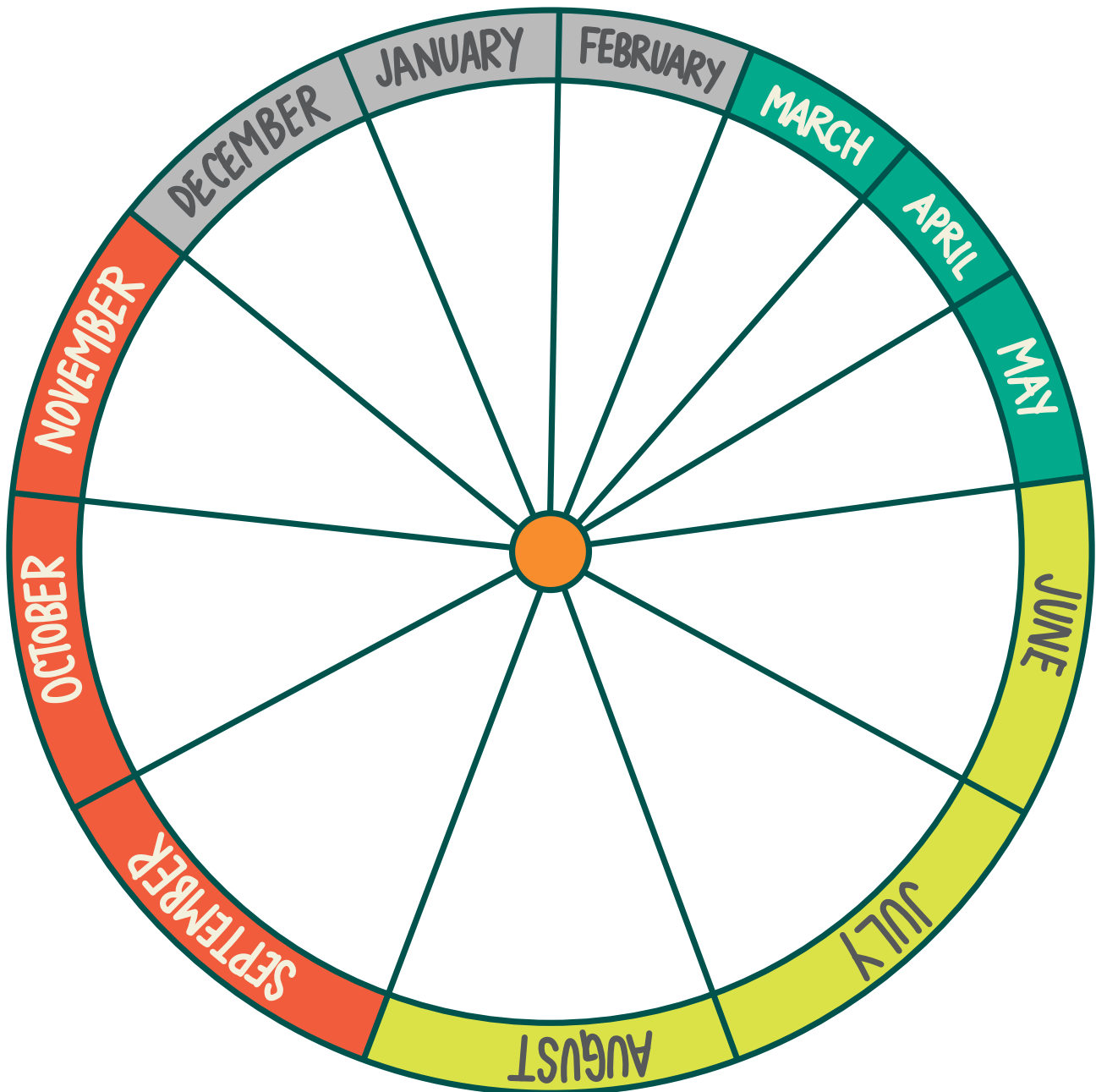
## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.RI.5.7

Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

# Seasonal Food Wheel Template

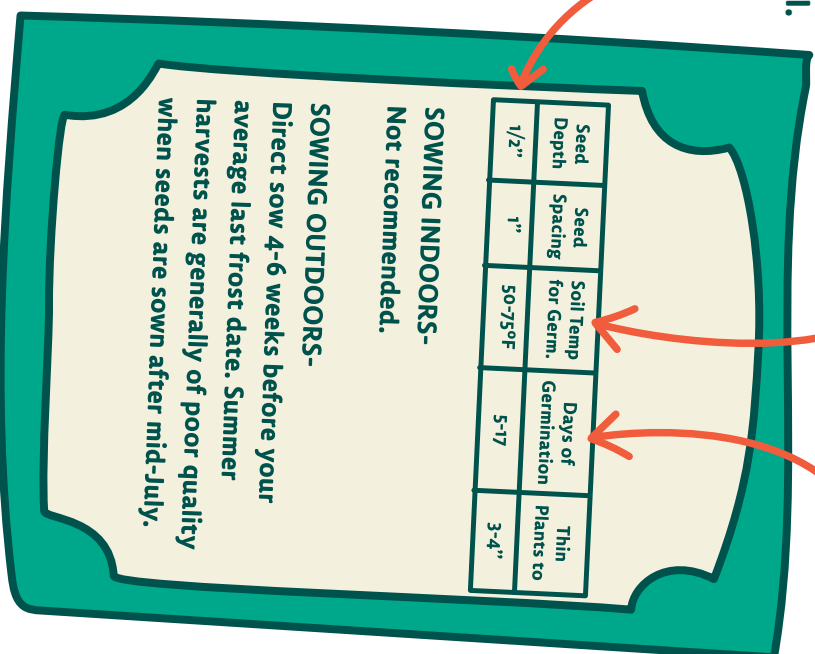


# READING A SEED PACKET

How long before the plant can be harvested.



Only plant the seed this deep in soil.



The soil needs to be this warm for the seed to sprout.

How long before the seed sprouts.

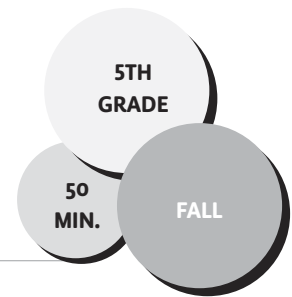
Seed Depth	Seed Spacing	Soil Temp for Germ.	Days of Germination	Thin Plants to
1/2"	1"	50-75°F	5-17	3-4"

**SOWING INDOORS-**  
Not recommended.

**SOWING OUTDOORS-**  
Direct sow 4-6 weeks before your average last frost date. Summer harvests are generally of poor quality when seeds are sown after mid-July.

# Green Sauce Around the World

**THEME:** PREPARING HEALTHY FOOD



## ESSENTIAL QUESTIONS

*How do different cultures use similar building blocks to create flavor in their foods?*

*How do we effectively balance flavors in a sauce?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain how people use similar foundational flavors across cultures.
- ✓ Students will be able to apply their understanding of balancing flavor profiles to a green sauce.

## CONCEPTS

balancing flavors   herbs   sauce

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher whether they have established groups of 4–6 students.
- During Action Steps 2 and 3, suggest that the teacher support students as they fulfill their roles in identifying various ingredients in their recipe.
- During Action Step 7, suggest that the teacher circulate through the room, supporting groups as they develop a green sauce recipe together.

## LESSON DESCRIPTION

In this lesson, students study five different

green-herb sauce recipes from various cultures and determine their commonalities and differences. The class then works together to create and enjoy one of these simple green sauces.

## MATERIALS

- Printed Recipe Cards (pp. 537–538) for five different green sauces (sauces made from green herbs)
- Ingredient Investigator Role Cards (p. 536)
- Blank Green Sauce Recipe Cards (p. 539)
- 6 red, yellow, green, blue, and purple pencils or highlighters for marking up recipes
- Ingredients to make a simple green sauce (see recipes listed at the end of this lesson)
- Large *molcajete* (mortar and pestle) or a blender
- 4–6 small bowls
- Pita bread or crackers for tasting
- Materials for cleanup

## PREPARATION

- › Choose which green sauce you'd like to prepare with your class. Consider which sauce might feature produce you have available in your school garden or locally, or which might be the most culturally and/or regionally relevant to your students. Note that the pesto, chimichurri, and chermoula will be best sampled on a cracker or piece of bread. Both the sofrito and the green curry paste benefit from being cooked further with whatever protein or vegetable they're being served with.

- › Set up a cooking station in the room where groups of 4–6 students can gather.
- › Photocopy and cut out Ingredient Investigator Role Cards, so there’s a card for each student in each group.

BUILDING BLOCKS FOR GREEN SAUCE					
ALLIUM FAMILY	LEAFY HERBS	FATS	ACIDS	SPICES	OTHER
• Garlic	• Parsley	• Olive oil	• Vinegar	• Salt	• Bell peppers
• Onion	• Cilantro	• Nuts	• Lemon	• Pepper	• Tomatoes
• Shallots	• Basil	• Cheese	• Lime	• Peppercorns	• Galangal
	• Lemon-grass			• Coriander	
	• Oregano			• Cumin	
				• Crushed red pepper	
				• Thai chili pepper	
				• Cayenne	

SAMPLE SCOREBOARD		
SAUCE	HAS GARLIC	HAS THE MOST SPICES
Chermoula	X	
Green Curry Paste	X	X
Sofrito	X	
Chimichurri	X	
Pesto	X	

## ACTION STEPS

**1. Sharing Favorite Sauces:** Divide students into five groups. They will work in these groups for the entire lesson. Begin by asking students to describe (in small groups) their favorite sauce. Provide some examples, such as soy sauce, ketchup, hot sauce, etc. Say, *Be sure to tell your group why this sauce is your favorite, any ingredients you know, and (if you know) what country it comes from. After everyone in your group has shared, look for common themes, and have someone prepare to share with the whole class.* After a couple minutes of small group discussion, ask a volunteer from each

group to share the commonalities they noticed. You might have a student take notes on the board or chart paper. Say something like, *Sauces are a way to add a contrasting flavor to a dish. People like ketchup with french fries because it adds something sweet to something salty. Today we’re going to be looking at different sauces from around the world that use green herbs as their foundation. (5 min.)*

**2. Studying Ingredients:** Explain that you’re going to give a green sauce recipe to each group to study. Say, *You’re all going to be ingredient investigators, and we’re going to get to the bottom of what makes these recipes similar and what makes them different. Each person in the group will be on the hunt for a different type of ingredient and will mark up the recipe based on their role.* Go over each role, having students offer examples of each category. Provide each team with recipes for different green sauces, Ingredient Investigator Role Cards, and highlighters or colored pencils. **(10 min.)**

**3. Ingredients Around the Room:** Tell students that in this next activity they’re going to represent their recipe. Explain that one side of the room will be “yes,” and one side will be “no.” You’ll have a representative from each group stand in the middle of the room, and you’ll ask whether their recipe contains a particular ingredient, and they’ll have to move to the yes or no side. If they’re unsure, they can stay in the middle and have a teammate help them. Play a few rounds, switching out the representatives for each team. Ask questions such as, *Does your recipe have cilantro? Does your recipe have garlic? Does your recipe contain a hot spice? Does your recipe contain a fat?* Have a student keep

a scoreboard for the class on chart paper or on the board so that you can refer to it during the following discussion. **(10 min.)**

**4. Discussing Observations:** Ask students for their observations, *What do the recipes seem to have in common? What else do you notice?* Explain, *Herbs pack a powerful punch, so they're a perfect ingredient to flavor other milder foods, but you wouldn't necessarily eat herbs just on their own, so we use fats and acids and spices to balance the flavors. It seems around the world, people understand that eating green foods, rich in chlorophyll and vitamins and minerals your body needs, is good for you.* Share with students what the different recipes have traditionally been eaten with. For example, chimichurri is meant to complement steak in Argentina, and chermoula is often served with grilled seafood in Morocco. Explain that one sauce might be saltier, creamier, or spicier depending on which food it is meant to accompany. **(5 min.)**

**5. Hand-Washing Break (5 min.)**

**6. Passing the Molcajete:** Explain that all these sauces could be prepared the same way—by mashing the raw ingredients into a sauce or paste using a mortar and pestle, or *molcajete* as it's called in Mexican Spanish. Show students your tool, and demonstrate how to use it. Pass the empty molcajete around, explaining, *In fact, the word "pesto" comes from the Italian verb pestare meaning to pound or crush. Garlic is a potent plant part we call an aromatic. When we crush these aromatic ingredients, like garlic, we are breaking down the plant's cells walls, and they release their strong aroma and flavor.* **(5 min)**

**7a. Creating Recipe Cards:** Pass out recipe cards to students. Have them work with their groups to create their own green sauce recipe, incorporating different elements from the recipes they studied.

**7b. Making Sauce Together:** While students are creating their own recipes, call up one group at a time to help make the sauce. For example, one group can peel and smash garlic with coarse salt. Another couple of groups can pick herbs and incorporate them into the sauce. The next group can incorporate spices, and the final group can slowly drizzle in the olive oil. **(15 min.)**

**8. Tasting:** Divide the sauce into smaller dipping bowls for each group of four to six students, and have a student pass out a couple crackers or piece of bread to each student. Encourage students to discuss the balance of flavors they taste in the sauce in their groups. If groups came up with new ideas for green sauces, have them share with the class. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What successes did you have working in your group?*
- *What challenges arose? How did you try to overcome them?*

### Check for understanding

- *Why do you think the ingredients in your group's recipe would be used in that particular part of the world?*
- *How can you incorporate one of these sauces into something you eat at home?*

- *How would you describe the flavors in the sauce we prepared?*
- *What techniques did you find best for working with the mortar and pestle?*

## ADAPTATIONS

**Alternative Approach:** If you have the resources, you might have each group make a different recipe, so students can taste the differences between the recipes.

**Garden Setting:** Make a green sauce based solely on what you can harvest in the school garden in the fall.

**At Home:** Have students bring home their customized recipe to make with their caregivers.

**Research Extension:** Have groups each research their recipe's country of origin, studying the climate and culture to better understand why certain ingredients might be used in that region. This connects well with the fourth grade lesson *Mealtime Traditions Around the World*.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.SL.5.1**

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 5 topics and texts*, building on others' ideas and expressing their own clearly.

# Ingredient Investigator Role Cards

Cut out the following to give to each student in a group:

## **SPICE SLEUTH**

Highlight in red any spices. These include basic spices like salt and pepper, to bolder ones like cayenne!

## **HERB-IVORE**

Highlight in green any herbs—this is what makes it a green sauce!  
Hint: These are probably leaves.

## **ALLIUM ALLY**

Highlight in yellow any ingredients in the allium family. These include garlic, shallots, onions, leeks, and scallions.

## **FAT FINDER**

Highlight in blue any ingredients that add fat to the sauce. These include oils, nuts, and cheeses.

## **SOUR SEEKER**

Highlight in purple any acid ingredients that add a sour or acidic flavor. These include vinegars and citrus fruits.



# Recipe Cards

## Green Sauces Around the World

Note: These recipes provide students insight into more unique ingredients used in different cultures, but these ingredients may be difficult to access. Adapt and substitute where needed.

### Sofrito - Caribbean

Yield: 2 cups

- 1/2 bunch cilantro leaves (about 1 cup)
- 1/2 medium green pepper, seeds removed
- 1/2 small tomato, diced
- 1/2 medium sweet onion, peeled
- 1/4 red sweet pepper, seeds removed
- 3–4 garlic cloves, peeled

Blend ingredients in a blender or food processor until a smooth consistency.

### Pesto - Italian

Yield: 1 1/4 cup

- 3–4 medium garlic cloves
- 1/2 teaspoon coarse sea salt, more to taste
- 3 ounces basil leaves (from about a 4-ounce bunch)
- 2 tablespoons (30g) pine nuts (or other nut such as walnuts)
- 5 tablespoons (2 ounces) grated Parmigiano-Reggiano
- 1/2 cup plus 2 tablespoons extra-virgin olive oil
- 1 tablespoon lemon juice (optional)

Blend ingredients in a blender or food processor until a smooth consistency.

### Chermoula - North African

Yield: 1 cup

- 1 cup packed cilantro leaves
- 1/2 cup packed parsley leaves
- 1/2 cup olive oil
- 1/4 cup preserved lemon juice, or 1/3 cup of regular lemon juice
- 4 medium cloves garlic, peeled
- 1 tablespoon paprika
- 2 teaspoons ground cumin
- 1/2 teaspoon cayenne
- 1/2 teaspoon Kosher salt, to taste
- 1/8 teaspoon crushed saffron (or substitute turmeric)

Blend ingredients in a blender or food processor until a smooth consistency.

