

**Farm to School: Highlighting Local Fruits & Vegetables**



# **standards based curriculum**



# standards based curriculum

Materials to inspire your USDA Fresh Fruit & Vegetable Program

### How to incorporate fruit and vegetable snacks into quick standards based classroom activities

Dear Educators,

Food is such a rich curriculum topic! Each one of us has direct, personal experiences, opinions, and knowledge about the food we consume. These connections make for high engagement, an essential ingredient in our recipe for success in learning.

These activities have been designed to be used with any fresh fruit or vegetable (FFV) snack. In fact, if you're serving fresh fruits and vegetables as part of the USDA Fresh Fruit and Vegetable Program, you'll find several quick activities to harvest more learning. There are countless other activities found on the internet that would allow you to delve deeper in any particular FFV of interest. Most of these activities can be adapted for use with different age groups.

We have provided you with a few multi-age activities designed to be:

- **Flexible:** these activities can be used with any FFV snack; some, like Produce Poetry or Eating With Our Senses, can be used repeatedly with any fruit or vegetable
- **Short and sweet:** quick activities, most under 20 minutes, and suggestions for extensions
- **Easy to set up using minimal supplies:** for ease of use, most activities use materials you probably already have in your classroom and require minimal prep
- **Standards-aligned:** to make best use of precious time, connections to standards are included

### A note on standards-alignment

There's good news and bad news when it comes to learning standards. The bad news is that when we consider the Common Core State Standards for Math and Language Arts, the Next Generation Science Standards, and all of the other curriculum requirements, such as state or local standards or the C3 for Social Studies, there seems an insurmountable (even ridiculous) amount of skills, content, and knowledge we need to teach and students need to learn.

Yet there's good news: when we look for the overlap, we find it. The Practices of Scientists and Engineers (1), the characteristics of students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language (2), and the Standards for Mathematical Practice (3) all suggest that we need to cultivate qualities such as good communication skills, the ability to reason, and skillful use of evidence in students. (Resources links on following page).

This is good news for us, because almost everything we do in the classroom provides opportunities for students to develop these skills and habits. When we use hands-on learning through food-based experiences, we expand these skills. When we aim for helping students develop these habits, we can feel confident that we are "standards aligned".

Happy snacking!  
VT-FEED

Thank you to the teachers, school nutrition professionals and staff who participated in the professional learning, piloting, and feedback of these activities at St. Albans City School, Richford Elementary School, Currier Memorial, and Cornwall School. Thank you to regional farm to school partners that supported this project including Northshire Grows and Northeast Healthy Roots Collaborative. Special thanks to Emily Hoyler, Sarah King, and Melissa Audette.

Many of these activities were adapted with permission from Shelburne Farms' *Project Seasons* and *Cultivating Joy and Wonder* found at <http://www.shelburnefarms.org/our-work/resources>.



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## Quick Classroom Activities to Use with the USDA's FFVP

Note: FFV = Fresh fruit or vegetable; use the item you are serving today in the activity

Activity	Primary Grades	Intermediate Grades	Middle Grades	ELA	Math	Science
Planting Seeds	●	●			●	
Eating the Rainbow	●	●		●		●
Eating with Our Senses	●	●	●			●
Produce Poetry	●	●	●	●		
Plant Parts We Eat	●	●	●			●
Accounting for Taste	●	●	●		●	
Rocks to Bones		●	●			●
Garden Architects		●	●		●	
Got Fresh? FFV PSAs		●	●	●		



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## JOKES

Courtesy of Laura Collaro

Icebreaker for all ages

**What do you call a sad asparagus?**

Despairagus

**What did the lemon say to the tomato in the salad?**

Give me a squeeze

**Knock Knock**

Who's there?

**Artichoke**

Artichoke who?

**Artichokes when he eats too fast!**

**How do you make a mango shake?**

Take it to a scary movie

**Why are bananas never lonely?**

Because they hang around in bunches

**What is a ghost favorite fruit?**

Boonanaa!

**Knock, knock**

Who's there?

**Yucca**

Yucca who?

