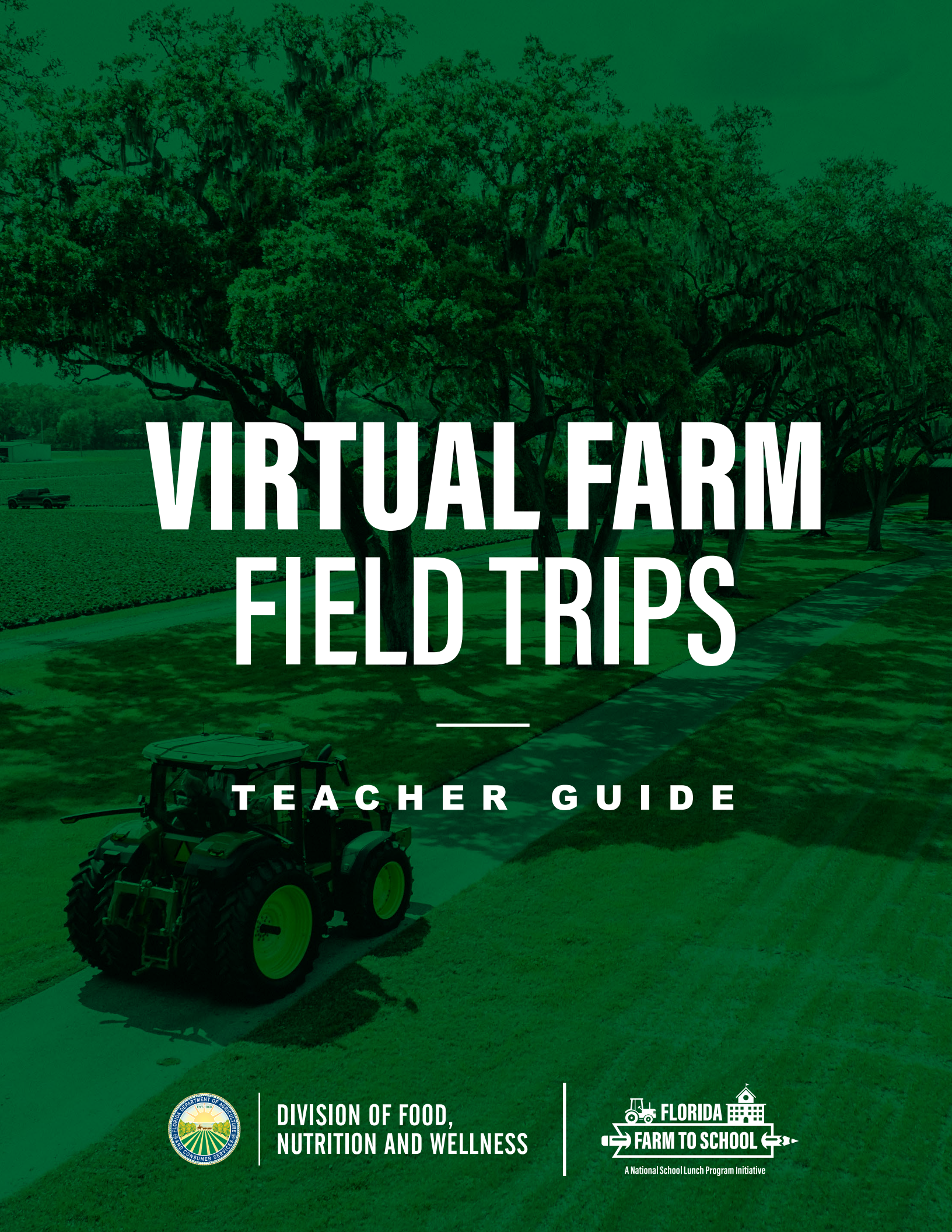

VIRTUAL FARM FIELD TRIPS

TEACHER GUIDE

DIVISION OF FOOD, NUTRITION AND WELLNESS

FLORIDA FARM TO SCHOOL

A National School Lunch Program Initiative

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Dear Teacher,

Welcome to the Virtual Farm Field Trips project, part of the Florida Department of Agriculture and Consumer Services' Florida Farm to School initiative! Whether you are introducing students to Florida agriculture, building on a science or nutrition lesson, or simply looking for a new way to bring learning to life, Virtual Farm Field Trips make it easy to bring the farm into your classroom.