\*If substituting with turmeric, the sauce may have a more orange color.

# Recipe Cards

## Green Sauces Around the World

Note: These recipes provide students insight into more unique ingredients used in different cultures, but these ingredients may be difficult to access. Adapt and substitute where needed.

### Green Curry Paste - Thai

Yield: 1 cup

- ½ cup sliced shallots
- ¼ cup garlic
- 2–3 green Thai chili peppers or 2–3 jalapeños (or other spicy pepper)
- 3–4 tablespoons sliced lemongrass
- 1 ½ tablespoons fresh galangal (or fresh ginger)
- 1 tablespoon salt
- 1 tablespoon sliced cilantro roots (or handful of cilantro)
- 1 tablespoon ground coriander
- ½ tablespoon cumin
- 1 kaffir lime, zested (or regular lime)
- ½ teaspoon peppercorns
- ¼ cup chili leaf (optional)

Blend ingredients in a blender or food processor until a smooth consistency.

Combine 1 tablespoon of paste with 1 cup coconut milk in a saucepan on medium heat until simmering and warmed through. Serve on rice or noodles.

### Chimichurri - Argentinean


Yield: 1 ½ cups

- ¾ cup chopped parsley
- 6 tablespoons red wine vinegar
- 8 large garlic cloves minced
- ¼ cup oregano leaves
- 2–4 teaspoons crushed red pepper, to taste
- 1 teaspoon kosher salt, to taste ¼ teaspoon freshly ground pepper, to taste
- 1 cup extra-virgin olive oil

Blend ingredients in a blender or food processor until a smooth consistency.

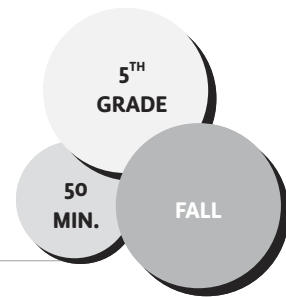
# Blank Green Sauce Recipe Cards

<b>RECIPE:</b> _____ _____	
<b>INGREDIENTS:</b> <b>SPICES</b> _____ <b>FAT</b> _____ <b>ACID</b> _____ <b>ALLIUM</b> _____ _____	<b>STEPS:</b> _____ _____ _____ _____ _____ _____

<b>RECIPE:</b> _____ _____	
<b>INGREDIENTS:</b> <b>SPICES</b> _____ <b>FAT</b> _____ <b>ACID</b> _____ <b>ALLIUM</b> _____ _____	<b>STEPS:</b> _____ _____ _____ _____ _____ _____

# Putting the Garden to Bed

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*How can we prepare the garden for winter?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain why we allow the garden to rest at certain times of the year.
- ✓ Students will be able to prepare the garden for winter.

## CONCEPTS

cold-weather crops   cover crops  
seasonality   warm-weather crops   winterizing

### *Engaging the Classroom Teacher*

- Prior to the lesson, discuss whether the teacher feels comfortable leading one of the rotations, and plan accordingly.
- During Action Step 2, suggest that the teacher circulate through the garden to support students observing seasonal changes.
- During Action Step 4, as you work with rotations of students sowing cover crop, suggest the classroom teacher aid rotations of students in harvesting and removing summer crops.

## LESSON DESCRIPTION

In this lesson, students explore the garden for signs of the changing season and learn techniques for putting the garden to bed. They remove warm-season crops, plant cover-crop seeds, and explore the differences between cold- and warm-weather seeds. This lesson can be taught with the lesson Cycle of a Nutrient to help emphasize the positive effects of cover cropping or the lesson Break it Down to emphasize decomposition.

## MATERIALS

- Seasonal Changes: Observations Worksheet for each student (p. 544)
- Cover-crop seed appropriate for your region
- Enough trowels or hand cultivators for each student at your Plant Cover Crops station
- 1 bucket for trowels or cultivators
- Cold-hardy seeds appropriate for your region (e.g., seed garlic, fava beans, or greens)
- 2–3 clippers
- 8–12 cold- and warm-weather seed packets for seed matching activity (see Preparation below)
- 8–12 small clear bags or baby food jars to store seeds for matching activity
- Wheelbarrow or a couple 5-gallon buckets for carrying debris to the compost pile

## PREPARATION

- › Photocopy Seasonal Changes: Observations Worksheet for each student

- › Identify cover crop and/or cold-hardy seeds appropriate for planting in the fall in your climate. Depending on your climate, good cover crop options might include clover, fava beans, peas, or vetch. These are often available at low prices in bulk bins at garden centers.
- › Clear and prepare one garden bed in which students in the first station rotation will be able to plant cover crops. Then make sure that students in the second rotation can plant cover crop into a bed cleared during the first rotation and so on.
- › Identify garden bed(s) with summer annual plants for students to harvest from and clear.
- › Gather burlap bags, straw, or tarp for beds that won't be cover cropped or planted in right away.
- › Prepare seed matching activity. This is a good way to use up old seeds that are no longer viable. Empty each seed packet into its own container, such as a small jar. If possible, laminate various seed packets, or put them into sheet protector sleeves. Be sure to have a variety of cold- and warm-weather crops.

## ACTION STEPS

**1. Discussion:** Gather students in a circle and ask, *Why do we go to sleep at night?* Field responses from students. Explain, *The garden is similar to us. It gets depleted if it remains actively growing all year. We can put it to rest for the winter a few different ways. Just as we put on a blanket at night, we can put a living blanket over our garden by using what we call a cover crop. Ask, How do you think the cover crop or blanket of plants helps the soil in the garden over the winter? (5 min.)*

**2. Explore the Fall Garden:** Say, *We're going to observe the ways the garden is already going to bed on its own.* Have students go out and explore the garden, looking for how different plants are responding to the winter. If time allows, give them a few minutes to record observations on the Seasonal Changes: Observations Worksheet. Then ask, *What are the signs that the season is changing and that our plants are responding to that change?* Invite students to share, and add in any of the following if it doesn't come up: *as the days get shorter and the temperature drops, some plants drop leaves, and others wither, die, and, ultimately, decompose. In the summer, warm-season crops have used up a lot of the nutrients, and winter is a good time to put nutrients back into the soil. (10 min.)*

**3. Explain Rotations:** Go over each rotation with students, explaining the activity and expectations at each station. Demonstrate how you'll indicate when it's time to rotate to the next station, and then divide students into groups. **(5 min.)**

**4. Rotations:** The following are possible rotations you could have students move through for this lesson, depending on your region, the status of your garden, your group dynamics, and how much additional adult support you have. See adaptations for more ideas. **(25 min. total, about 8 min. per station)**

### a. Harvesting and Removing Summer

**Crops:** Give students an example of a ripe crop that they can harvest. Have students harvest all that remains on the plant before pulling out the plant. Remind students to use two hands, and pull on the main stem as close to the soil as possible to effectively

pull out the plant. Remind students to also shake or tap off the soil clinging to the root system to keep as much soil as possible in the bed. Discard old plants in the compost.

**b. Planting Cover Crops:** Gather students around the garden bed. Explain that cover crops are good for the garden because they help draw nutrients, such as nitrogen, from the atmosphere and pull it down into the soil. Then show students how to sow cover crops, explaining, *You'll be using the method of broadcasting the seed, which is a technique of scattering seeds across a large soil surface. You'll then rake the soil to incorporate the seeds.* Pass out a small handful of seeds to each student, and have them sprinkle the seeds across the bed, being mindful of where others are scattering their seeds to achieve even coverage.



Then have a student distribute trowels or cultivators and demonstrate for students how to cover the seeds and rake the soil smooth. Finally, have students return their tools to the bucket, and gently pat the surface where they planted to ensure contact with the soil. Remind students not to use too much force because soil packed down too much doesn't hold water as well or give worms and other organisms all the air they need to thrive.

**c. Seed-Matching Activity:** Have students match jars of seeds to their respective seed packets. Then have them read the seed packet information to determine whether they could be planted during fall. Have them split the matched seeds into a warm-weather pile and cold-weather pile or in whatever way makes sense for your region. If time allows, invite students to draw a dream garden map for the spring featuring warm-season crops.

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: (5 min.)

### Social and emotional learning

- Ask yourself: Was I safe and helpful in the garden today?

### Check for understanding

- How long do you think it will be until we see the seeds we planted germinate (or sprout) from the ground?
- What plants did you identify in our garden that will survive the winter?
- Based on our seed-matching activity, are there any other cool-season crops we could still plant in our climate?
- What are the natural signs of the garden putting itself to bed that we observed?
- How did the work we did today benefit or help our garden soil?

## ADAPTATIONS

**Establishing a Cloche Bed:** Explain to students that sometimes in the winter months we give our plants a real blanket made of fabric to insulate them from winter temperatures. Set up

a cloche bed together by bending wire (such as steel pencil rod or clothesline wire purchased at a hardware store) into arches over your plants, then draping row cover cloth over the wire and attaching the cloth to the wire with binder clips or clothespins.

**Singing:** If you think your fifth graders will go for it, challenge groups of students to come up with a garden lullaby. Ask, *What song could we sing to the garden to help it know it's time to rest?*

**Compost Variation:** If your group doesn't have a compost pile, you can establish one using the FoodCorps Lesson Break it Down or through the method trench composting. Have students dig a 12-inch deep trench in an area of the garden where you won't be planting over the next year. Have students put their chopped green and brown materials into the trench, bury it with soil, and rake it smooth.

**Food Preservation Extension:** Have students make a preserve from the last harvest of warm-weather crops. For example, students could make a green tomato chutney using the green tomatoes from tomato plants they pull out and coriander from bolted cilantro plants.

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

### NGSS LS2.A

Interdependent Relationships in Ecosystems

The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2-1)

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Seasonal Changes: Observations

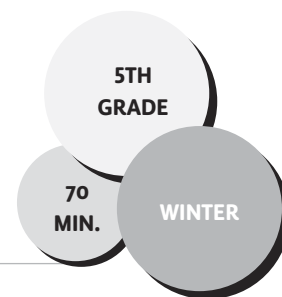
**Directions:** Explore the garden. In the table below, record evidence for how the plants are responding to seasonal changes.

<b>Plant</b>	<b>Do you think it is alive or dead?</b>	<b>What is your evidence, or how do you know?</b>
<i>Example: Tomatoes</i>	<i>Still alive, but dying</i>	<i>The leaves are mostly brown, but it still has some tomatoes growing on it.</i>



# The Secret Strategies of Food Advertising

**THEME:** MAKING HEALTHY FOOD CHOICES



Can be split into two sessions

## ESSENTIAL QUESTION

*What influences our food choices?*

## LEARNING OBJECTIVES

- ✓ Students will be able to analyze food advertisements and identify marketing strategies.
- ✓ Students will be able to create persuasive advertisements for fruits and vegetables.

## CONCEPTS

ads   advertising  
claim   persuade   strategy

### *Engaging the Classroom Teacher*

- If using a gallery walk during Action Step 2, suggest that the teacher ensure students are moving through the space responsibly.
- During Action Step 5, suggest that the teacher support and encourage students while they're creating their Fruit and Veggie Advertisements.

## LESSON DESCRIPTION

In this lesson, students think critically about food advertising strategies, analyze a range of food advertisements, and create their own persuasive fruit or vegetable advertisement. This lesson can easily be split into two sessions, one

to introduce and discuss advertising strategies and the other for students to create their own fruit and veggie advertisements.

## MATERIALS

- 5–10 food advertisements or food packages (or video ads)
- Nutrition labels for the same 5–10 foods, if possible
- A chime or other noisemaker to indicate when it is time for students to rotate in the gallery walk (optional)
- Food Advertising Strategies Chart (p. 548)
- Nutrition facts for 15 or more common fruits or vegetables that your students might be familiar with
- Paper for each pair of students
- Markers and colored pencils

## PREPARATION

- › Gather age-appropriate food advertisements that represent a diverse group of ethnicities from magazines or packaging, incorporating a wide range of food advertising strategies from the chart below and ideally including one advertisement or package that is straightforward and accurate in its portrayal of the food. You may want to laminate them, mount them on thicker paper, or put them in sheet protectors to reuse. Alternatively, if you have access to a computer and projector, create a slideshow of video ads from YouTube that adhere to these parameters to show students during Action Step 1.
- › Post food advertisements and packages in

various locations throughout the room, each one paired with its associated nutrition label, where possible. Alternatively, set up a computer and projector, and cue up the video ad slideshow.

- › Photocopy or prepare to project the Food Advertising Strategies Chart.
- › Project or post the following gallery walk guiding questions where all students can read them:

#### GALLERY WALK GUIDING QUESTIONS

- Who is the audience the company wants to see this advertisement? (for example, kids? parents? people who like sports?)
- How is the ad trying to convince you to buy the product?
- What does the ad promise, or claim, about the product?
- Do its claims reflect the information on its Nutrition Facts label?

## ACTION STEPS

### 1. Viewing Food Advertisements Gallery Walk:

Explain to students that today you'll be considering how food companies market, or get people to buy, their products. Explain that you've posted advertisements (or ads, for short) around the room that you'd like them to observe and think about critically in pairs. Explain that they'll have one minute at each food ad and should discuss the guiding questions with their partner. When the minute is up, they'll hear a bell and move to the next advertisement, traveling clockwise around the room. If you're using a video ads slideshow instead, still give students one minute per ad to discuss with a partner. **(10 min.)**

**2. Discussion:** After the gallery walk or slideshow, have students regroup and discuss the guiding questions as a class. Ask students how the advertisements make them feel. **(10 min.)**

**3. Introducing Strategies:** Display the Food Advertising Strategies, and have students discuss examples they've seen of each, including television and internet ads. Discuss the concept of honesty with students. Ask, *Are any of these advertisements being completely honest?* **(10 min.)**

**4. Explain the Activity:** Explain that now that they understand how food companies market to kids to buy their products, students will create their own food advertisements. Say, *You can use the same strategies food companies use to promote their products, or you can choose to be completely honest about your fruit or vegetable!* *You'll work in pairs to create a persuasive food advertisement for, let's say, strawberries.* **(5 min.)**

### 5. Making Fruit and Veggie Advertisements:

Hand out nutrition facts for the fruits or vegetables they'll be promoting. Have students work with partners to create an advertisement for the fruit or vegetable they got. You can focus everyone on making visual advertisements, or give the option for theatrical ones as well. Circulate through the room, and check in with students, asking clarifying questions. Give students a three-minute warning before asking them to clean up. **(20 min.)**

**6. Sharing:** Create a second gallery walk with their advertisements. Have students place their finished work on their desks for classmates to walk around and observe. After everyone has seen each other's work, have students sit down,

and have them (those who choose to) create a theatrical advertisement to perform. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How did it feel to learn about how food companies have been marketing to you?*
- *How did it feel to create your own food advertisement? What strategies did you use?*

### Check for understanding

- *How has considering food marketing influenced your thinking about food?*
- *What were the differences between the class's veggie advertisements that were completely honest versus those that used marketing strategies? Which was more persuasive to you?*
- *Why do you think companies work so hard to market foods?*
- *Why do we see more advertisements for food products than we do for whole fruits and vegetables?*
- *If you want accurate information about food, where can you get it?*

## ADAPTATIONS

**Tasting Extension:** Have students sample each fruit or vegetable they'll create advertisements for.

**Cafeteria Connection:** Have students create advertisements for fruits and vegetables in the cafeteria's salad bar. Then, ask nutrition services and the administration if you can post these ads in the cafeteria.

**Garden Connection:** Have students create advertisements for crops you have growing in your school garden.

**Media Literacy Extension:** Have students note and record every food advertisement they see in one day, identifying what strategy each uses.

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.RI.5.7

Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

### CCSS.ELA-LITERACY.RI.5.5

Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts.

### CCSS.ELA-LITERACY.L.5.5

Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.

### CCSS.ELA-LITERACY.L.5.3

Use knowledge of language and its conventions when writing, speaking, reading, or listening.

### CCSS.ELA-LITERACY.RI.6.8

Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.

# Food Advertising Strategies

## **COOL FACTOR**

The ad makes it look like you're really cool if you use the product.

## **CARTOON CHARACTERS**

There's a cartoon character who you identify with the product.

## **HEARTWARMING**

Kids and families in the ad look perfect, and/or people are sharing a sweet moment, making it seem the product brings them together.

## **CELEBRITIES**

Sports or TV stars are paid to promote the product.

## **SNEAKY LANGUAGE**

Advertisers try to make their products seem healthier than they are with words like "all natural" or "part of a balanced breakfast."

## **INSULTS**

Advertisers put down the competition to make their product look superior.