**Yucca open the door, or yucca close the door, it's up to you.**

**What kind of beans can't grow in a garden?**

Jelly beans

**Why did the orange stop rolling down the hill?**

Because it ran out of juice

**What do you get when you cross broccoli with a vampire?**

Count Broccula!



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## FACT OR FICTION

This quick activity can get students moving while learning a few fun facts about today's FFV snack.

### Icebreaker for all ages

Time: 5-10 minutes

### Before you begin...

- Locate a few fun facts about today's FFV snack from the "Fruit and Vegetable Facts" section of this resource or:
  - <http://lancaster.unl.edu/nep/fruitveggie.shtml>,
  - <https://snaped.fns.usda.gov/resource-library/foods/fruits-and-vegetables>
  - <http://childnutrition.ncpublicschools.gov/information-resources/nutrition-education/fruits-and-vegetables/fruit-and-vegetable-fact-sheets>
- Create a few fictitious-yet-realistic "facts" about today's FFV snack.
- Decide how students will indicate their guess. Options may include:
  - Standing up/remaining seated
  - Moving to different locations in the room
  - Using body language or gestures
  - Student-generated idea

### Instructions

1. Explain to students that you will test their knowledge with a game of Fact or Fiction. Explain how they will indicate their guess.
2. Randomize the order of your true and false facts. Read the first "fact" and have students indicate whether they think it's true or false.
3. If time allows, ask students for evidence that supports their guess.
4. Reveal the answer.
5. Repeat with the remaining facts as time allows.



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## PLANTING SEEDS

Students practice their measuring (and multiplication) skills to plan and prepare seeds for planting by making seed tape that can be saved and then later directly planted in the ground.

### Primary & Intermediate Grades

Time: 30 minutes

### Before you begin...

#### Gather materials

- FFV snack
- Roll of toilet paper
- Markers
- Rulers (optional, depending on skills you want students to develop)
- Common Seeds Spacing Chart from High Mowing Seeds found here: <https://www.highmowingseeds.com/pub/media/wysiwyg/pdf/2017%20Planting%20Chart.pdf>
- Packets of seeds (ideally from the FFV you are tasting, or carrot, beet or other seeds), enough so each student can “plant” at least 5-10 seeds
- Paste (made with flour and water in a ratio of 2:1, such as 2T flour to 1T water - you don't want to paste to be too watery or it will begin the seed germination process)
- Baggies (for students to take home their seed tapes)
- Fun facts & information about FFV

### Instructions

1. Distribute today's FFV snack and allow students to eat it while you teach the mini-lesson.
2. Ask students who has gardened. Invite students to share some of the activities they have done in the garden (such planting, weeding, harvesting, tasting, digging, etc.).
3. Bring students' attention to the practice of planting seeds. Ask what they know about how this process works. Talk about plants' needs for sun, water, air, soil, and space. Lead students to think about spacing of seeds and the need for space so the plant can grow.



## PLANTING SEEDS CONT...

4. Explain that today students will use their measurement skills to create seed tape, which can be planted directly in the garden. If you are using rulers, review with students how to use a ruler.
5. Show students the seed packet. Invite a student to locate the plant spacing information, or show students if they do not know where to locate this information. On your board, draw a long rectangle. Invite a student to use a ruler to show you how mark dots at that spacing. For example if you are using carrot seeds, have the student make a dot every 1" (1 ½", or 2"). To raise the level of challenge, have student mark seeds spacing incrementally at 1 ½" (1 ½", 3", 4 ½", etc.). If your students are familiar with multiplication, have them calculate how many seeds would fit in 1', etc.
6. Show students the toilet paper. Explain that today you will be using this biodegradable paper for a different use! Tear off a strip of paper (1' -2') and show students how to fold it in half lengthwise and lightly crease it. Then unfold it.
7. Distribute materials. Show students how to measure and mark the spacing on the toilet paper. Then, show students how to use a small dab of paste, topped with a seed.
8. Once students have finished their seed tapes, allow them to dry completely before rolling them up and placing them in baggies to store until planting time.

### Extension

Follow up this activity with a trip to the school garden to plant your seed tapes. Keep track of the number of seeds on the tape, the number that germinate, and the number that grow and explore ratios and yield.