Through engaging videos and accompanying worksheets and activities, students in grades K–5 will virtually visit Florida farms, meet the people who grow their food and explore how some of Florida's fresh commodities are produced, prepared and distributed.

HOW TO USE THIS GUIDE

This Teacher Guide was designed with flexibility in mind. You don't need to use every resource or complete the curriculum from beginning to end. Start with a Virtual Farm Field Trip video for each lesson, then choose the activities and worksheets that best fit your students, your lesson plans and the time you have available.

Content is organized first by grade level and then by commodity. Within each section, you'll find:

YOU KNOW YOUR STUDENTS BEST

While we've organized content by grade level, we encourage you to review all the resources to decide which are the best fit for your students.

1. Classroom Guide

Start here for background on the featured commodity and farm, access to the corresponding Virtual Farm Field Trip video, suggested discussion questions and an overview of the Teaching Tools available for that lesson.

2. Guided Activities

Bring the field trip to life through hands-on learning, from taste tests and recipes to sensory exploration, science investigations and other activities. Be sure to review each activity in advance, as some require additional materials or preparation.

3. Student Worksheets and Answer Keys

Extend and reinforce learning through grade-appropriate worksheets. Select the worksheets that work best for your students and make copies as needed.

SHARE YOUR FIELD TRIP WITH US!

We'd love to see Virtual Farm Field Trips in action in your classroom! If you take photos during your field trip or activities, consider sharing them with us. Before photographing or sharing images of students, please send home the included Photo Consent Form and ensure you have the appropriate permissions. Then email your photos to InfoFNW@FDACS.gov along with the signed consent forms.

We hope these Virtual Farm Field Trips help your students make meaningful connections between the food they eat, the farmers who grow it and the role agriculture plays here in Florida.

Happy Field Tripping!

Jeremy Eason

JEREMY EASON
Chief, Bureau of Nutrition Education and Outreach
Division of Food, Nutrition and Wellness
Florida Department of Agriculture and Consumer Services

ACCESS VIRTUAL FARM FIELD TRIPS

Scan code or visit:
FarmToSchoolFL.com/FieldTrips

Hello, Parents and Guardians!

Is your child curious about the food they eat? Do you wish they were more interested in eating fruits and veggies? Well, you're in luck!

Your child's class is participating in Virtual Farm Field Trips through the Florida Farm to School initiative.

Using educational videos, hands-on activities and worksheets aligned with key learning standards, your child will explore Florida farms growing foods from cucumbers and sweet corn to strawberries, lettuce and green beans. Along the way, they'll learn all about agriculture, science and nutrition.

HOW YOU CAN SUPPORT

You can play an active role in your child's education by continuing the learning at home! Here's how:

1. Ask your child about their "field trip" experience, including what they learned about agriculture, science and nutrition, as well as any new foods they tried.
2. Try a recipe together at home using one of the Florida-grown foods they learned about. Children are more likely to be excited about trying food that they choose and help prepare.
3. If you have a free weekend, you can take the learning to another level by planting your own fruits or vegetables or by taking your child on an adventure to a local U-Pick farm!

PHOTO CONSENT

We'd love to share photos your student's teacher takes of their class enjoying the program to help spread the word.

If you're comfortable with your child being included, **please sign and return the photo consent form to your child's teacher.**

Thank you for partnering with us in your child's education and future. We look forward to hearing all about their Virtual Farm Field Trip experience!

Sincerely,

Jeremy Eason

JEREMY EASON
Chief, Bureau of Nutrition Education and Outreach
Division of Food, Nutrition and Wellness
Florida Department of Agriculture and Consumer Services

ACCESS VIRTUAL FARM FIELD TRIPS

Want to preview the Virtual Farm Field Trip videos or watch them again with your young learner at home?