## **FACTS AND FIGURES**

The ad includes statistics like "95% of people who used . . ." to make the product's value seem more believable.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Fruit and Veggie Advertisements

**Task:** Create an ad for your fruit or vegetable that persuades people to eat it!  
Include the following:

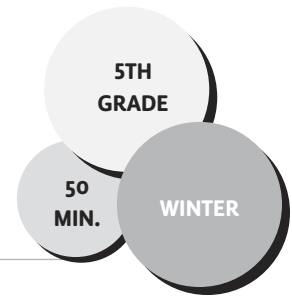
**A slogan.** A slogan is a catchy phrase that makes you remember the product.  
Create a slogan for your fruit or vegetable.

**A claim.** A claim is a promise. What do you claim your fruit or vegetable will do?

**A visual.** Create a picture (or scene) that makes your fruit or vegetable appealing.

# Web of Life

**THEME:** EXPLORING THE ECOLOGY OF FOOD



## ESSENTIAL QUESTION

*How are all living creatures connected?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain the interdependence of plants and animals.
- ✓ Students will be able to demonstrate how energy is transferred between living things.

## CONCEPTS

consumers   decomposers   diversity  
food web   interdependence   producers

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher about students' familiarity with the terms consumer, producer, and decomposer and the concept of a food web. Together you can determine how to structure Action Step 6 and whether there is a younger class of students who students would enjoy performing for.
- During Action Steps 4 and 5, suggest that the teacher support students who might need extra help in understanding their role in the food web.

## LESSON DESCRIPTION

In this lesson, students consider the interdependence and transfer of energy between living things by creating food chains and participating in a yarn food web activity. This lesson is designed to be taught in conjunction with lessons What do Plants Eat? and Cycle of a Nutrient.

## MATERIALS

- Play dough (or a piece of bread or paper)
- One set of Food Web Role Cards (pp. 553-556)
- Tape
- Producers, Consumers, and Decomposers Poster (p. 557)
- Yarn or string

## PREPARATION

- › Consider finding a large space, such as the gym or outdoors, to create your food web, so there's plenty of room for students to make the circle.
- › Photocopy and cut apart the Food Web Role Cards.
- › Set aside the following cards for your demonstration of food chains:
  - › Simple chain: sun, carrot, human
  - › Complex chain: sun, carrot, slug, chicken, coyote, bacteria

## ACTION STEPS

**1. Engage:** Gather students in a circle and ask students to perform a simple physical activity such as running in place. Ask, *What do you need so you can do that?* Once students say, “energy,” ask, *Where did you get that energy from?* Once students answer “food,” say, *Of course! We get energy from the food we eat.* Ask for a volunteer to tell you what they ate that day that gave them energy. Then walk students through the chain of that food. For example, *If you had a glass of milk, where did the energy in the milk come from? (Cow!) Where did the energy in the cow come from? (Grass!) Where did the energy in the grass come from?* Remind students that green plants are the only living things that can make their own food or energy from the sun. **(5 min.)**

**2. Demonstrating a Food Chain:** Pass out several Food Web Role Cards that would make a food chain. Start with a simple one of a human eating a vegetable, such as sun, carrot, and human. Have the sun give the carrot a piece of play dough, and explain that it represents the energy from the sun that the carrot stores. Now tell the class that only 10 percent of the energy that the carrot gets from the sun is passed on. Have the carrot break off one-tenth of the play dough, and pass it to the human. Next, demonstrate a more complex food chain, for example, the sun, carrot, slug, chicken, coyote, and bacteria. Have those students stand up and order themselves with the class’s help. Check for understanding by asking students how they know. Again, have the sun pass a big hunk of play dough to the corn, but this time the corn passes 10 percent to the

slug, and the slug passes 10 percent of that to the chicken, and so on, so that just a teeny speck is being passed. **(10 min.)**

**3. Explain the Activity:** Explain, *We just created a food chain, but next we’ll create a food web to see the interdependence of many plants and animals on one another and how the sun’s energy gets passed. Interdependence means how different plants and animals depend on one another.* Pass out the rest of the Food Web Role Cards and tape, and have students affix their role card prominently to their shirts. **(5 min.)**

**4. Identifying Producers, Consumers, and Decomposers:** Display the Producers, Consumers, and Decomposers Poster and ensure that students understand their role and place in the food chain. Depending on the space you have and the energy level you want to create, when you give the prompts that follow, you can have students either raise their hands, stand up, or stand in a circle and take a step forward. Say, *If you can make food from sunlight, raise your hand. You’re the plants, or producers! If you are an animal that eats plants and/or animals, raise your hand. You’re consumers! If you help break down dead plants and animals, raise your hand. You’re decomposers! (5 min.)*

**5. Making a Yarn Food Web:** Have students gather in a circle and have the sun stand in the middle of the circle with the ball of yarn. Explain, *A food web consists of many food chains. For example, a hawk might eat a snake that has eaten a frog, but a hawk might also eat a mouse. We’ll show all those relationships with this ball of yarn.* Say, *The sun must pass*

its energy to someone who can receive it, and then that person must pass the yarn to someone who can receive it. In other words, you pass the ball to someone who can eat you! So, if the ball gets passed to you, hold a piece and then pass the ball to someone who you can give your energy to. Keep the chain going as long as you can, and then cut the yarn, and pass the ball back to the sun to start a new chain, but make sure everyone keeps holding onto their place in the chains you've already made. Keep creating new chains until all students are holding at least one piece of yarn. **(15 min.)**

**6. Discussing:** Ask students to think of scenarios that would affect the food web (e.g., a drought or deforestation). Discuss these hypothetical scenarios, and have students tug on the string if they would be directly affected. Ask who felt the tug, and then have those students tug on the string. Try it out with some positive scenarios too, such as a farmer feeding compost to the plants to make them healthier. Discuss how an event that affects one living creature in the food web eventually affects other living creatures that rely on it. **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What did you enjoy about the activity?*
- *What was challenging or frustrating? What solutions can you think of to make it better?*

### Check for understanding

- *Why is it important to have a diverse food web*

*with many different plants and animals in it?*

- *How did the yarn food web activity affect your thinking about plants and animals around you?*

## ADAPTATIONS

**Garden Setting:** Have students bring out clipboards and paper, and make a list of every living thing they observe in the school garden, from insects, to plants, to birds flying overhead and squirrels in the trees. Then have students make role cards for these creatures, and create a yarn food web for the garden.

**Research Extension:** Have students research consumers specific to your ecosystem. Have each student determine what that consumer eats, and have them visually represent a food chain that includes that animal.

**Small-Group Variation:** Instead of a whole-class activity for Action Step 4, you might consider passing out sets of role cards, chart paper, glue sticks, and string to groups of students. They then must create a visual representation of a food web.

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

### **NGSS 5-PS3-1.**

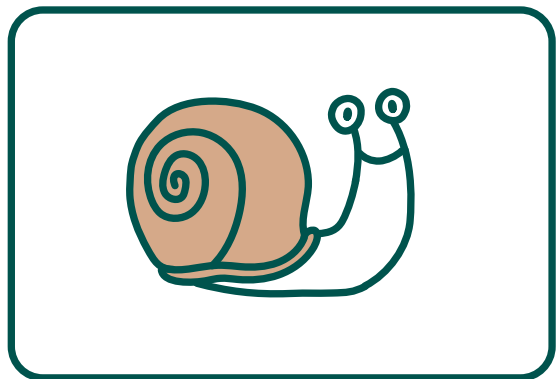
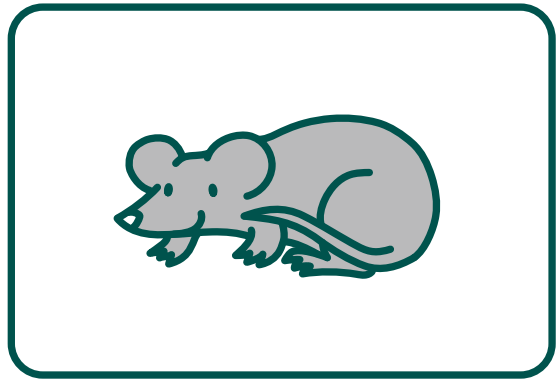
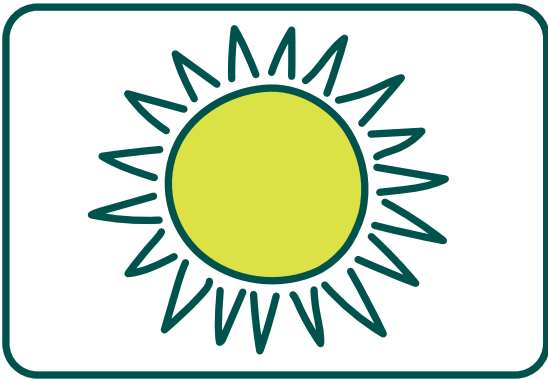
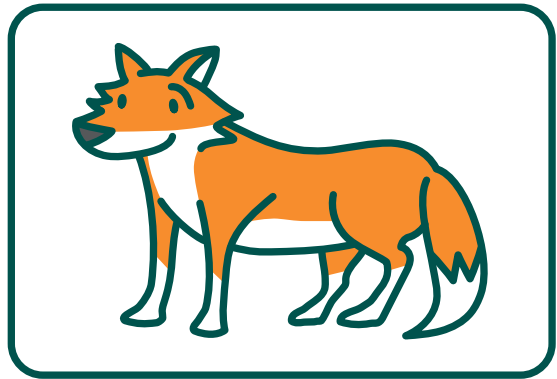
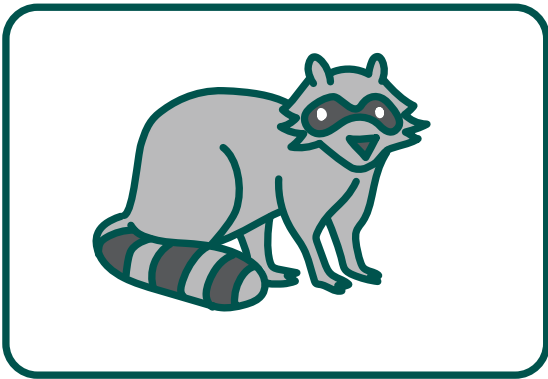
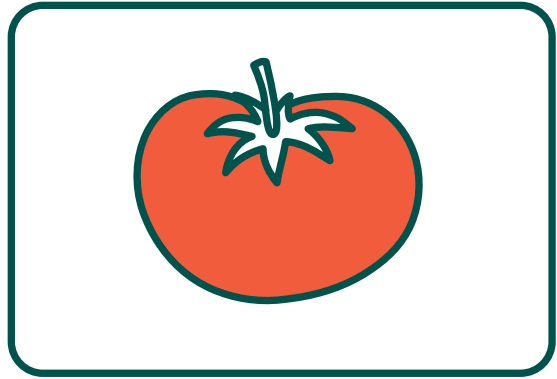
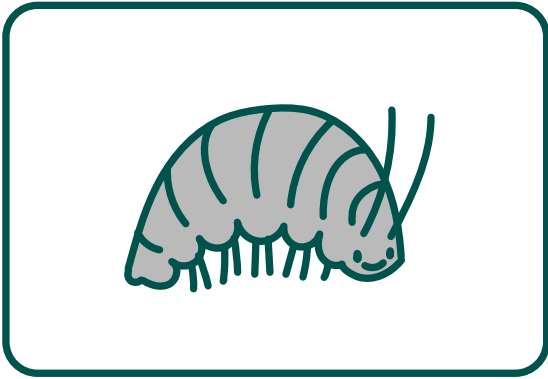
Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

### **NGSS 5-LS2-1.**

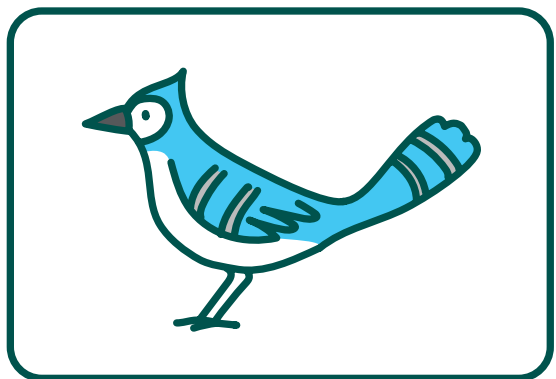
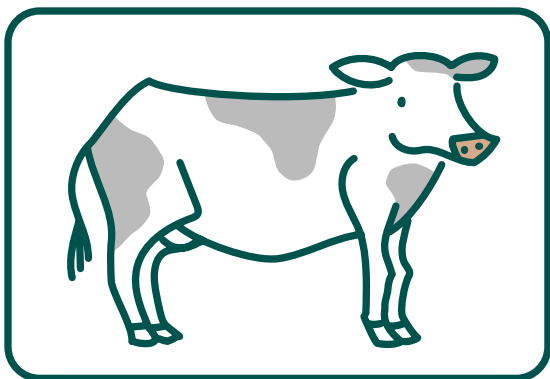
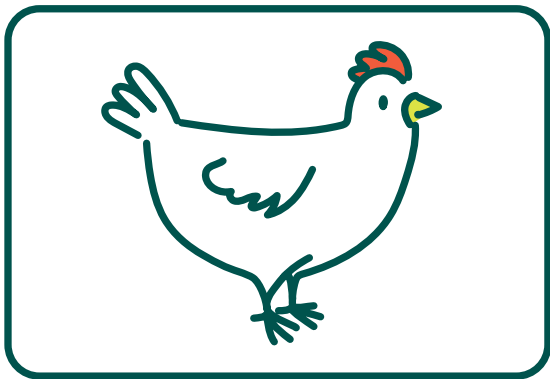
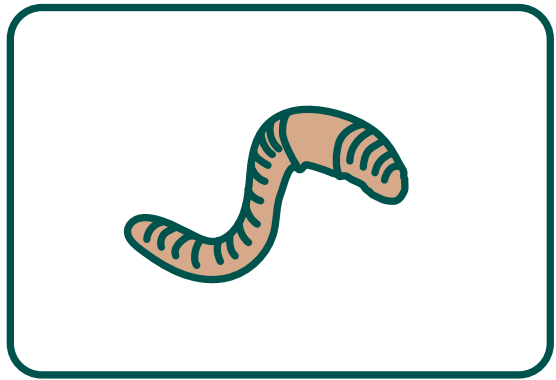
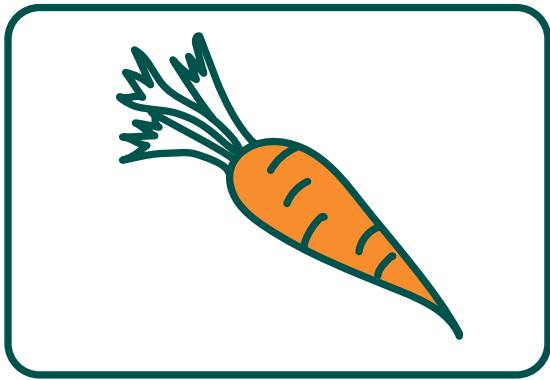
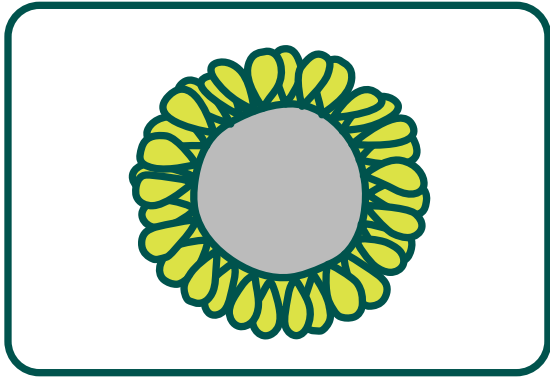
Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.