### Standards Alignment

#### CCSS.MATH.MD.A Measure lengths

#### CCSS Math Practices

- MP1. Make sense of problems and persevere in solving them.
- MP4. Model with mathematics.
- MP5. Use appropriate tools strategically.
- MP6. Attend to precision.
- MP7. Look for and make use of structure.
- MP8. Look for and express regularity in repeated reasoning.



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## EATING THE RAINBOW

Through creating an Eat the Rainbow booklet, students will connect colorful produce to healthy eating habits.

**K-2: Primary & Intermediate Grades**

**Time: 30 minutes**

**Before you begin...**

### Gather materials

- FFV snack, including example of whole item
- Whiteboard or chart paper listing the colors and their corresponding health benefits (see chart below)
- Folded Paper Booklet (instructions here: <http://www.wikihow.com/Make-a-Booklet-from-Paper>)
- Markers and writing utensils for each student
- Fun facts & information about FFV

### Instructions

1. Distribute today's FFV snack and allow students to eat it while you teach the mini-lesson.
2. Begin by inviting students to share their favorite FFV. Capture their idea on the board, sorting into columns by color (but don't include column headings just yet).
3. Explain that today you will be exploring the rainbow of FFVs.
4. Write the column headings on the board: Red, Yellow/Orange, Green, Blue/Purple, White/Brown. Invite students to brainstorm FFVs that fall into these color categories and write them on the board.





## EATING THE RAINBOW CONT...

5. Introduce the word **nutrient** (substance that plants, animals, and people need to live and grow). Explain that different plants have different nutrients that we need to be healthy.
6. Reveal and explain the chart that explains the connections between colors and health benefits. Explain that it's important to eat a variety of different (colored) fruits and vegetables for optimum health.
7. Explain that students will make a mini-book today to remind themselves to Eat the Rainbow.
8. Distribute mini-booklets. Students can title their books 'Eat the Rainbow' and make one page per color category. Students will write and illustrate their book. You can vary the amount of writing per page depending on your students' skill level and your instructional goals. Ideally, each page names the color, explains the health benefits, and lists an example. Such as, "Red fruit and vegetables, like tomatoes, help keep our hearts and brains healthy." or "Eat red for your heart and head."  
Note: If you are pressed for time, students could each pick a color and make just one page or poster for that particular color.
9. Create time for students to share: partner shares, share one page, etc.

**Fruits and vegetables that are the colors below generally benefit specific areas of the body**

Red	Heart, head (memory)
Yellow/Orange	Heart, eyes, immune system
Green	Eyes, bones, teeth
Blue/Purple	Head (memory)
White/Brown	Heart



# EATING THE RAINBOW CONT...

## Extension

- Taste the Rainbow Sample Stations: provide samples of produce of each color
- Read
  - *Eating the Rainbow: Fruits and Vegetables from A-Z* by Lois Ehlert
  - *Growing Colors* by Bruce McMillan
- Research in more depth the health benefits of each color, some resources can be found here:
  - <http://myhealthydish.com/health-benefits-of-eating-a-rainbow/>
  - <http://www.onegreenplanet.org/natural-health/eating-the-rainbow-why-eat-a-variety-of-colorful-fruits-and-vegetables/>
  - <http://recipes.howstuffworks.com/fresh-ideas/healthy-dinners/health-benefits-of-fruits-and-vegetables-ga1.htm>

## Standards Alignment

### CCSS.ELA-LITERACY.CCRA.W.2

Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.



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## EATING WITH OUR SENSES

Cultivating mindfulness — or paying attention in the present moment — will help students connect with their senses and develop an appreciation for all that was involved in bringing this snack to their hands.

### All Grades

Time: 15 minutes

### Before you begin...

Gather a FFV snacks, including an example of the whole item

### Instructions

1. Circle up with students in a rug or meeting area. Explain that today students will be using their five senses to explore today's FFV snack.
2. Ask students to review the five senses.
3. Show students the whole FFV item. Ask them to identify the item. Ask students to think about where this item came from. Invite them to dig deeper, guiding them back to list the plant's need: soil, space, air, sun, and rain.
4. Distribute FFV to students, asking them to hold it in their hands without tasting it yet.
5. From the time the seed was planted to it's being place in their hand, invite students to think about all the people that may have been involved in bringing this snack to their hands.
6. Progress through each of the senses, excluding taste, inviting students to share their observations about what the FFV item looks, sounds, feels, and smells like.
7. Finally, tell students to place the food into their mouth. Before they begin chewing, ask them to notice texture, flavor, and the sensations happening in their mouths. Instruct students to begin chewing slowly, paying careful attention to the experience.
8. Close by inviting students to share what the experience of mindfully eating was like for them.