Scan code or visit: *FarmToSchoolFL.com/FieldTrips*

PHOTO CONSENT FORM

As part of the Florida Farm to School Virtual Farm Field Trips project, we'd love to share photos of student(s) participating in classroom activities to highlight and spread the word about this initiative. If you're comfortable with your child being included in these photos, please review and sign the consent form below.

I, _____ (first and last name), for good and valuable consideration, the receipt of which is hereby acknowledged, hereby irrevocably authorize **The Florida Department of Agriculture and Consumer Services Division of Food, Nutrition and Wellness** and their partners in executing this initiative (**Moore**) to use photographs or video of myself, my organization and/or my property as granted by program participants and their legal guardians, and authorize clients, licensees, legal representatives and transferees to use and publish (with or without my name, company name, or with a fictitious name) video, photographs, pictures, portraits, or images herein described in any and all forms and media and in all manners including composite images or distorted representations, and the purposes of publicity, illustration, commercial art, advertising, videos, publishing (including publishing in electronic form on CDs or internet websites), for any product or services, or other lawful uses as may be determined by the videographer/photographer or studio named here. I further waive any and all rights to review or approve any uses of the images, videography, any written copy, or finished product.

Description of images: **Virtual Farm Field Trips Participation**

SIGNATURES

I am of full legal age and have read and fully understand the terms of this release.