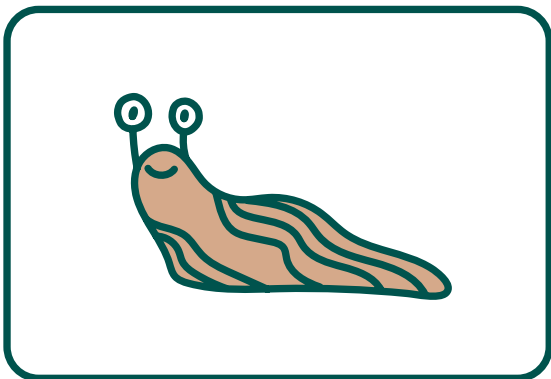
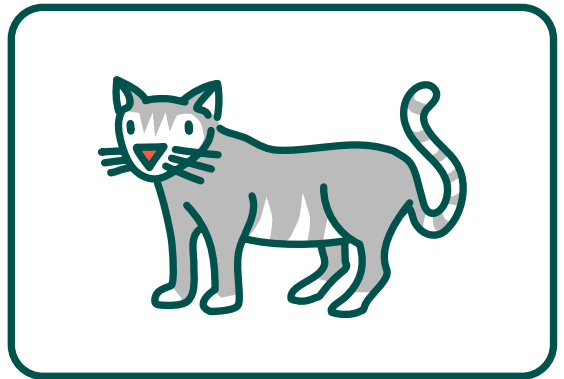
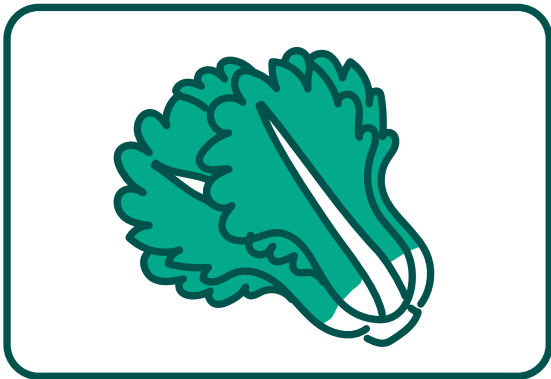
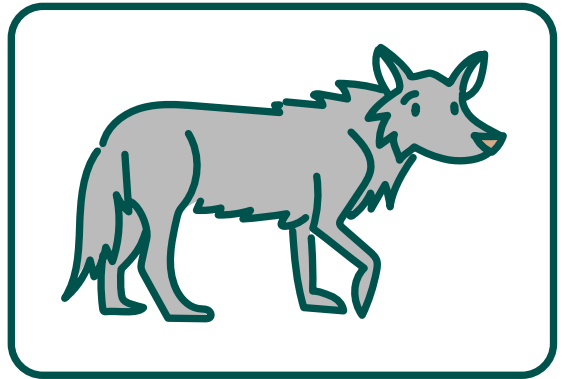
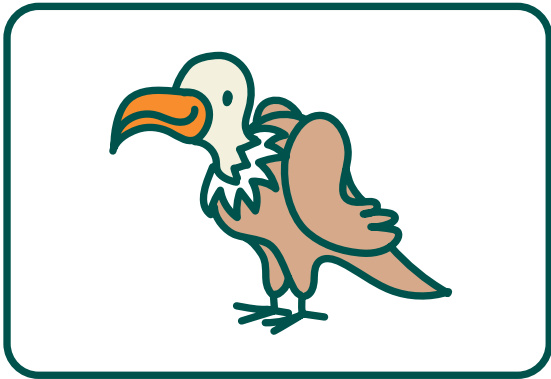
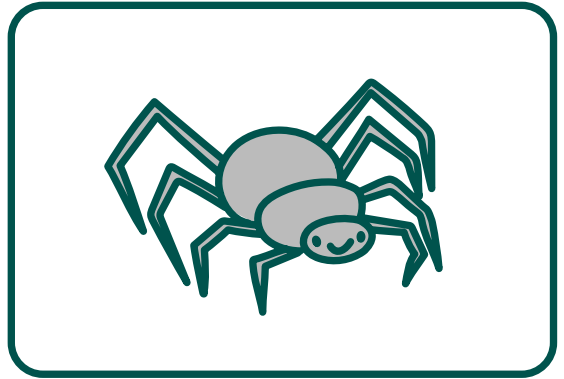
# Food Web Role Cards



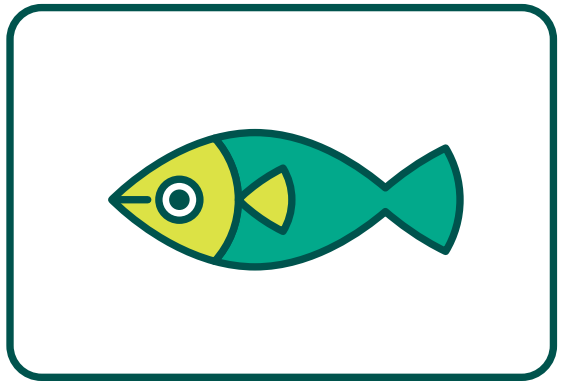
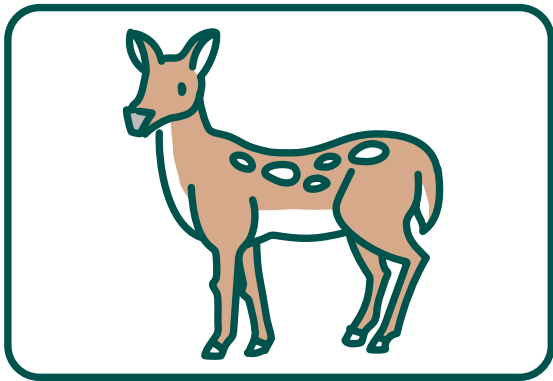
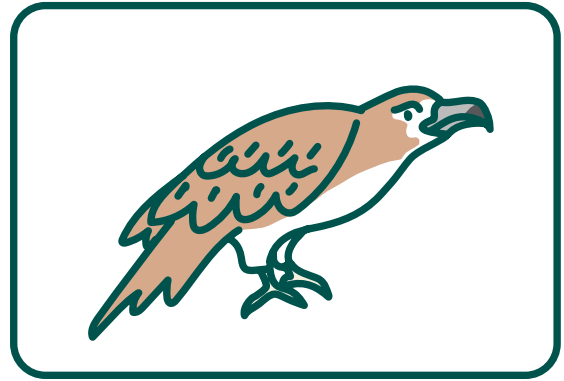
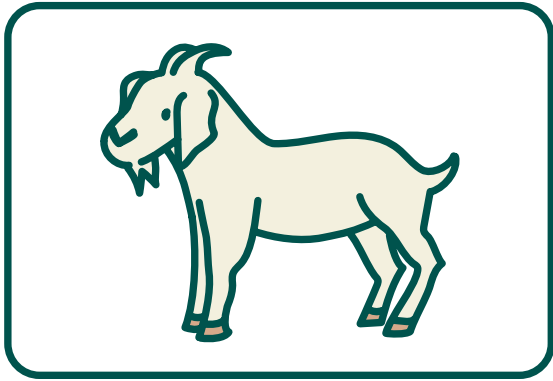
# Food Web Role Cards


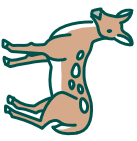


























# Food Web Role Cards



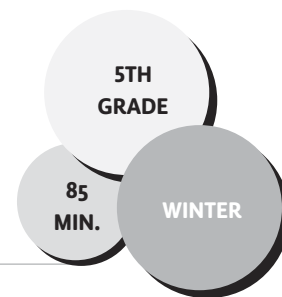
# Food Web Role Cards



PRODUCERS	CONSUMERS	DECOMPOSERS
 <b>Wheat</b>	 <b>Deer</b>	 <b>Worm</b>
 <b>Bok Choy</b>	 <b>Goat</b>	 <b>Slug</b>
 <b>Clover</b>	 <b>Cat</b>	 <b>Fungus</b>
 <b>Carrot</b>	 <b>Chicken</b>	 <b>Roly Poly</b>
 <b>Sunflower</b>	 <b>Person</b>	 <b>Snail</b>
 <b>Tomato</b>	 <b>Hawk</b>	
 <b>Corn</b>	 <b>Mouse</b>	
	 <b>Raccoon</b>	
	 <b>Coyote</b>	
	 <b>Blue Jay</b>	
	 <b>Cow</b>	
	 <b>Fox</b>	
	 <b>Spider</b>	
	 <b>Vulture</b>	

# Changemakers

**THEME:** GROWING AND ACCESSING HEALTHY FOODS



## ESSENTIAL QUESTION

*How can we be agents of change within our community?*

## LEARNING OBJECTIVES

- ✓ Students will be able to identify problems in their community and suggest possible solutions.
- ✓ Students will know that they can create change.

## CONCEPTS

action plan   activist   outcome

### *Engaging the Classroom Teacher*

- Prior to the lesson, discuss with the teacher their level of commitment in having this be a true project-based learning experience for students. Determine how you will both support students in whatever ideas arise from this activity. Together you can decide on a realistic number of class sessions to devote to this project.
- During Action Step 7, ask that the teacher support students in getting into groups based on their topics of interest.
- During Action Step 8, suggest that the teacher help circulate through the room, supporting groups in filling out their Action Plan Worksheet.

## LESSON DESCRIPTION

In this lesson, students hear about an activist who addressed a sustainability issue within their community. They'll then brainstorm issues within their own community and work in teams to generate solutions and action steps they could take to be agents of change. This lesson is a springboard for student-initiated projects, and it is ideally led with significant input and support from the classroom teacher. It is important to have a plan for supporting students after the lesson with opportunities to take action on the projects they design, such as in a subsequent class period or during a lunchtime club when students can work together on letter-writing campaigns, posters for the school, or the like. You can easily teach this lesson over two or three class periods, stopping after the gallery walk in Action Step 4 on the first day. This lesson is the fifth-grade version of the fourth-grade lesson Agents of Change.

## MATERIALS

- Computer and overhead projector
- Chart paper
- Tape
- Markers
- Action Steps and Outcomes Worksheet (pp. 563-564)
- Action Plan Worksheet (p. 562)
- Kitchen timer

## PREPARATION

- › Visit the Brower Youth Awards website, and browse its list of awardees to find a video to share with your students, such as the video about Maya Salsedo who addressed issues she saw with the food system by creating a Youth Food Bill of Rights and mobilizing other youth to get involved. Alternately, if you know a youth in your community who has led a successful service-learning project or community initiative, invite them to talk with your students!
- › Write the following Margaret Mead quote where all students will see it: “Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it is the only thing that ever has.”
- › Hang chart paper throughout the room, labeling each with different issues that relate to food systems that might arise in their community: Access to Healthy Food; Habitat for Pollinators; Food Waste; Food Packaging and Recycling; Conditions and Pay for People Working on Farms, in Markets, or in Restaurants; Pollution; and Other.

## ACTION STEPS

**1. Real-Life Story:** Share with students the following quotation by Margaret Mead: “Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it is the only thing that ever has.” Ask them to discuss in pairs and share: *What does this quote mean to you?* Explain that you’ll be showing them a video of a student who embodies the spirit of that quote. Show students a video of a Brower Youth Award winner. Ask students for their impressions: *Do*

*you think you and your peers could create change like that in this community? (5 min.)*

**2. Freewriting or Drawing:** Say, *I’m going to give you five minutes to think about your neighborhood and, specifically, about how people in your neighborhood get food. A neighborhood or community is its own ecosystem. We’re all connected, and different parts of the ecosystem can affect others positively or negatively. Imagine you’re flying over your neighborhood, seeing all the different parts of your community. What do you observe that affects what people in your neighborhood eat? What are the things you enjoy or are proud of? Is there something you wished looked different? Describe or draw what you see and what you wish were different with as much detail as you can. After five minutes, have students turn and talk to a neighbor and share as much as they feel comfortable sharing. (10 min.)*

**3. Brainstorming Issues:** Show students that you’ve hung posters around the room highlighting big, global issues. Their task is to use the ideas from their freewrite to elaborate on how one or more of these issues show up in their community. If the issue they brainstormed doesn’t fall under one of the categories, they can write it on the chart paper with the heading “Other.” Pass out markers and instruct students to add issues to the charts under the appropriate category. If students write issues unrelated to food, you can say, *I appreciate that we’re calling out so many things that make us want to be agents of change. For the purpose of this lesson, our goal is to focus on something that is related to food. If you have an issue that doesn’t seem to relate to food, you can take action on this individually, and we*

can also discuss if there might be a connection to food (like climate change and agriculture). **(10 min.)**

**4. Gallery Walk:** After students have written their issues, encourage them to walk through the room reading each chart and writing comments of affirmation or ideas for solutions next to other people's ideas. Explain that they can also draw a star next to an issue to indicate that they agree. If ending day one of this lesson here, consider using some of the script in Action Step 5 to synthesize the day's activities and explain what you'll be doing next session. **(10 min.)**

**5. Identifying Action Steps and Outcomes:** Have students take their seats again and say, *That probably feels good to express some of those issues out loud, but we don't just want to rant or complain. We want to figure out how we can do something about them.* Display the Action Steps and Outcomes Worksheet. Say, *Once we identify an issue, it's important to figure out what we want to see happen instead. That would be our desired outcome.* Have pairs of students discuss the Brower Youth Award winner as an example. Have students identify the problem award winner saw, the steps they took, and the outcomes of their actions. **(5 min.)**

**6. Whole-Group Practice:** Have students share the problems they identified. Then select one of the problems from the chart paper to examine as a class. Ask students, *What would be your desired outcome?* Make note of their responses, then ask, *What steps do we need to take to make that change happen?* Encourage students to think of specific, immediate steps they can take. If students need guidance, you might ask, *What's causing this*

*problem? Or Who in our school community needs to know about this problem?* But let the ideas for solutions come solely from students. You might want to introduce the concept of SMART goals, having small, measurable, achievable, realistic, and timely goals. **(5 min.)**

**7. Sorting into Solution Teams:** Tell students now that they've practiced together as a class, they'll have a chance to work on the issue they feel most strongly about. Have students self sort into teams based on the issue they're most interested in. Explain that when you give a signal, they'll get up and stand next to the chart paper that contains their issue. Give the disclaimer that there should be no more than four people in each group, and if they're not self-sorted after three minutes, you will help them find a group. If more than four students want to work on one issue, have them divide into multiple teams, each with up to four students. These teams can work on the same issue. Give the signal and set the timer. **(5 min.)**

**8. Finding Solutions:** Once students are settled into their groups, assign or have them self-select roles. Each group could have the following: a recorder to take notes, a time manager to keep the group on task, a facilitator to ask questions and make sure everyone's voice is heard, and a presenter to share information with the class. Have students determine the specific problem they'll be tackling. Then have them work together to fill out the Action Plan Worksheet. Say, *Make sure that everyone's voice in your group is heard. For instance, if you've just shared a lot about how you feel, it'd be nice to then ask someone on your team for their opinion.* Circulate through the room, ensuring students are taking detailed notes, and all team members are getting air time. **(15 min.)**



**9. Sharing Action Plan:** Have each team report to the class. Have team representatives share the issue they decided to work on and what action steps they determined would lead them to their desired outcome. **(15 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What strategies did your team use to hear from everyone?*
- *How did your group agree on how to approach your problem?*

### Check for understanding

- *How would the community benefit if we were to implement these changes?*
- *Why is it important to consider your desired outcome for a problem before taking action?*
- *What are ways you can help to create change in our community?*

## ADAPTATIONS

**Classroom Extension:** Have each team become an action group for their chosen issue. Have them meet once a week to check in on their progress toward their desired outcome using the Action Group Log (see p. 564).

## ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.SL.5.4**

Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Action Plan Worksheet

**Directions:** Fill out the following with your team.

The problem we chose is

We chose this problem because

Instead, we want to see

We believe what's causing the problem is

The first step we'll take is

The next step is

The next step is

We'll know we've made an impact when

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Action Steps and Outcomes

**PROBLEMS**

**ACTION STEPS**

**OUTCOMES**

	↓		↓	
	↓		↓	
	↓		↓	

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Action Group Log

What have we accomplished since our last meeting?

What do we need to follow up on?

What goals do we have this week?

Who do we need to contact or get support from this week?

What resources do we need?

TO DO:

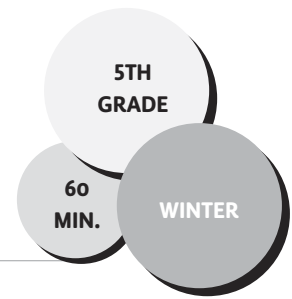
#1 \_\_\_\_\_ Who will do this? \_\_\_\_\_

#2 \_\_\_\_\_ Who will do this? \_\_\_\_\_

#3 \_\_\_\_\_ Who will do this? \_\_\_\_\_

# Stone Soup

**THEME:** PREPARING HEALTHY FOOD



## ESSENTIAL QUESTION

*How do individual efforts contribute to a whole community?*

## LEARNING OBJECTIVE

✓ Students will be able to practice knife skills as they prepare vegetables for soup.

### CONCEPTS

collaboration      community  
interdependence      knife skills

### *Engaging the Classroom Teacher*

- Prior to the lesson, decide with the teacher what other guests you might invite. Determine whether there are parent volunteers or other adults than can assist with the lesson.
- During Action Step 5, suggest that the teacher and any other adults you have recruited support students as they fulfill their food preparation tasks. They can also ensure that students who've already contributed their ingredients have moved on to writing the recipe.