# EATING WITH OUR SENSES CONT...

## Extension

- Write students' observations on the whiteboard or chart paper and use them to write poetry (see Produce Poetry) or do a word sort for parts of speech, etc.
- Students can create a map of the journey the FFV item took to reach them.

## Standards Alignment

### Crosscutting Concepts

- Structure & Function
- System & System Models

### Disciplinary Core Idea

- Life Science

### Scientific And Engineering Practices

- Asking Questions (for science)
- Analyzing and Interpreting Data
- Constructing Explanations (for science)

### K-LS1-1

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

### 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.





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## PRODUCE POETRY

Inspired by today's FFV snack, students write FFV-themed Haikus.

**Grades 3-5**

**Time: 20 minutes**

### Before you begin...

- Decide on an ELA learning objective. This lesson is written to explore Haiku format with students, but many other language aspects could be used. You could focus on:
  - Parts of speech: adjectives
  - Figurative Language: metaphor, simile
  - Poetry Forms: Haiku, limerick, ode, free verse
- **Gather materials**
  - FFV snack, including example of whole item
  - Whiteboard or chart paper
  - Paper and writing utensil for each student
  - Fun facts and information about FFV

### Instructions

1. Write 'Haiku' on the whiteboard, ask students if they are familiar with this type of poetry. Explain that a Haiku is Japanese form of poetry, consisting of 17 syllables broken up into a 5/7/5 pattern.
2. Share examples of Haikus and clap the syllables out with students. Ask students what else they notice about these sparse poems (no rhyming necessary, kind of like a broken up sentence, short, no title, etc.). Clarify any misunderstandings.
3. Explain that you will be writing Haikus about today's FFV snack. Hold up example of the whole item. Ask if anyone knows what it is called. Write the FFV name on the whiteboard.
4. Create a word bank by asking students to use their powers of observation to describe the FFV and list their words on the board.



## PRODUCE POETRY CONT...

5. Distribute their FFV snack. Ask students to examine the produce with four of their senses (hold off on tasting), and continue to add to the word bank. Then, taste the snack and add observations to the word bank.
6. As students eat, write a Haiku together. Use the words in your word bank (these words can get students started, but make sure they know they can include other words, too). Model how to use your fingers to count syllables, and how to break lines in the middle of a phrase to adhere to the format.
7. Tell students to begin writing a Haiku of their own about the FFV snack. Students may write more than one if time allows.
8. Ask students to share their Haikus. If you are short on time, have students partner share; if you have more time, invite a few students to share with the whole group.

### Extension

Students can publish their Haikus and illustrate their finished pieces.

### Examples

Glorious maroon  
Beets shake dirt from hairy roots  
Sweet, earthy rubies

Are they forests of trees,  
Or little flowers unbloomed?  
Broccoli you're mine

Orange spike, lacey  
tops, super power vision  
Eat carrots daily

### Standards Alignment

#### CCSS Anchor Standards

- **CCSS.ELA-LITERACY.CCRA.L.1**

Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. (Parts of Speech)

- **CCSS.ELA-LITERACY.CCRA.L.3**

Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening. (Parts of Speech, word choice/precision of language)

- **CCSS.ELA-LITERACY.CCRA.L.5**

Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. (Figurative Language)



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## PLANT PARTS WE EAT

Through recall and reasoning, students will explore plant structures as they identify the different plant parts we eat and develop theories about the functions of these structures.

**Grades 3-5 (with modifications)**

**Time: 20 minutes**

### Before you begin...

#### • Gather materials

- FFV snack, including example of whole item
  - Index cards with one edible plant part (see table) written on it, at least one per student
  - Fruit and vegetable cards from The Center for Ecoliteracy to sort. Find them here: [https://www.ecoliteracy.org/sites/default/files/uploads/CEL\\_nutrition\\_education\\_cards\\_eng.pdf](https://www.ecoliteracy.org/sites/default/files/uploads/CEL_nutrition_education_cards_eng.pdf)
  - Fun facts & information about FFV
- Post signs for each plant part around the room (roots, stem, leaves, flowers, fruit, seeds)

### Instructions

1. Invite students to think about a favorite plant food (try to avoid saying fruit or vegetable, as the word 'fruit' gives away the plant part). Ask a few students share their favorite.
2. Ask students to imagine what part of the the plant this food comes from. Review the plant structures we eat: roots, stems, leaves, flowers, fruits, seeds. Ask students to partner share their favorite and what part of the plant they think it comes from.
3. Explain that students will each get a card with a plant part we eat on it. Their job will be to evaluate what part of the plant this from comes from and move to that sign. Once everyone has sorted themselves, students will take turns sharing their plant part and their reasoning and evidence with the others in their group. Discuss what to do if students disagree on the plant part or function. Then, the group will discuss the function of that particular plant structure and get ready to share their ideas with the group (feel free to omit this second step if you are working with students for whom this would be too challenging and instead give them this information during the sharing time).



## PLANT PARTS WE EAT CONT...

4. Distribute the cards and invite a student to recap the directions for the group. Then let students begin the sort.
5. Once students are sorted, invite them to begin their discussion. Circulate as students are working. Remind students to transition to discussing the function of their plant part and pick a reporter to share out.
6. When group is ready, invite each group to share out. Depending on time constraints and level of risk desired, you can have each student share their food item, plant part, and evidence. Some are trickier than others! As a group, share ideas on the function of their plant part. Add, clarify or correct as needed.
7. Close by asking students if there were any surprises in today's activity.

Structure	Function	Edible Examples
Roots	Take in water and nutrients (minerals) from the soil	Beets, carrots, radishes, turnips, rutabagas, parsnips
Stem	Transfer water and nutrients to the plant, transfer energy created in the leaves to the roots, hold the plant upright	Asparagus, rhubarb, broccoli stem, sugar cane, potato (stem tuber)
Leaves	Take in solar energy to create food for the plant (photosynthesis)	Spinach, lettuce, kale, chard, arugula
Flowers	First stage of plant reproduction (will create fruit/ seeds), attracts pollinators	Broccoli heads, cauliflower heads, artichokes
Fruit	Holds the seeds of the plant	Apples, pear, grapes, cherries, tomatoes, cucumbers, zucchini
Nut	Final stage of plant reproduction - can be planted to grow new plant (or eaten)	Pumpkin seeds, walnuts, almonds





# PLANT PARTS WE EAT CONT...

## Extension

- Read *Tops and Bottoms* by Janet Stevens
- Research other “Plant Parts We Eat” activities online to find a wealth of slideshows, videos, and activities

## Standards Alignment

### **Crosscutting Concepts**

- Structure & Function
- Systems & System Models

### **Disciplinary Core Idea**

- Life Science

### **Science & Engineering Practices**

1. Asking questions (for science)
4. Analyzing and interpreting data
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information



# standards based curriculum

Materials to inspire your USDA Fresh Fruit & Vegetable Program

## ACCOUNTING FOR TASTE

Students sample today's FFV snack, evaluate their current opinion, then collect and graph taste test data.

### Primary & Intermediate Grades

Time: 20 minutes

### Before you begin...

#### • Gather materials

- FFV snack, including example of whole item
- Whiteboard or chart paper
- Sticky Notes and writing utensil for each student
- Large grid graph paper, optional

### Instructions

1. Introduce today's FFV snack. Tell students that you will be conducting a taste test and collecting data to learn about your class's taste preferences.
2. Explain that students will taste today's snack, and then evaluate whether they
  - Love it
  - Like it
  - Don't like it yet