## LESSON DESCRIPTION

In this lesson, students are each given a role to prepare and contribute something to a

classroom stone soup. It is ideally intended as a celebration where parents or other adult community volunteers are present to assist. This lesson can be taught with the lesson If Our Class Were a Soup . . . adapted for this grade level.

## MATERIALS

- *Stone Soup* the 2003 version by Jon J. Muth (emphasizes community and sharing)
- Smooth, clean stone
- Stone Soup Ingredients (see recipe below)
- Induction burner
- Extension cord
- Stock pot
- Ladle
- Bowl and spoon for each student
- Bowls for food prep
- Flexible cutting mats
- Measuring cups and spoons
- Knives
- Containers for compost
- Paper and pencils
- Blank Recipe Cards for each student (p. 569)
- Markers
- Materials for cleanup

## PREPARATION

- › Recruit other adults or volunteers to help supervise students prepping vegetables, while you are watching the soup pot. (It's ideal to start recruiting at least three weeks in advance, and it can be helpful to provide several reminders to your committed volunteers a

day or two before the event.)

- › Find an appropriate location for this activity. The cafeteria will often work well for this.
- › Have a variety of vegetables so that groups of 2–3 students can prepare vegetables together.
- › Par boil (boil until soft but not until completely cooked) beets, carrots, or potatoes if you need to speed up in-class cooking time.
- › Roast winter squash, if using, beforehand.
- › Set up a demonstration cooking station for all students to see and access easily.
- › Prep the garlic and onions yourself, sautéing them until translucent, and then add broth and bring to a boil before class begins.
- › Set up stations with each ingredient already portioned on a cutting mat and ready for students to prepare. Have measuring cups or an empty bowl or container that’s the size of the amount of vegetable that you’ll want prepped.
- › Display your recipe where students can see, either on poster board, on the board, or projected.
- › Create role cards, 2–3 of each role, depending on how involved the task is, for example, tear collard leaves, juice one lemon, or scoop squash seeds. Put the cards in a container for students to select at random.
- › Photocopy and cut blank Recipe Cards for each student.

## Stone Soup

**Yield:** About 25 servings, ½ cup

### Basic Components

- 1–2 tablespoons olive oil
- 3–4 quarts liquid (water and/or vegetable broth)

- 1–2 teaspoons lemon juice
- 2–4 teaspoons dried herbs
- 2 cups chopped onion (1 large onion)
- 3–5 cloves garlic, minced
- 1 (8-ounce) can of beans, drained and rinsed
- 12–16 cups chopped vegetables (see Student Additions table below)

### Example of Stone Soup Ingredients

- 3 cups carrots (4 carrots)
- 2 cups potatoes (1 potato)
- 6 cups collards
- 3 cups butternut squash (roasted 40 minutes)
- 1 teaspoon dried parsley
- 1 teaspoon salt
- ½ teaspoon pepper
- ½ teaspoon dried sage
- ½ teaspoon dried rosemary
- 1 bay leaf

- Roast winter squash until partially cooked, if using, beforehand (about 20 minutes at 400 F).
- Par boil (boil until soft but not until completely cooked) beets, carrots, or potatoes whole if you need to speed up in-class cooking time.
- Prep the garlic and onions yourself, sautéing them in oil until translucent, and then add broth and bring to a boil before class begins. Turn heat back down to a simmer until you add the first round of vegetables.
- Meanwhile, chop the first round of vegetables and add to the pot, turning the heat up to medium to keep at a steady simmer. Add the second round vegetables once the harder vegetables have sufficiently softened. (If you have parboiled beforehand, the second round can be added soon after first.)
- Bring the second round of vegetables to a boil, and turn down to a simmer for about ten minutes, until beans have softened and/or tomatoes have broken down.

Add third round of herbs and seasonings, stirring well. Taste and adjust.

## ACTION STEPS

**1. Engage:** Gather students in a circle. Explain that today the class will be making stone soup, showing students your stone. If they've heard it already, ask students to recall the story *Stone Soup*. If they haven't heard it, read it aloud. Guide them to remember the theme that each person's small contribution in a community can add to a significant end result. **(5 min.)**

**2. Explain the Activity:** Tell students, *You'll each play a role in preparing the soup, and each person's contribution makes this soup tasty.* Explain that you'll hand out role cards, with two to three people sharing each role. Say, *It's important that you share the task, and make sure everyone with your job gets a turn.* Explain that when you call out for their ingredient, they should bring up the bowl of the prepared veggie and will have a chance to stir it into the pot. Remind them that the pot will be very hot, and ask them for ways to be safe. Then explain what they'll do with down time. Say, *When you're finished prepping your ingredient, you should clean up your spot, and then write the recipe to take home.* **(5 min.)**

**3. Hand-Washing Break (5 min.)**

**4. Knife Safety Demonstration (5 min.)**

**5a. Preparing Veggies:** Have students randomly select role cards and find their stations. The stations should be set up so that students need minimal guidance for preparing their vegetables. Call up students to deliver the vegetables during the appropriate time for cooking them. Try to make it fun and in keeping with the story *Stone Soup*. Say something like, *You know what this soup could really use is some squash. I wonder if*

*anyone in the village has squash; or Hmm, I once had a stone soup with a little bit of lemon juice, and it was delicious.* When groups of students bring up their vegetable, allow them to pour it into the soup pot, and give each student a chance to stir. Try having students chant while they stir: "One, two, cha, cha, cha, pass!" or Shakespeare's "Double, double, toil and trouble, fire burn and cauldron bubble!" It doesn't matter what they say, but that it makes it fun, limits their turn, and reminds them to pass.

**5b. Writing Recipes:** Once students have prepared and incorporated their ingredients into the cooking soup, have them write and decorate the recipe to bring home. **(20 min.)**

**6. Cleanup:** Taste and adjust the soup once all students have contributed. You may need to add more broth or more salt. While students are cleaning up their stations, portion the soup into individual bowls, and allow it to cool. **(5 min.)**

**7. Tasting:** Pass out bowls, and remind students to wait until you tell them to start eating. As you share your stone soup, reflect on the experience. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: *(5 min.)*

### Social and emotional learning

- *What successes did you have while working with your classmates?*
- *What challenges arose? What solutions did you find?*
- *How did it feel to be contributing to something made by this class community?*

### Check for understanding

- *Can you taste your prepared vegetable in the soup?*
- *What other vegetables would taste good in this soup?*
- *How would you change the recipe if you made it at home?*
- *What does the story Stone Soup tell us about community?*

## ADAPTATIONS

**At Home:** Have students bring in recipes for their favorite soups to share with the class.

**Garden Setting:** If your garden is in full swing, try preparing a stone soup solely with what can be found in the garden.

## ACADEMIC CONNECTIONS

(If reading *Stone Soup*)

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.RL.5.7**

Analyze how visual and multimedia elements contribute to the meaning, tone, or beauty of a text (e.g., graphic novel, multimedia presentation of fiction, folktale, myth, poem).



# Recipe Cards

**RECIPE:**

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**INGREDIENTS:**

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**STEPS:**

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**RECIPE:**

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**INGREDIENTS:**

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**STEPS:**

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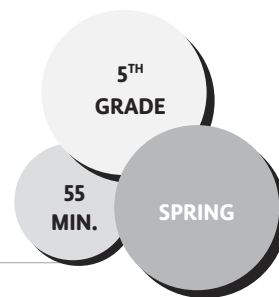
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# Sugar Showdown

**THEME:** MAKING HEALTHY FOOD CHOICES



## ESSENTIAL QUESTIONS

*Why is it important to consider the amount of sugar in what we eat?*

*How can we tell how much sugar is in a particular food?*

## LEARNING OBJECTIVES

- ✓ Students will be able to interpret a nutrition label to know how much sugar is in a product.
- ✓ Students will be able to explain the evolutionary reasons humans generally like sugar.
- ✓ Students will be able to prepare a healthy beverage.

## CONCEPTS

estimation and comparison   healthy choices  
multiplication and division   sugar

### *Engaging the Classroom Teacher*

- Prior to the lesson, discuss with the teacher whether students are able to do the division and multiplication required in Action Step 2 on the Sugar Showdown Worksheet. See if the teacher wants to lead or co-teach this section. For a simpler alternative, see the Adaptations section.

- During Action Step 2, suggest that the teacher support groups as they measure sugar cubes and fill out their Sugar Showdown Worksheet.
- During Action Step 5, suggest that the teacher circulate through the room, encouraging students as they create their own infused water recipe.

## LESSON DESCRIPTION

In this lesson, students estimate and measure the sugar content of commercially sold beverages and consider the implications of excess sugar in our diets as well as why humans like sugar. Then they sample an herb-and-fruit-infused water and think of variations they'd like to create at home.

## MATERIALS

- Box of sugar cubes (or a bag of sugar)
- Paper towels
- Set of 5 nutrition labels for each group of 4–6 students
- Sugar Showdown Worksheet (p. 574) for each student
- Flavored Water Recipe Cards (p. 575) for each student
- Sugar Facts Worksheet (p. 577) for each pair of students
- Small cup for each student
- 2 ½ gallon glass jars (for doubling recipe; each recipe serves 15 small 4 oz. cups)
- Ingredients for infused water. The recipe below is just a suggestion. You can use cucumber, lime or other citrus, tropical fruits, basil, or other herbs to which you have access.
- Materials for cleanup

## PREPARATION

- › As you prepare to teach this lesson, keep in mind that the goal is not to shame students for liking certain drinks that include sugar but to provide them with facts to promote conversation about food choices. Remember that most students have limited autonomy around these choices, and the goal is to promote critical thinking for future choices.
- › Print nutrition labels from the internet for a variety of drinks that have sugar, such as sodas, iced teas, energy drinks, flavored milks, fruit juices, etc. Pick items with which you think your students might be familiar.
- › Prepare images of your selected drinks to display to the class. If you have access to an overhead projector in the classroom, simply project them in a slideshow. Otherwise, print a set of images for each group of students.
- › Photocopy Sugar Showdown Worksheet.
- › Create 1–2 fruit-and-herb-infused waters for students to try. See the recipe below as an example.

### Berry- and Mint-Infused Water

**Yield:** 32 servings, ¼ cup

1 cup berries, slightly crushed  
Handful mint leaves, muddled

- Place mint leaves in ½ gallon jar and muddle (gently bruise with a wooden spoon).
- Add the crushed berries, and fill the jar with water.
- Allow the jar to sit in the fridge for four hours or up to overnight before serving.

## ACTION STEPS

**1. Guessing Sugar Content:** Display images of sugary drinks. Show students a sugar cube. Explain the following: *Each sugar cube is a teaspoon of sugar. With your groups, you'll have to guess how many sugar cubes, or teaspoons of sugar, are in each of these drinks.* Pass out cubes and the Sugar Showdown Worksheet to each group of students. Have students work together to stack sugar cubes in front of the images of each beverage to show how much sugar they estimate is in each. After some time, ask a few students to share some of their group's estimates, explaining their justifications. **(5 min.)**

**2. Measuring Sugar:** Say, *I'm going to give you the nutrition labels that show the amount of sugar. One catch is that they're written in grams, so you'll have to know that each sugar cube has 4 grams of sugar in it. If a label says 24 grams of sugar, how do I figure out how many cubes that is? (Divide by 4 to discover that 24 grams = 6 sugar cubes). The other catch is that some containers have more than one serving in them. If there are 6 sugar cubes in 1 serving, and the container has 2 servings, how would I figure out the total number of sugar cubes? (Multiply by the number of servings, so 6 cubes/serving x 2 servings = 12 sugar cubes in the container).* Pass out nutrition labels to students. Have students match the labels to each of their beverages, use their handout to calculate the actual amount of sugar cubes in each drink, and update their stack of sugar cubes. Encourage students to stack their cubes vertically or into pyramids to enhance the visual impact. While they're working, create a stack of twelve sugar cubes. Once they're finished,

explain that *the American Heart Association has an even smaller daily maximum recommendation of 24 grams, or 6 sugar cubes, for women and children and 36 grams, or 9 sugar cubes, for men.* Have students work in small groups to compare these recommendations with the sugar in their beverages. **(15 min.)**

**3. Deciding True or False:** Have students clean up. Then display or pass out the Sugar Facts Worksheet to pairs of students. Have them work in pairs to answer true or false for each statement. Allow students to discuss answers in small groups, and go over each statement as a class. You can have group representatives raise their hands to vote; call on some to give justifications. Then you can share some of the facts behind each statement. **(10 min.)**

**4. Tasting:** Explain to students that you've made a naturally flavored water for them that could be a substitute for these sugary drinks you've been looking at. Pass out small tasting cups of the infused water you've prepared. Ask students to describe the flavor. **(10 min.)**

**5. Making Recipes:** As a class, brainstorm other fruits and herbs that would taste good infused in water, such as lime and strawberry, and pass out the template to have each student create their own recipe to take home. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How do you feel about the activity we did today?*
- *What surprised you about the activity we did today?*

### Check for understanding

- *Why do humans like sugar so much?*
- *What information from today's activity would you share with friends or family?*

## ADAPTATIONS

**Simplified Sugar Comparison:** If you don't want to get into math calculations in Action Step 2, you can fill zip lock baggies for each group with the amount of sugar found in each drink, and have students guess which bag belongs with which drink.

**Food-Prep Extension:** If you have time, allow groups of students to make their own infused water, with a variety of berries, citrus, and herbs.

**Garden Setting:** Make sun tea with students using herbs they've harvested from the garden. Allow the tea to sit in full sun for a couple hours; refrigerate the tea to serve to students the next day.

**Classroom Extension:** Share with students a list of all the other words sugar goes disguised as: high-fructose corn syrup, evaporated cane juice, corn sweetener, dextrose, or honey. Hand out a new set of nutrition labels. Have students find all the hidden sugars. This works well with

canned soups and other foods that students might be surprised to see contain sugar. Explain that because food manufacturers are mandated to write the ingredients in order by weight, many companies use different names of sugar to spread out the total amount to not appear so high in the list. Show them an example.

## **ACADEMIC CONNECTIONS**

Math Common Core State Standards

### ***CCSS.MATH.CONTENT.5.MD.A.1***

Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

### ***CCSS.MATH.CONTENT.5.MD.C.3***

Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

English Language Arts Common Core State Standards

### ***CCSS.ELA-LITERACY.RI.5.7***

Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Sugar Showdown Worksheet

**Directions:** Use this table to calculate the number of sugar cubes in each beverage.

DRINK NAME	Estimated Number of Sugar Cubes per Container	Actual Amount of Sugar per Serving (in Grams)	Actual Number of Sugar Cubes per Serving	Actual Number of Sugar Cubes per Container	How Close Was Your Original Estimate?
#1 _____	_____ cubes	_____ grams	_____ grams/4 = _____ sugar cubes	____cubes x _____ servings = _____ total sugar cubes	We were off by _____ cubes.
#2 _____					
#3 _____					
#4 _____					
#5 _____					

\_\_\_\_\_ 's Flavored Water Recipe

**INGREDIENTS**

1 cup \_\_\_\_\_ fruit

1 handful \_\_\_\_\_ herb

**DIRECTIONS**

**Crush herbs in your hands, and add to a half-gallon jar or pitcher.  
Add fruit, and fill your container with water.**

\_\_\_\_\_ 's Flavored Water Recipe

**INGREDIENTS**

1 cup \_\_\_\_\_ fruit

1 handful \_\_\_\_\_ herb

**DIRECTIONS**

**Crush herbs in your hands, and add to a half-gallon jar or pitcher.  
Add fruit, and fill your container with water.**

# Sugar Facts: True or False? (Educator Copy)

**The sugar that occurs naturally in fruit is the same as the sugar in sodas and other sweetened beverages.**

*False. The sugar in fruit and other naturally sweet foods is connected to fiber, vitamins, and other nutrients. This helps us digest it slowly and provides our body with nutrients we need. Added sugar in soda and other foods, however, provides sweetness but nothing else. This is why people often refer to it as “empty calories.” It is empty of anything we need other than calories.*

**We need to eat added sugar just like we need to eat fats and protein.**

*False. Although our bodies need sugar to function properly, our bodies can get sugar from eating plants (grains, starches, vegetables, and fruits) and other things in our diet. We don't need to eat any added sugar.*

**Sugar is a natural preservative, like salt, that makes food last longer.**

*True. This is one reason many commercial products add sugar to foods that don't necessarily need the sweetness, like canned vegetables, canned fruits, sauces, dressings, bread, or soups. This has made us all get used to everything tasting sweet.*

**Our bodies absorb table sugar almost instantly. For this reason, table sugar is better for us than fruit.**

*False. The first part is true, which is why eating something with a lot of sugar makes our blood sugar rise and then crash. Here's the good news: the sugar in fruit comes with fiber. Fiber helps slow down our bodies' absorption of sugar and helps us avoid a blood sugar spike and crash.*