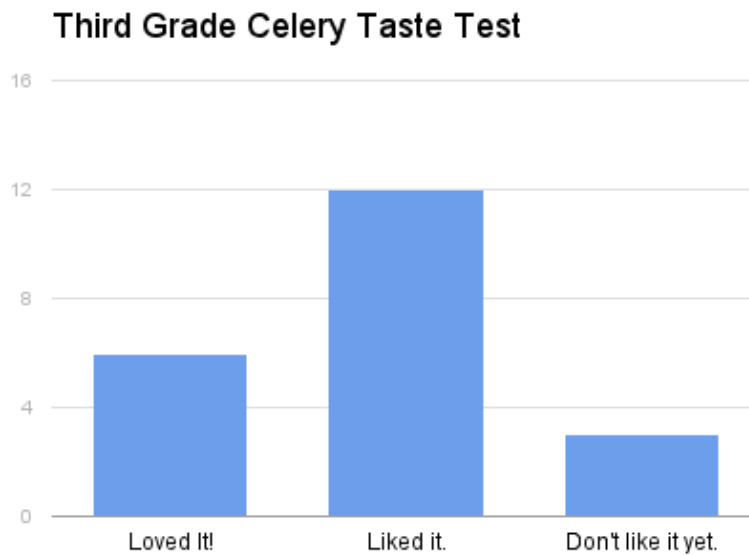
It can be helpful to explain to students that it often takes over 40 different instances of trying a new food to discover whether we like it or not! By qualifying their preference with "yet" you're supporting a growth mindset (and palate)!

3. Distribute sticky notes and today's FFV snack. Let students eat their snack. As they finish, ask them to privately evaluate if they love, like, or not yet this snack. Instruct them to write their preference on their sticky note. (Sometimes students are swayed by their peers opinions, so having them commit to a preference privately prevents biased data.)



## ACCOUNTING FOR TASTE CONT...

4. On your chart paper or whiteboard, draw an X and Y axis graph, where the X axis will represent the preferences, and the Y axis will show the number of students. If your students are unfamiliar with graphs of this sort, explain the axes, variable, labels, and increments. Invite students to actively create the graph with you.
5. Once your graph is set up and labeled, invite students to place their sticky note on the graph in the appropriate spot.
6. As the graph is completed, invite students to interpret the data. Ask how many people fell into each category. Depending on your math curriculum, you can involve fractions or percentages. This can be a great time to introduce fractions to younger students as well.
7. If time allows, students can use the graph paper to copy the graph, converting from sticky notes into true bar graphs.





# ACCOUNTING FOR TASTE CONT...

## Extension

- Collect data from several different FFV and compare and contrast the results.
- Have students write about what the data show.

## Standards Alignment

### CCSS.MATH.MD.B Represent & Interpret Data

#### CCSS Math Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.





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## ROCKS TO BONES

Through asking questions, constructing explanations, and engaging in arguments based on evidence, students will tell the story of how minerals in rocks moved through biogeochemical cycles to arrive in a vegetable and then into our bodies.

### Intermediate & Middle Grades

**Time: 20 minutes**

### Before you begin...

- Group students into small groups (3-5 students per group)
- **Gather materials**
  - FFV snack, including example of whole item
  - One set of story elements per group (see cards included), placed in an envelope (one set per envelope). Feel free to include a photo of today's FFV snack as the "plant" card in the story elements.

### Instructions

1. Tell students you have a riddle for them: how are bones connected to rocks? Explain that you have an activity that will help them solve this riddle.
2. Assign students to groups. You can reveal the contents of the envelopes to the whole group, or let each group discover the contents on their own. Explain that students need to put each element in the envelope in order that tells a story that can explain how bones are connected to rocks.
3. Let each group wrestle with the riddle, circulating as they work. Alternatively, you can do this activity as a whole group.
4. Once groups have arrived at a conclusion, let each group explain to the class how they solved. Explore differences. Once all groups have shared, let the groups reconvene to determine if they would like to revise their thinking and story.