**Consuming sugar can give you lots of energy!**

*False. It is true that you get a boost of energy when your blood sugar level is raised. But without fiber, fat, or protein along with the sugar, your blood sugar levels quickly drop, leaving you feeling drained. The up-and-down roller coaster of your blood sugar levels can affect your mood.*

**We should eat at least six teaspoons of added sugar each day.**

*False. The American Heart Association suggests an upper limit of 24 grams, or 6 teaspoons, of added sugar for children per day. Unlike vitamins and minerals, which have recommendations for the minimum amount, with sugar the recommendation is for the maximum. This means that we don't need any added sugar, but if we choose to have some, we should limit it to 24 grams per day to stay healthy.*

**One 20-ounce soda is equal to the recommended daily maximum for added sugar for the whole day.**

*False. One 20-ounce soda has about 15–17 teaspoons of sugar. This is more than double the American Heart Association's maximum of 6 teaspoons . . . all in one beverage! This is also more sugar than is in a donut and about the same as in a slice of cake.*

**Humans crave sugar because of evolution.**

*True. Sugar is a basic, easy form of energy for the body. Sugar was beneficial to our hunter-gatherer ancestors because they could have long periods of intense physical activity and food scarcity; therefore, they needed to get energy whenever they could. In addition, “sugar” used to refer to the sweetness that comes from fructose which, in nature, is hardly ever found in toxins. Therefore, our bodies evolved to look for sweetness as a sign of safe, edible, energy-rich food.*



Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Sugar Facts: True or False? Worksheet

**Directions:** Write True or False beneath each statement below.

**The sugar that occurs naturally in fruit is the same as the sugar in sodas and other sweetened beverages.**

**We need to eat added sugar just like we need to eat fats and protein.**

**Sugar is a natural preservative, like salt, that makes food last longer.**

**Our bodies absorb table sugar almost instantly. For this reason, table sugar is better for us than fruit.**

**Consuming sugar can give you lots of energy!**

**We should eat at least 6 teaspoons of added sugar each day.**

**One 20-ounce soda is equal to the recommended daily maximum for added sugar for the whole day.**

**Humans crave sugar because of evolution.**

# Cycle of a Nutrient

**THEME:** EXPLORING THE ECOLOGY OF FOOD

5TH  
GRADE

55  
MIN.

SPRING

## ESSENTIAL QUESTIONS

*Where do the nutrients in our food come from?*

*Where do the nutrients in our food waste go?*

*Why is composting food waste an important step in the nutrient cycle?*

- During Action Step 4, suggest that the teacher support and encourage students as they craft their Year in the Life of a Nutrient representations.

## LEARNING OBJECTIVES

- ✓ Students will be able to explain how the nutrients that nourish us are derived from soil and air.
- ✓ Students will be able to explain how our food waste can go back into the nutrient cycle in the form of compost to replenish the soil.

## LESSON DESCRIPTION

In this lesson, students learn about the nutrient cycle and demonstrate their understanding of the nutrient cycle through a cartoon or narration.

## CONCEPTS

compost   cycle   decomposers  
decomposition   environment   nutrient

## MATERIALS

- Objects that represent the nutrient cycle, such as an apple, a decaying apple core, a small container of rich garden soil or finished compost, and a small twig
- Handkerchief or tray
- Cycle of a Nutrient Cards (p. 581)
- Nutrient Cycle Poster (p. 582)
- Paper for each student
- Markers and colored pencils

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher about students' familiarity with elements and the process of decomposition.
- Ask the teacher whether they have established groups of 3–5 students who work well collaboratively.
- During Action Steps 1 and 2, suggest that the teacher circulate through the room to support students as they sequence the Cycle of a Nutrient Cards.

## PREPARATION

- › Photocopy Cycle of a Nutrient Cards, and cut them out; create sets for partners. Set aside all the cards with images of a worm or a human to be passed out separately.
- › Find a way to display the Nutrient Cycle Poster.

## ACTION STEPS

**1. Connecting the Dots:** Gather students around a handkerchief or tray with objects that represent the nutrient cycle. Make sure that the objects

are not in any logical order. For example, you might just have the twig, then the apple core, then the apple, and then the soil in a line. Explain to students, *These objects tell a story. But right now they're not in order! It's your job to figure out the mystery of how to reorder them to tell the story.* Pass out sets of cards (minus the worm and human cards) to pairs of students, and have students work in pairs to figure out the order the cards would go in to tell a story. The goal is to have students recognize that the decaying plant eventually becomes part of the soil, and the nutrients released in the process of decomposition help nourish a new plant. Have students share their story and, as they do, reorder your real objects to reflect the story they're telling (soil to twig to apple to decaying apple). **(5 min.)**

**2. Animals in the Cycle:** Pass out a picture of a human to each pair and ask them to discuss with each other, *How would a human fit into this story?* Students may suggest that the human plants the tree or that they excrete the nutrients found in the apple. Be prepared to discuss humanure! Pass out a picture of a worm and ask students to consider how it would fit in as well. Call on pairs to share their guesses. If students don't mention it, say, *This is a story with no beginning and no end. It is a cycle, which means it happens again and again in the same order, like the seasons.* Reorganize the objects into a circle to connect the dead plant to the soil and the soil back to the new plant. **(5 min.)**

**3. Putting it All Together:** Display the Cycle of a Nutrient poster. Explain to students, *Nutrients are chemical elements that all plants and animals need to grow. For example, Foods such as bread, tortillas, pasta, and rice all have a nutrient called*

*carbohydrate that is a great source of energy. Fruits and vegetables have nutrients called vitamins and minerals that help our bodies work well and make us glow. We get the word nutrition from the nutrients found in our food. Nutrients move from our environment into living things. Once those living things die, they decompose, or break down, thanks to whose help? (Decomposers such as worms). The process of decomposition releases the nutrients back into the soil, where they're ready to nourish and support new plant life.* Explain to students that the earth is very efficient at recycling waste, but humans often interrupt this cycle by throwing our food scraps into a plastic garbage bag that goes to a landfill. When we compost, we are giving those nutrients from our food waste right back to the soil, which helps us grow new food. **(10 min.)**

**4. A Year in the Life of a Nutrient:** Tell students, *I'm giving you the challenge to put yourself in the place of a nutrient! What would your life look like over the course of a year?* Give them the choice between drawing their own cartoon, writing a narrative, or performing a skit from the point of view of a nutrient. Allow students to work alone, or in pairs or triads, reminding them to make a responsible choice. Have students start by thinking of one of their favorite foods. They will start their cartoon or narrative from the perspective of a nutrient inside an ingredient from that food. Have them include the food growing, part of the food getting eaten and part of it getting composted, the nutrients going back into the soil from composted food, and the new ingredients growing from that soil. For the food that is eaten, students can depict waste being excreted directly back into nature by animals.

Circulate through the room, checking in with students and providing support. **(20 min.)**

**5. Sharing:** Have small groups of students share their cartoons and narratives with each other. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *How well did you support your partner's learning?*

### Check for understanding

- *Where do the nutrients we eat originally come from?*
- *What role do decomposers, such as worms, play in the nutrient cycle?*
- *What steps can humans take to play a positive role in the nutrient cycle?*
- *What other things in our lives or the environment have a cycle?*

## ADAPTATIONS

**Garden Setting:** Have students find objects in the garden to represent the various components of the nutrient cycle, and have them put them in order to tell stories.

**Physical:** Play decomposer tag as an energetic way to reinforce the concept. Have one student wear an armband indicating that they're "frost" (Death), and have a couple other students wear an armband in a different color, indicating their roles as "worms" (Decomposers). Have all other students be plants. If Death tags a plant, the plant is frozen until a Decomposer tags it, representing the decomposition cycle.

Try playing where Death is allowed to tag the Decomposers to show that without decomposers recycling plant matter, there's no new life.

**Musical:** Teach students the song "Dirt Made My Lunch" by the Banana Slug String Band.

**Worm Bin:** If you have an established worm bin, bring in the worm bin to facilitate your discussion of the nutrient cycle. Allow students time to explore and observe decomposing food and worm castings.

**Extension:** Have students create their own game to represent the nutrient cycle. You can show them *Caine's Arcade* for inspiration. Provide materials such as cardboard boxes, markers, tape, and marbles, but let students use their own imagination to dream up the game. Have students present how their game represents the nutrient cycle. Then allow students to play each other's games.

## ACADEMIC CONNECTIONS

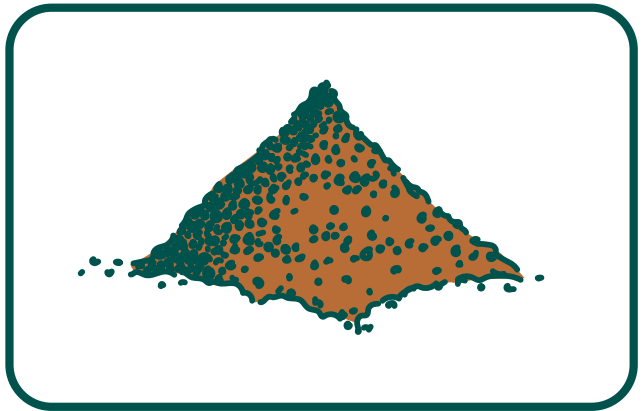
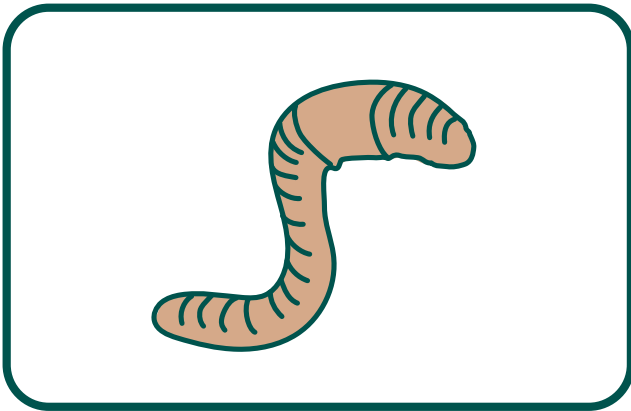
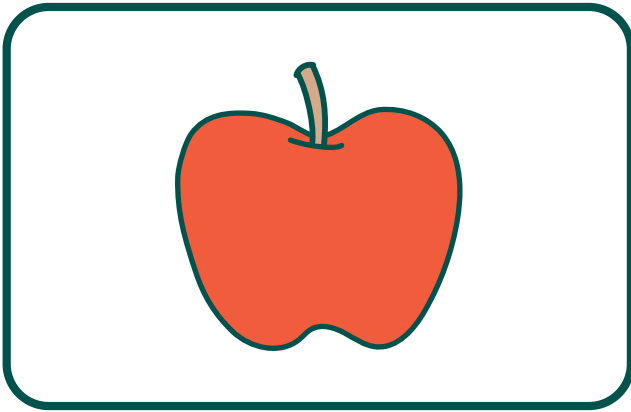
Next Generation Science Standards

Life Science Disciplinary Core Idea

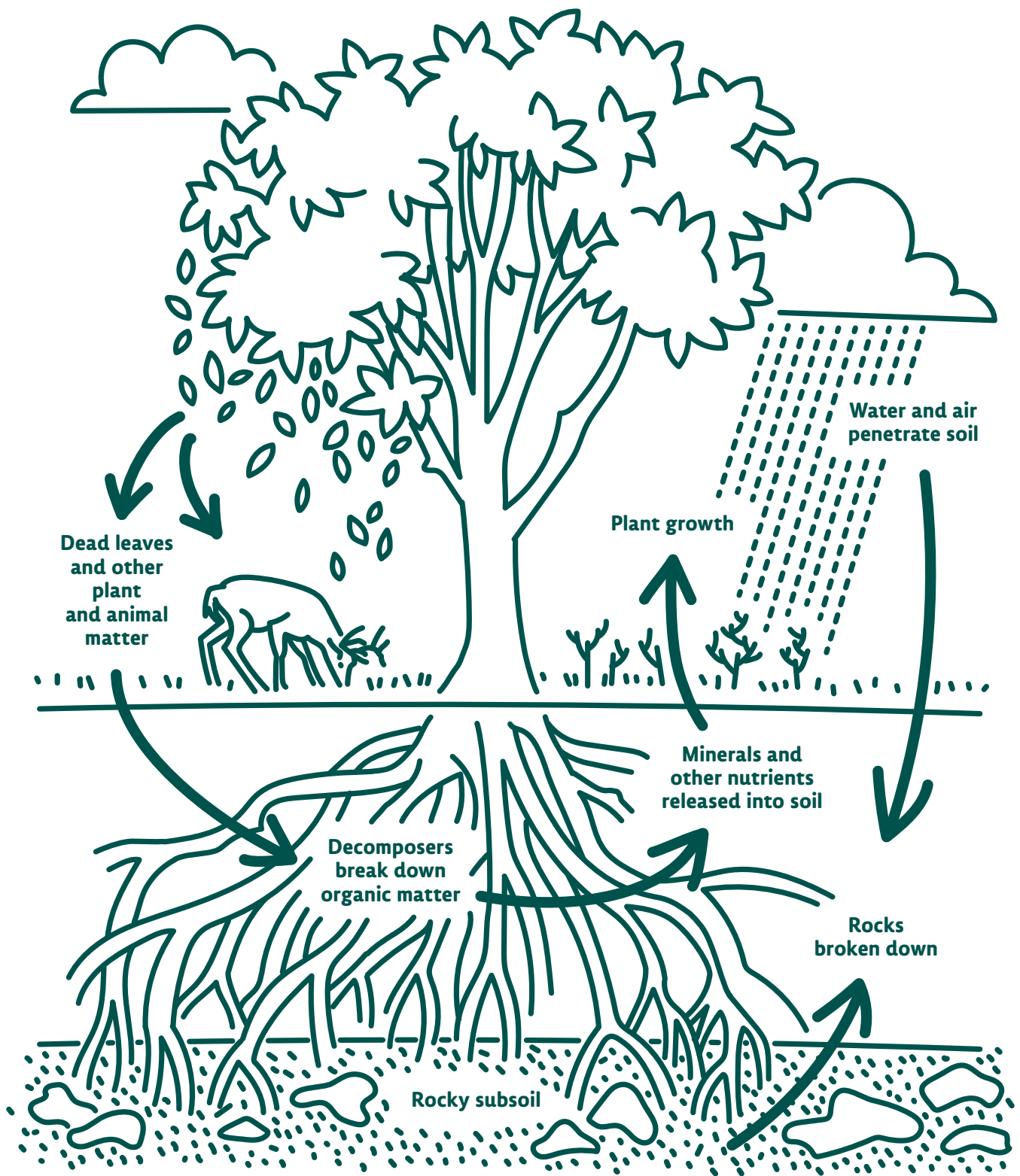
### **NGSS.LS.2.A.**

The food of almost any animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants, while decomposers restore some materials back to the soil.

# Cycle of a Nutrient Cards

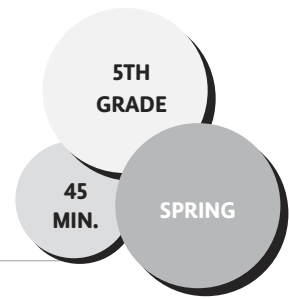


# NUTRIENT CYCLE



# Break It Down

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*How is composting beneficial to our garden and our earth?*

## LEARNING OBJECTIVES

- ✓ Students will be able to describe the movement of matter among plants, animals, decomposers, and the environment.
- ✓ Students will be able to build a compost pile and explain the value of compost in a garden.

## CONCEPTS

biodegradable   carbon   compost  
decomposition   nitrogen   tool safety

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher about students' familiarity with decomposition and the elements carbon and nitrogen.
- Ask the teacher whether they have four or five established groups of students who work well collaboratively.
- During Action Step 5, suggest that the teacher supervise groups bringing materials over to the compost pile as you supervise work happening on the pile.

## LESSON DESCRIPTION

In this lesson, students practice identifying and sorting biodegradable objects before they work in teams to learn how to build a compost pile in the school garden. This lesson is designed to be taught in conjunction with lessons Rotting Away, Day by Day and Cycle of a Nutrient.