## ROCKS TO BONES CONT...

5. Regroup and ask for any groups that revised their story to share their new thinking. All groups should eventually arrive at a story that looks something like this:

- a. The basis for all soil is rock (small rock)
- b. Rocks weather (rain) to become sand, clay, gravel (crushed rock)
- c. Sand, clay, gravel mix with organic matter (brown leaves)
- d. To become soil (soil)
- e. Soil is a habitat for many plants (growing vegetables)
- f. Plants grow by the energy of sunlight, through a process called photosynthesis (picture of sun)
- g. People eat plants (vegetable and person)
- h. Nutrients and minerals from plants are used by our bodies, including calcium in our bones (bones)

Placement of the sun and rain/water can vary depending on the way students choose to tell the story (since the sun drives the water cycle and winds which cause weathering). Rocks are made of minerals, and some contain calcite (calcium). When rocks break down, the calcite goes into the soil. The plants absorb the calcite in the soil. When we consume plant contains, the calcite, in turn, becomes part of our bodies. You can say we are made of rocks. We are what we eat!

### Extension

- Students can create a poster representing the processes.
- Students can identify the cycles, systems, and inputs/outputs present in the story.

### Standards Alignment

#### Crosscutting Concepts

- Structure & Function
- Systems & System Models

#### Disciplinary Core Idea

- Life Science
- Earth & Space Science

#### Science & Engineering Practices

1. Asking questions (for science)
2. Developing and using models
4. Analyzing and interpreting data
6. Constructing explanations (for science)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information



# ROCKS TO BONES CONT...





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## GARDEN ARCHITECTS

This two session activity asks students to calculate plant spacing using square feet and inches in part one, and then to design and plot a garden in part two.

### Intermediate & Middle Grades

Time: Two 20 minute sessions

### Before you begin...

#### Gather materials

- Packet of seeds
- Graph paper
- Plant Spacing Planner worksheet
- Paper and writing utensil for each student (colored pencils)

### Instructions

#### Part One

1. Invite a student to draw a representation of a garden on a whiteboard, alternatively show students an image of a garden planted in rows.
2. Ask students why they think gardens are planted in rows. Explain that most gardeners imitate larger-scale farmers, who have large fields and need to have access to all parts of the field for weeding and maintenance. Ask students what the drawbacks of this type of planting might be (lots of wasted space).
3. Show students a packet of seeds. Have a student locate and share the plant and row spacing information.
4. Tell students that a newer method of gardening has been developed for small scale gardeners. This method is called square foot gardening, and can be used in smaller garden beds. This method eliminates the row spacing, allowing plants to be spaced evenly using a grid.





## GARDEN ARCHITECTS CONT...

5. Explain that today students will design and plan a garden using this method. Show an example of how to plant using this method: draw or project a grid onto your whiteboard.

Outline a 12" x 12" square (1 square foot). Tell students that radishes need to be spaced 2" apart. Using that information, how many will fit in 1 square foot?

- Find the number of square inches in a square foot (144")
- Find the area needed for each plant by squaring the spacing (in this case  $2" \times 2" = 4"$ )
- Divide the # inches in a square foot (144") by the square inches needed per plant (in this case 4") to figure out how many plants per square foot. ( $144 / 4 = 36$  plants per square foot in this case)

6. Instruct students to find the rest of the values. Determine if you will work as a whole group, in pairs, or individually.

7. Review plant spacing (answers) before closing for the day.

### Part Two

1. Explain to students that they will be using the plant spacing they calculated in the prior session to plan and design a garden today. Review with students the advantages of using the square foot method.

2. Discuss with students the size of garden beds. In thinking about the size of a garden bed, ask students to identify considerations. You want students to understand that because you won't be using rows, you need to be able to reach all plants from the edges of the garden, so the maximum width of a garden bed should be no more than 4', ideally 3', leaving 2' between beds.

3. Tell students they will be designing a garden that is 12' x 12' (feel free to adjust this number). They can decide how many beds will fit into this garden, using the guidelines given (2' between beds, beds no wider than 4'). They will also be deciding what to plant in those beds using the spacing guidelines they calculated. **The objective is to maximize space, and leave no useable space fallow** (unplanted).

4. Have students share their work.



# GARDEN ARCHITECTS CONT...

## Extension

Explore some of these Square Foot Gardening resources:

- <http://www.mysquarefootgarden.net/plant-spacing/>
- <http://www.gardenality.com/Articles/687/Resources/Calculations/How-To-Calculate-Plants-Per-Square-Foot/default.html>

This online tool by Gardener's Supply allows users to design a square foot garden online:

- <http://www.gardeners.com/on/demandware.store/Sites-Gardeners-Site/default/KGP-Design>

## Standards Alignment

**CCSS.MATH.MD.A Measurement & Data**

**CCSS.MATH..G.A.1 Geometry & Area**

**CCSS Math Practices**

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.



# GARDEN ARCHITECTS CONT...

## Plant Spacing Planner

### Formula

- 1 square foot = \_\_\_\_\_ inches
- Square the spacing between plants to determine the total square inches needed per plant, enter those values in Column 3
- Divide the total inches in a square foot by the total inches needed per plant to determine number of plants per square foot, enter those values in Column 4
- You can't plant half of a plant, so round down when faced with a remainder
- Challenge: For plants requiring more than 12", determine how many square feet would be needed per plant

Plant Variety	Spacing between Plants	Square Inches Needed per Plant	Number of Plants per Square Foot
Radishes	2"		
Carrots	3"		
Beets, Turnips	4"		
Lettuce	8"		
Peppers, Potatoes	12"		

CHALLENGE: plants requiring more than 1 square foot per plant

Plant Variety	Spacing between Plants	Square Inches Needed per Plant	Number of Plants per Square Foot
Cucumber, Broccoli, Corn	18"		
Tomato, Watermelon, Zucchini	24"		



# GARDEN ARCHITECTS CONT...

## Answer Key

Plant Variety	Spacing between Plants	Square Inches Needed per Plant	Number of Plants per Square Foot
Radishes	2"	4 square inches	36 plants
Carrots	3"	9 square inches	16 plants
Beets, Turnips	4"	16 square inches	9 plants
Lettuce	8"	64 square inches	2 plants
Peppers, Potatoes	12"	144 square inches	1 plant
Cucumber, Broccoli, Corn	18"	324 square inches	4 plants per 9 square feet
Tomato, Watermelon, Zucchini	24"	576 square inches	1 plant per 4 square feet



## GOT FRESH? FFVP PSA

By crafting a Public Service Announcement (PSA) urging younger students to eat a healthy diet, students hone their research and presentation skills.

### Intermediate & Middle Grades

Time: 30+ minutes

### Before you begin...

#### Decide on a format

- Poster or slideshow: students will use computers or create by hand
- Performance: students will draft, practice, and present a PSA
- Consider if all students will create their PSA for the same FFV or will have choice

#### Gather materials

- FFV snack, including example of whole item
- Computers, paper, art supplies, or props
- Information about FFVs from this book; others can be found online, such as:
  - <http://lancaster.unl.edu/nep/fruitveggie.shtml>, <https://snaped.fns.usda.gov/resource-library/foods/fruits-and-vegetables>, and
  - <http://childnutrition.ncpublicschools.gov/information-resources/nutrition-education/fruits-and-vegetables/fruit-and-vegetable-fact-sheets>
- Alternatively, students can research online to find this information

### Instructions

1. Ask students to name some reasons that it's important to make healthy food choices. List these on the board. Ask for some examples of healthy foods, list these.
2. Inquire as to if students know what a Public Service Announcement (PSA) is. Discuss that these are media texts designed to teach people about about something that will improve their quality of life.

# GOT FRESH? FFVP PSA CONT...

3. Explain that students will be creating a PSA to help younger children make healthy nutrition choices. Discuss the concept of target audiences and how to reach a target audience. For example, considering using strategies and information that will appeal to the target. Discuss and list how you might reach your target audience (for example, young children might like superheroes, not too many long words, funny, bright colors, etc.). Feel free to change the target audience or assign different target audiences.
4. Discuss other information students will need to make a successful PSA. Will they need health or nutrition information? Nutrition facts? Statistics? Discuss how to research this information. If you are assigning specific FFV or target audiences, do so.
5. Let students create their PSAs. Leave time for students to share their work with each other.

## Extension

- Let these PSAs be a rough draft and have students polish and publish.
- Have students share their PSAs with their target audience.

## Standards Alignment

### CCSS.ELA-LITERACY.CCRA.W.2

Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

### CCSS.ELA-LITERACY.CCRA.W.6

Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

### CCSS.ELA-LITERACY.CCRA.SL.2

Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