## MATERIALS

- Vinyl tablecloth
- 5–10 biodegradable items for display (try to have a variety of items, including items students may not immediately think of, such as a piece of a burlap sack, newspaper, or cotton shirt)
- 5–10 nonbiodegradable items such as plastics and cans
- Building and Maintaining a Compost Pile Poster (p. 587)
- Watering cans or hose
- 1–3 wheelbarrows
- Shovels
- Digging forks
- Hand shears
- 3 wheelbarrows' worth of green compost materials, such as kitchen scraps, grass clippings, noninvasive weeds, or crop debris
- 3 wheelbarrows' worth of brown compost materials, such as straw, dried leaves, berry canes, or other branches
- 1 wheelbarrow worth of garden soil

## PREPARATION

- › Scout a location for your compost pile in the school garden. Be sure it is close to a water spigot and easily accessible for hauling

materials. Indicate the blueprint of your pile by laying branches to create a square, three feet by three feet.

- › Collect a variety of biodegradable and non-biodegradable materials for in-class sort.
- › Have some green and brown layers already broken down into six-inch pieces.
- › Designate a mound of garden soil to freely add to your compost pile.
- › Consider leading Action Steps 1 and 2 indoors if you don't have a designated outdoor space for gathering, anticipate students may be distracted, or the weather may not be warm enough to be sitting still for long.

## ACTION STEPS

**1. Sorting Biodegradable Objects:** Gather students in a circle. Have a vinyl tablecloth in the middle of the circle, arranged with a mix of biodegradable and nonbiodegradable materials. Tell students that half of the materials have something in common with one another, and it's their job to figure out with the person sitting next to them what that characteristic is. Pick up two objects, for instance an apple core and an aluminum can, and say, *This one is, waving the apple, but this one isn't, waving the can.* Tell students to whisper with their partner to figure out the rule. If they figure it out, they should keep it a secret but raise their hands to show another example to the class. Continue having different pairs choose items and say, *This one is, but this one isn't,* until everyone in the class has caught on. **(5 min.)**

**2. Revealing the Rule:** Call on students to reveal the mystery rule. Students might say these things are biodegradable or are

compostable, or come from nature, or were once alive. If students haven't already made the connection to decaying organic material, say something like, *So that means that anything decomposable would have been alive at some point.* Or ask students, *Which of these things were once living?* Explain, *All things that were once alive break down into their basic elements with the help of decomposers. When this happens, we get compost, which can be added to the soil to help grow more plants.* Explain to students that today they'll be building a compost pile. If you've already taught the lesson Cycle of a Nutrient, make the connection by explaining that the compost pile will help us do our part in cycling the nutrients in our food waste and garden debris. **(10 min.)**

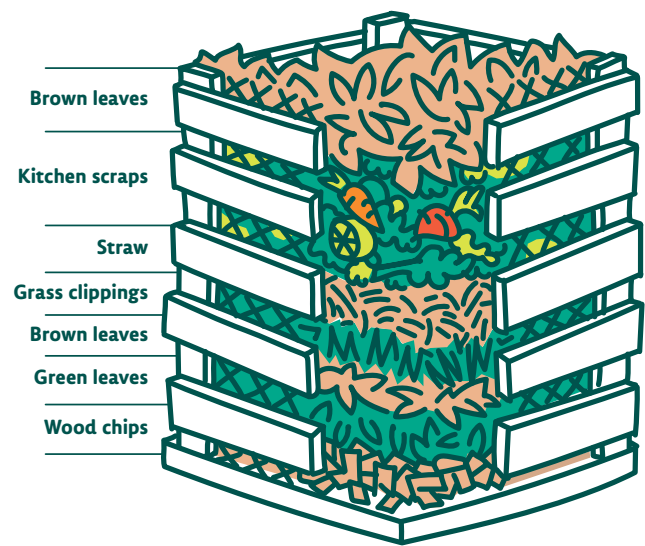
**3. Model:** Gather students outside, and demonstrate building a mini compost pile. Consider having students build their own mini compost pile as you model, using just a handful of the required material for each layer. Alternatively display or pass out Building and Caring for a Compost Pile Poster for students who would benefit from this additional visual. First, create a layer of broken sticks, explaining that this will help water drain from the pile so it's not too wet. Add a layer of greens and sprinkle with water. Explain the following: *This green layer, whether it's food waste, grass clippings, or weeds, adds nitrogen to our compost pile. Add a layer of browns and sprinkle with water. Explain the following: These woody materials such as straw, branches, or dried brown leaves are a source of carbon for our compost pile.* Add a layer of garden soil and sprinkle with water. Remind students of the following: *Though we might not see them, there are microorganisms in soil that are decomposers,*



just like worms, that will help break down the materials in our compost pile and help release all the good nutrients they hold. We add water because the microorganisms need water to stay alive, just like we do. **(10 min.)**

**4. Demonstrate Tool Safety!** Remind students that using garden tools is a responsibility and to keep tools low and be aware of their classmates as they're working. Model with students how you want them to hold and move with their tools, and let them know where tools should be placed when not in use. Emphasize and demonstrate how to keep the sharp or metal end of the tool below your waist at all times. **(5 min.)**

**5. Building a Compost Pile:** Divide students into four teams—Greens, Browns, Water, and Soil. Have a station where each group will work (i.e., a station for Green and Brown teams to cut up garden debris into smaller six-inch chunks and a mound of garden soil for the Soil team to shovel from). Depending on the size of your class, you might have a fifth group in charge of maintaining the compost pile with digging forks so that it stays square and level, or you can add that responsibility to the Water team. Explain to students that you'll call out when you need that team, and two representatives from the team can bring over materials while the rest of the team continues working to create smaller pieces. Monitor students working with tools as you're calling Greens or Water for the next step in the compost pile. Repeat until you've used all your materials and/or your pile is three feet tall. Be sure to end with a layer of soil. **(15 min.)**



## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- What strategies worked best when we were making our compost pile? What could have worked better?
- Ask yourself: Was I safe and responsible using tools in the garden today?
- Ask yourself: Did I work well with my team?
- Ask yourself: How did I contribute to making the compost pile?

### Check for understanding

- What are the layers in our compost pile? What purpose does each ingredient serve? What other ingredients could we have used?
- What do you think our compost pile will look like if we dig into it in a week? In a month? In six months?
- What strategies worked best when we were making our compost pile? What could have worked better?

## ADAPTATIONS

**Tasting:** Have students create edible compost piles to reinforce the idea of layering green nitrogen-rich materials with brown carbon-rich materials. You can use crackers, nut butter, and greens.

**Cafeteria Extension:** Set up a station in the cafeteria for collecting compostable food scraps. Have students rotate to monitor the collection station and to add these scraps to the compost pile in the garden.

**Classroom Extension:** Have students visit the compost pile every couple of weeks to observe and record what living creatures are present. Students can even track a particular piece of garden debris or food waste, such as an apple core, to see how quickly it is decomposing. If you have a compost thermometer, have students record the temperature and graph the change over time as the pile heats up and then the temperature levels off.

**Follow-Up:** Be sure to involve students in maintaining the compost pile. Every three weeks, check the moisture level—it should be as wet as a wrung-out sponge. Turn your compost by putting the top layer on the ground beside your original pile. Keep transferring layers to the new pile until the bottom of the old pile is now the top of the new pile.

## ACADEMIC CONNECTIONS

Next Generation Science Standards  
Life Science Disciplinary Core Idea

### **NGSS.LS.2.A**

The food of almost any animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants, while decomposers restore some materials back to the soil.

## BUILDING AND MAINTAINING A COMPOST PILE

1. First, put down a layer of sticks. (for sticks to drain through).



2. Add a layer of green and sprinkle with water.



3. Add a layer of browns and sprinkle with water.



4. Add a layer of garden soil and top with water.



5. Repeat!

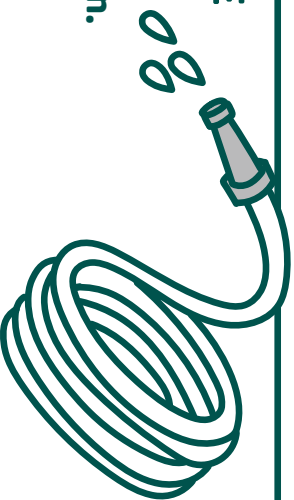


(Greens: food waste, grass clippings, weeds, garden debris, manure)

(Browns: straw, branches, brown leaves, shredded cardboard)

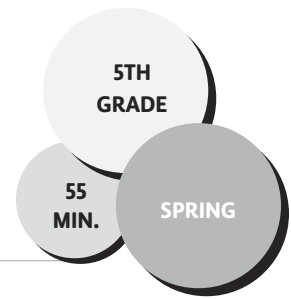
## MAINTAIN YOUR COMPOST PILE

1. Add new layers!
2. Stir or turn your pile every so often.
3. Keep it moist, but not too wet.



# Rolling Into Spring

**THEME:** PREPARING HEALTHY FOOD



## ESSENTIAL QUESTION

*How can we prepare a healthy dish?*

## LEARNING OBJECTIVES

- ✓ Students will be able to practice knife skills.
- ✓ Students will be able to assemble veggie spring rolls and create a dipping sauce.

## CONCEPTS

collaboration   kitchen tool safety   knife skills

### *Engaging the Classroom Teacher*

- Prior to the lesson, ask the teacher whether they have established groups of 4–6 students.
- During Action Step 5, suggest that the teacher supervise as students use knives to prepare the vegetables.
- During Action Step 7, suggest that the teacher circulate through the room, supporting students who need help assembling their spring roll.

## LESSON DESCRIPTION

In this lesson, students practice knife skills and balancing flavors to make veggie spring rolls and an accompanying sauce.

## MATERIALS

- Spring Roll Ingredients ingredients (see recipe below)
  - Thermos or kettle of hot, potable water (make sure it's warm by the time you assemble spring rolls but not hot)
  - Index cards or scratch paper
  - Wax paper or 1 ceramic or plastic plate for each student (paper plates won't work well because the spring rolls stick to the paper)
  - Materials for cleanup
- Tray of the following for each group of 4–6 students:**
- Washed and portioned spring roll ingredients
  - Pie plate or other dish with high rim (to dip wrappers into warm water)
  - 2–3 cutting mats
  - 2–3 knives
  - Small jar or bowl for sauce
  - Box grater
  - Measuring cup
  - Teaspoon
  - Bowls for prepared ingredients
  - Container for compost

## PREPARATION

- › If you haven't used rice paper wrappers previously, you'll want to make a test spring roll prior to teaching the lesson to confidently guide students in working with them.
- › Write out roles on index cards for what each member in each group will do (e.g., in each group have a “cabbage shredder,” “carrot grater,” “cucumber slicer,” “herb chopper,” and “sauce maker”).
- › Wash the produce, and develop a model

of how each herb or veggie should be prepared (e.g., shredded, grated, sliced, etc.).

- › Set up a sauce station in the room where sauce makers can come to get their ingredients.
- › Prepare trays for groups with a small amount of each vegetable you're using. For every 4–6 students, for example, prepare ½ a head of cabbage to shred, ¼ a beet to grate, a carrot to slice, a couple scallions to slice, and a ½ cup of cilantro.

## Spring Rolls

**Yield:** 25 servings, 1 roll per person

### Sauce Ingredients (makes 1 ½ cups)

- ¾ cup soy sauce or tamari
- ¾ cup lime juice
- ½ cup toasted sesame oil
- 2 teaspoons honey
- 2 teaspoons garlic, minced (optional)
- 2 teaspoons chili paste (optional)

### Example of Spring Roll Ingredients\*

- (about 9 cups of vegetables total; about 1/3 cup mixture per roll)
- 1 package rice paper wrappers
- 1 head of cabbage
- 5 large carrots
- 2 medium cucumbers
- 1 bunch cilantro
- 1 bunch scallions

\*These are merely suggestions to get a sense of portions. Use the table below for more ideas, and choose ingredients that make sense for your region, students, and season.

- Whisk sauce ingredients together and set aside.
- Chop cabbage into fine shreds. Grate carrots on the largest holes of a box grater. Cut

cucumber in half, lengthwise, and thinly slice into matchsticks. Thinly slice scallions into matchsticks and stem cilantro.

- To assemble a spring roll, dip rice paper wrapper in warm water and count five seconds, and then gently place the wrapper on your clean plate or wax paper. Place a small amount of vegetables in the center of the wrapper, making sure you leave at least a couple inches on all sides. Fold in the sides tightly, and then roll from the bottom up, gently pressing the ingredients together as you go.

### POSSIBLE SPRING ROLL INGREDIENTS

#### Fruit and Veggies

- Bell peppers
- Cabbage
- Carrots
- Cucumbers
- Lettuce
- Mango
- Radishes
- Turnip

#### Herbs

- Chives
- Cilantro
- Mint
- Scallions
- Thai basil

## ACTION STEPS

**1. Engage:** Pass a couple rice paper wrappers around the room and ask students if they know or can guess what they are and what they are made of. Explain, *Today we'll be making spring rolls. Different versions of these rolls are popular in Vietnam, Cambodia, China, and other Asian countries. Sometimes they also have pork, shrimp, or duck in them. We'll be making a vegetarian version today. (5 min.)*

**2. Explain the Activity:** Explain to students that each group member will have an official task in the group for preparing an ingredient, which you'll assign to them. Briefly go over

each role, showing students each ingredient, and then explain that once all the ingredients are prepped, they learn how to assemble spring rolls as a class. **(5 min.)**

### **3. Knife and Grater Safety Reminder (5 min.)**

**4. Hand-Washing Break:** This is a good time to pass out role cards to each person on a team. You can give sauce makers a copy of the recipe at this time as well. **(5 min.)**

**5. Preparing Ingredients in Group:** Distribute trays of ingredients to groups of students. Circulate through the room, guiding students to be safe and use proper technique where needed. Give students a two-minute warning, and then call when time is up, and have students clean their spaces. **(10 min.)**

**6. Model:** Model how to make a spring roll. Be sure to go slowly and exaggerate and highlight the proper techniques you want to see from them. Say, *Dip the rice paper wrapper in warm water and count five seconds, and then gently place the wrapper on your clean plate or wax paper. Place a small amount of vegetables in the center of the wrapper, making sure you leave at least an inch on all sides. Fold in the sides tightly, and then roll from the bottom up, gently pressing the ingredients together as you go.* If your classroom has a document camera, project your demonstration so all students can easily see. Remind students that they are sharing the ingredients with their whole group, and if they put too many veggies in, their spring roll won't close, so they should only be taking small pinches of each ingredient. **(5 min.)**

**7. Making Spring Rolls:** Have helpers give each group of students plates or wax paper and spring roll wrappers. Meanwhile, walk around and pour warm water onto each group's large plate. Have students take turns dipping their rice wrappers and adding vegetables. Circulate as students are preparing spring rolls, reminding students to share and offering support where needed. If some students finish early, have them make extra spring rolls for their teachers, office staff, cafeteria staff, etc. **(10 min.)**

**8. Tasting:** Remind students about hygiene and that their sauce is for everyone, so they should drizzle the sauce on their spring rolls instead of dipping! Ask students for descriptive words to describe the taste and texture of their creations. **(5 min.)**

## **REFLECTION**

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### **Social and emotional learning**

- *What was challenging about creating your spring rolls? What was successful?*
- *What strategies did you find for working well in your groups?*
- *How did it feel to be in charge of one ingredient for your group's spring rolls?*

### **Check for understanding**

- *What fruits and vegetables would you put in your rice paper wrapper to make a summer roll? What about a fall roll or a winter roll?*
- *How would you teach someone else to use a knife properly?*

## ADAPTATIONS

**Garden Setting:** Make these spring rolls a true testament to the season, and only use what produce is available in your springtime garden. Have students harvest, wash, and process your garden veggies.

**Cooking Competition:** Conduct a cooking competition in which each team chooses the ingredients to include in their spring rolls and/or their dipping sauce and then are judged on taste, presentation, and cooperation.

## ACADEMIC CONNECTIONS

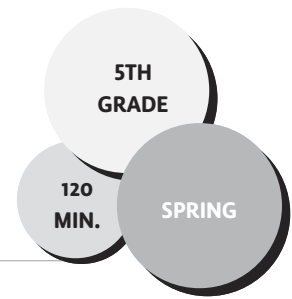
English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.SL.5.1**

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 5 topics and texts*, building on others' ideas and expressing their own clearly.

# Gratitude Feast

**THEME:** CONNECTING FOOD, CULTURE, AND COMMUNITY



Session 1: 60-min. planning period

Session 2: 1–2-hour Gratitude Feast, held at a convenient time for your students and guests

## ESSENTIAL QUESTIONS

*How can we express our gratitude to the growers and makers of our food?*

*What are the lessons about food and healthy living we'll remember most?*

## LEARNING OBJECTIVES

✓ Students will be able to prepare and present a celebration to honor all the people who help them eat well every day.

✓ Students will be able to articulate what they have learned about living up to their full potential and how this will affect their lives in the future.

## CONCEPTS

community      full potential  
gratitude      honoring

### *Engaging the Classroom Teacher*

- Coordinate with classroom teacher(s) ideally a month prior to when you'd like to host the event. Together, determine a reasonable time frame between session 1 and 2. Have them help you consider the school calendar and any anticipated events or holidays.
- Ask the teacher for support in getting the word out.
- During Session 1, suggest that the teacher support students in making crafts and writing thank-you notes.

## LESSON DESCRIPTION

In this lesson, students plan and create a celebratory feast to honor the people who help them eat well every day. After brainstorming ways to honor and thank their guests, students craft invitations, decorations, conversation-starter cards, and thank-you notes. This end-of-the-year celebration will also provide an opportunity for students to reflect on what lessons and habits from their time with FoodCorps they would like to bring into their next year. This lesson also serves as a follow-up to the lesson Full Potential Manifesto.

## MATERIALS

- Crayons, markers, colored pencils
- Butcher paper
- Nice paper for making invitations
- Index cards
- Plates
- Silverware
- Serving utensils
- Jars or vases for bouquets
- Materials needed to prepare your foods

## PREPARATION

- › Three weeks prior to Session 1: Planning the Gratitude Feast, determine a time and location for the event. If it will include multiple fifth-grade classes, you may want to reserve the cafeteria or another space for after school.
- › Two weeks prior to Session 1: Have students



determine who will be invited and begin advertising the event through formal school communications (newsletter/website).

- › *Optional:* At least two weeks prior to Session 1: connect with farmers about sourcing food for the event and having them attend the feast. Ideally, you're also harvesting produce from your school's garden! Connect with families about being involved, for example, by preparing a food that has cultural or historical significance for their family.
- › Session 1: Together with your students, begin making personalized invitations, decorations, and thank-you notes for attendees.
- › Two weeks prior to the event: Recruit volunteers to help day-of. Make a list of supplies you'll need, and determine how you'll be sourcing these.
- › After Session 1, and two to three days prior to the Feast itself, send a reminder email to invitees (FoodCorps partners, staff, etc.), and have the school remind families through formal communications (newsletter, website, automated voice messaging system, etc.)

## SESSION 1: PLANNING THE GRATITUDE FEAST

### ACTION STEPS

**1. Brainstorming:** Explain to students that today you'll be planning a celebratory feast to honor all the people who help them eat well. Ask, *Who should we invite? Who grows our food? Who prepares our food?* Have students brainstorm a list of people to invite including family, local farmers, cafeteria staff, and perhaps local restaurant cooks. Next, have them brainstorm ways to honor their guests. You might want to introduce the concept of giving

toasts to honor people. **(10 min.)**

### 2. Reflecting on the Purpose of the Feast:

Have students recall goals they set in their Full Potential Manifestos at the beginning of the year. Then have them explain how the people they just listed helped them reach those goals by growing, preparing, or providing them with healthy foods. **(5 min.)**

**3. Creating a Celebratory Space:** Depending on the time you have available and the amount of students involved, you might assign or have students self-select into different committees for the following tasks. Or you might have one classroom responsible for each task. **(15–30 min.)**

- **Invitations:** Have students create invitations with the pertinent information for potential guests. You can have them decorate the invitations with simple leaf rubbings or more elaborate flower pounding. (See Life Lab's *The Book of Gardening Projects for Kids* or Life Lab's website for details on how to do flower pounding.) **(15 min.)**

- **Thank-You Notes and/or Short Speeches:**

Designate time for students to write and/or draw thank-you notes or prepare short speeches to honor all the ways their guests have contributed to their healthy eating goals. (As you're wrapping up service in this community, consider this an opportunity for you to express gratitude to the school and those who've supported you in your service.) **(15 min.)**

• **Conversation-Starter Cards:** Explain to students that conversation-starter cards are a fun way to get different people talking who may not know each other. Provide some examples of conversation starters such as, *If you could only eat one food for the rest of your life, what would it be and why? Tell me about the first person who taught you how to cook. What's your favorite thing about your job? What's the most unusual thing you've ever eaten?* Provide students with index cards and colored pencils. Have them write as many cards as they'd like, and encourage them to decorate the cards. **(15 min.)**

**Decorations:**

- Have students harvest flowers or herbs from the garden for making bouquets to serve as table decor.
- Students can decorate butcher paper that will serve as tablecloths with pictures of their favorite recipes and lessons with FoodCorps as well as words of gratitude and inspiration for their guests. **(20 min.)**

**4. Planning Food:** Consider the following suggestions, but ultimately decide what makes the most sense based on your students and community.

- Ask students if they have a personal family recipe or something from their family or culture that they'd like to include.
- Ask students which were their favorite recipes that they've made so far this year, and decide on one or two they would like to recreate for the feast.
- See if a farmer has surplus crop that students can prepare for the feast.

- Alternatively, you might have students research celebratory foods around the world and vote on something to prepare. **(15 min.)**

**5. Setting Intentions:** Have students reflect on all that they've done and learned with FoodCorps. If students created a Full Potential Manifesto at the start of the year, have them review it and consider how they've been fulfilling the goals they set for living up to their full potential. **(15 min.)**

## SESSION 2: GRATITUDE FEAST

### ACTION STEPS

**1. Welcoming Guests to the Gratitude Feast:**

Once all invitations are sent, decorations are made, and food is prepared, it is time for your Gratitude Feast! This is an informal gathering of community members who have supported your students' healthy eating throughout the year. During the Feast, welcome community members, and acknowledge them publicly for their contribution to a healthy school community. **(5 min.)**

**2. Giving Thanks:** Find some ways to acknowledge them, such as by having students

share goals they set in their Full Potential Manifestos at the beginning of the year and having them explain how the people here helped them reach those goals by growing, preparing, or providing them with healthy foods. They could do this in written thank-you cards or in short speeches. **(10 min.)**

**3. Feasting:** Have your students introduce the foods they've prepared, including information

on where things were grown and/or how they were prepared. Then invite guests to enjoy the food together! **(20–45 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What are you thankful for?*
- *What have you learned about preparing healthy food? What have you learned about growing food? What have you learned about making healthy food choices?*
- *What will you carry with you after this year?*

### Check for understanding

- *What goals did you set in your Full Potential Manifestos at the beginning of the year?*
- *How did the people at the Gratitude Feast help you reach those goals by growing, preparing, or providing you with healthy foods?*

## ADAPTATIONS

**Garden Setting:** Consider having your feast outside in the garden if the weather allows!

**At Home:** Have students discuss how they might translate this experience to eating at home. Who grows and prepares the food they eat outside of school, and how can they show their gratitude to these people?

## ACADEMIC CONNECTIONS

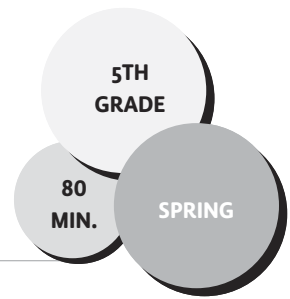
English Language Arts Common Core State Standards

### CCSS.ELA-LITERACY.SL.5.1

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 5 topics and texts*, building on others' ideas and expressing their own clearly.

# Rotting Away, Day by Day

**THEME:** EXPLORING THE ECOLOGY OF FOOD



Session 1: 45mins

Session 2: 35mins

## ESSENTIAL QUESTION

*What factors affect how quickly an object will decompose?*

## LEARNING OBJECTIVES

- ✓ Students will be able to explain the process of decomposition.
- ✓ Students will be able to make predictions about the rate of decomposition.

## CONCEPTS

characteristics    environmental factors  
organic matter    rate of decomposition

### *Engaging the Classroom Teacher*

- Prior to the lesson, schedule a day for the second session at least two weeks after the first.
- During Action Step 2, suggest that the teacher circulate through the garden to support students during the scavenger hunt.
- During Action Step 4, suggest that the teacher supervise students as they find an object to bury and fill out their worksheet.
- During Action Step 7, suggest that the teacher supervise students as they unearth their objects and fill out the second part of their worksheet.

## LESSON DESCRIPTION

In this lesson, students look for signs of decomposition in the garden, consider the various factors that influence the rate of decomposition, and then bury a specific object that they unearth a couple weeks later to observe. This lesson can be taught in conjunction with FoodCorps lessons Break it Down and The Nutrient Cycle.

## MATERIALS

- Pencils
- Magnifying glasses (optional)
- For each pair of students:
  - Decomposition Scavenger Hunt Worksheet (p. 600)
  - Observing Decomposition Worksheet (pp. 601-603)
  - Clipboard
- Popsicle sticks, paint stirrers, or found sticks for each student
- Permanent markers
- Masking tape
- Trowels
- Butcher paper or newspaper on which to place decomposed objects during Session 2
- Rocks to weigh down the butcher paper or newspaper
- Garden gloves for students (optional)

## PREPARATION

### Session 1

- › Create a model identification tag by wrapping a piece of masking tape with your name written in permanent marker around the top of a stick.
- › Find something in the compost pile or elsewhere that is intensely rotting and perhaps has an “ick” factor.
- › Identify beds or sites in the garden where students can dig freely to bury their objects.
- › Photocopy Observing Decomposition Worksheet for each student
- › Photocopy Decomposition Scavenger Hunt Worksheet for each pair of students

### Session 2

- › Place butcher paper or newspaper in one area of the garden, and weigh it down. This is where students will be able to gather around and sort their decomposed objects into a long spectrum.

#### FACTORS AFFECTING RATE OF DECOMPOSITION

##### Environmental

- Weather
- Temperature
- Moisture content in the soil
- Presence of decomposers

##### Characteristics of the Object

- Size of object
- Water content
- Whole vs. broken objects
- Surface area

## ACTION STEPS

### Session 1:

**1. Engage:** Gather students in a circle, and show them your decaying item from the garden. Ask, *Do you know what this used to be? What has happened to it? How long ago do you think it was living?* Explain, *Today we’re going to be*

*setting up decomposition observations in the garden, but first we’ll be going on a scavenger hunt throughout the garden to find elements and evidence of decomposition. (3 min.)*

**2. Scavenger Hunt:** Briefly review expectations and the strategy you’ll use to gather them back together. Put students into pairs, then pass out clipboards with pencils and the Decomposition Scavenger Hunt Worksheet. Explain how to engage in the Scavenger Hunt by trying to find the objects. Help individual students stay focused during the hunt by asking open-ended questions such as, *Where do you think you might find . . . ? (10 min.)*

**3. Explain:** Gather students back together, have them share a couple of their findings. Explain, *We can use a lot of different words to describe when something is decomposing. Rotting, decaying, and decomposing all mean when an organic substance, something that was once alive, breaks down to its basic parts. This process can release all the nutrients it held back to the earth. Ask, What do you think affects how quickly something breaks down or decomposes?* Discuss environmental factors such as weather, temperature, moisture in the soil, and the presence of decomposers, in addition to characteristics of the object itself, including size, water content, and how much surface area is exposed. *We’re each going to find an object in the garden that we’re curious to see decompose. We’ll bury our object, mark our spot, and then two weeks from now, dig it back up to see how it has decomposed. (5 min.)*

**4. Burying Objects:** Show students your sample location marker. Pass out materials so they can make one themselves. Be sure to outline

parameters for what objects they can use and where they can bury them. For example, you'll want to remind students that their object must've been alive at one point, and you may want to say that there has to be at least ten more of their object still on the plant or in the space. Then point out the beds or places they're allowed to dig. Finally, before you set students free to find their objects, demonstrate how to safely use trowels. **(12 min.)**

**5. Making Predictions:** Have students fill out the Observing Decomposition Worksheet, applying the information they considered during your discussion of factors to make a prediction of how much their object will have decomposed by your next session. Collect the worksheets for safekeeping until your next meeting. **(10 min.)**

### Session II:

**6. Review Worksheet:** Pass back students' Observing Decomposition Worksheets, and have them refresh their memories of their predictions. Ask, *Based on the weather we've had and how long it's been since we buried our objects, would anyone change their predictions?* Discuss and then pass out trowels for students to dig up their object. **(5 min.)**

**7. Unearthing Objects:** Remind students that they are scientists, and they'll be comparing their predictions to their direct observations, just like scientists do. Then have each student find their buried object and observe the changes, drawing and recording their observations on their worksheet. **(10 min.)**

**8. Making a Spectrum of Decomposition:** Explain, *Now you'll compare your objects to other classmates'. Once you're in your groups,*

*you'll create a spectrum of your objects, from least decomposed to most, or quickest rate of decomposition to slowest. Be prepared to explain to the class what patterns you observe in your groups.* Divide students into groups of six to eight. Have them line up their objects in a spectrum. Circulate, asking students to explain the rationale of their order. **(10 min.)**

**9. Whole Group Drawing Conclusions:** Have each group share their findings with the whole class. Ask, *What patterns did we notice? What factors seem to most affect how quickly something decomposes?* **(5 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

### Social and emotional learning

- *What was challenging about this activity? How did you work through it?*
- *What would you do differently in the future?*
- *Ask yourself: Was I safe and respectful in the garden today?*

### Check for understanding

- *What factors affect decomposition?*
- *Was your prediction supported by what you observed?*
- *If you were to do this experiment again, how would you set up the test differently?*

## ADAPTATIONS

**Mini-Experiment:** Two weeks or so prior to this class, bury a few different objects in the ground, such as a tomato, a carrot, and a pencil. Take a photo before covering them with soil. Then, to start this lesson, show students the photo, and dig up the objects. Use this "aha!"

moment to engage students with the concept of decomposition before they set up their own decomposition experiments.

**Planting with Compost Variation:** If you have finished compost in your garden, plant an appropriate crop in a bed where you add compost to only half the bed. Have students periodically check the bed to observe differences between germination, growth rate, and health.

**Indoor Worm Bin Variation:** If you have a worm bin, you can set up experiments to see which food scraps the worms prefer or to observe the rate of decomposition when you have a whole fruit versus a fruit that has been cut into small pieces to increase surface area.

**Music:** Sing “The FBI (Fungus, Bacteria, and Invertebrates)” by the Banana Slug String Band with your students.

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

### **NGSS LS2.A**

Interdependent Relationships in Ecosystems







The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able

to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem.



**DIRECTIONS:** Look for the objects listed below that are part of the decomposition process. When you find one, check the box!

# CAN YOU FIND...?


## DECOMPOSITION CLUES:

<p>A leaf that's been chewed on</p> <input type="checkbox"/> 	<p>A piece of rotting wood</p> <input type="checkbox"/> 	<p>Dried, brown leaves</p> <input type="checkbox"/> 
<p>A dead flower</p> <input type="checkbox"/> 	<p>A rotting fruit</p> <input type="checkbox"/> 	<p>Worm castings (hint: they look like tiny round balls of soil)</p> <input type="checkbox"/> 

## DECOMPOSERS:

<p>Fungus</p> <input type="checkbox"/> 	<p>An invertebrate, such as a worm, mite, or roly poly</p> <input type="checkbox"/> 	<p>Another decomposer?</p> <hr/> <input type="checkbox"/> ?
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## HUMANS HELPING DECOMPOSERS:

<p>A compost pile in the garden</p> <input type="checkbox"/> 	<p>What's the freshest item you found in the compost pile?</p> <hr/> <input type="checkbox"/> ?	<p>What's the oldest item you found in the compost pile?</p> <hr/> <input type="checkbox"/> ?
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Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Observing Decomposition

**Directions:** Fill in the following chart.

## Day 1

Object: \_\_\_\_\_

Date: \_\_\_\_\_

Draw a detailed picture of your object on the day you bury it:

## Factors Affecting Decomposition

### Environment:

What's the weather like today?

Sunny    Cloudy    Rainy    Other \_\_\_\_\_

\_\_\_\_\_

What was the soil like where you buried your object?

Rocky    Clay-Like    Hard    Sandy    Moist

Other \_\_\_\_\_

Did you see any decomposers?

Yes    No

What did you see? \_\_\_\_\_

\_\_\_\_\_

### Quality of your Object:

How big is your object? (estimate in centimeters or inches)

\_\_\_\_\_

How soft or hard is your object? Describe its texture.

\_\_\_\_\_

\_\_\_\_\_

Has your object already started breaking down? How do you know?

\_\_\_\_\_

\_\_\_\_\_

What do you predict your object will look like two weeks from now?

\_\_\_\_\_

\_\_\_\_\_

## Day 2

Object: \_\_\_\_\_

Date: \_\_\_\_\_

Draw a detailed picture of your object on the day you dig it up:

How has your object changed in size, weight, texture, smell, and color? How does this compare to your prediction?

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Is your object smaller than it was? Where do you think the missing matter or "stuff" has gone?

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