MODEL

_____

Signature *(legal guardian if photo subject is under 18 years of age)*

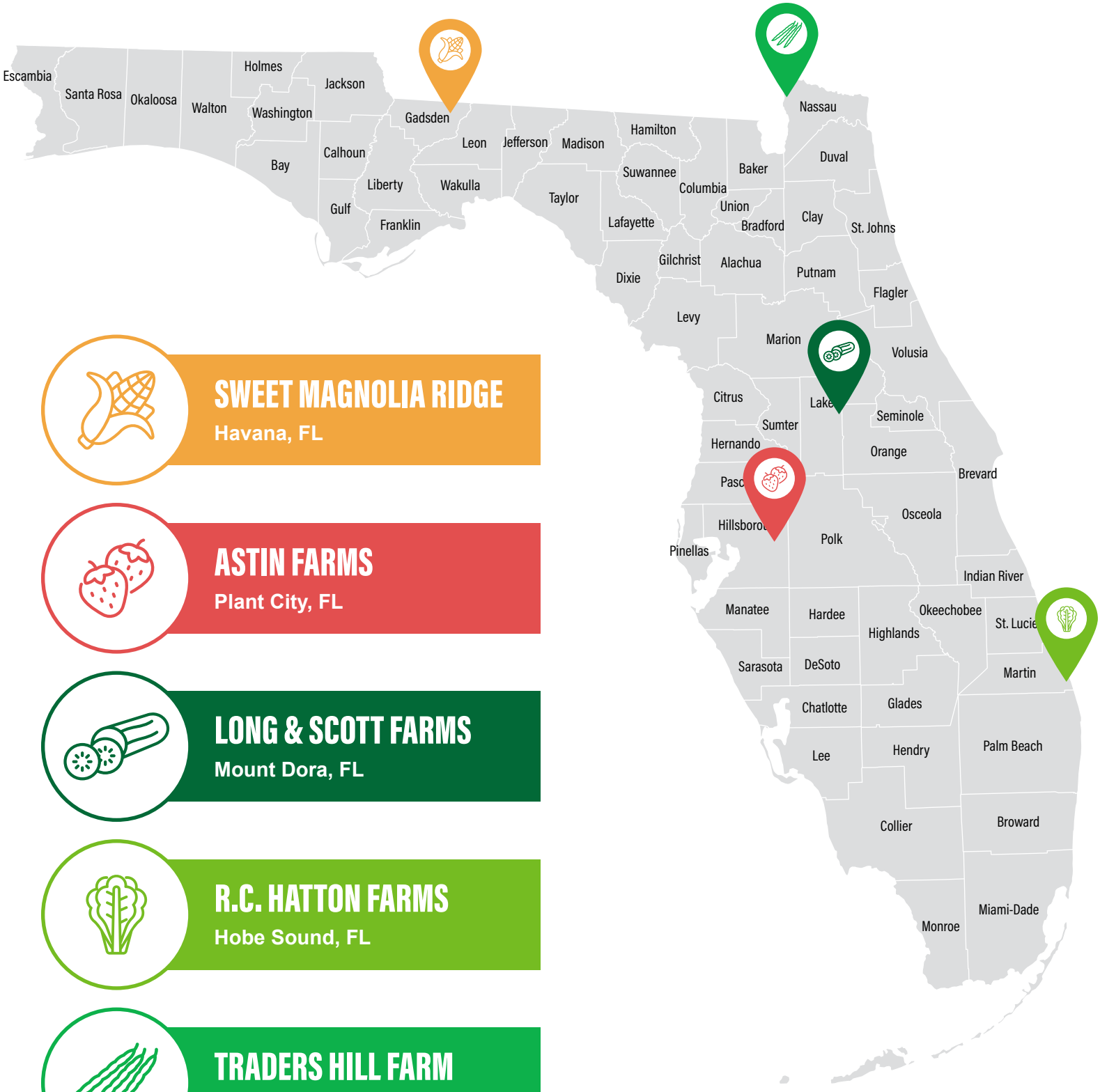
_____ _____

First and Last Name Date

WITNESS

_____ _____

Signature Date



SWEET MAGNOLIA RIDGE
Havana, FL

ASTIN FARMS
Plant City, FL

LONG & SCOTT FARMS
Mount Dora, FL

R.C. HATTON FARMS
Hobe Sound, FL

TRADERS HILL FARM
Hilliard, FL

LET'S LEARN ABOUT FLORIDA CUCUMBERS!

This Virtual Farm Field Trip unit is all about cucumbers. It begins with an informative 4-minute video, transporting students to Long and Scott Farms in Mount Dora, Florida. Your students will meet farmers Haley and Kirsten to learn how Florida cucumbers are planted, grown, harvested and distributed.

We encourage you to expand the learning experience using this section's worksheets and guided activities, including a taste test. You may choose to use all these resources or pick the ones best suited to your classroom.

ACCESS VIRTUAL FARM FIELD TRIP

Scan code or visit:
FarmToSchoolFL.com/FieldTrips

FLORIDA CUCUMBER FUN FACTS

- **There are two main kinds of cucumbers – they are called slicers and picklers. We eat slicers fresh and turn picklers into… pickles!**
- **Florida grows more slicer cucumbers than anywhere else in the United States.**
- **Cucumbers are more than 95% water. They are the perfect snack to keep you hydrated on a hot day.**
- **Have you ever heard someone say, "cool as a cucumber"? That's because the inside of a cucumber is 20 degrees cooler than the temperature around it.**
- **Cucumbers are high in nutrients like iron, calcium and vitamin B. Iron helps make blood, which carries the air we breathe to our muscles so we can move and grow. Calcium helps us grow strong bones and vitamin B turns the food we eat into energy.**

BEFORE YOU WATCH: DISCUSSION STARTERS

Get students thinking about agriculture, science and nutrition by asking questions such as:

- *Where do the fruits and vegetables you eat come from? How did they get there?*
- *What do plants need to grow?*
- *Let's name some vegetables. Can you think of any others that are green?*
- *Now, let's name some fruits. Which ones are green?*
- *Close your eyes and imagine you are at a farm. What do you see? Hear? Smell?*
- *Today, we'll be taking a virtual field trip to visit a Florida cucumber farm. What do you know about cucumbers?*

AFTER YOU WATCH: CHECK FOR UNDERSTANDING

Trivia Toss

Materials

- **3 buckets, boxes or similar containers**
- **2 palm-sized balls (enough for each team to have one)**

Divide students into two teams. Students work as a team to answer a review question about the video. Then, if they answer correctly, they get a chance to toss a ball into one of three buckets to get a prize for their team. Prizes might be a homework pass, free time, extra computer time or lunch in the classroom.

The video is full of information. You might want to watch it again after your discussion so students can listen for details they missed!

SUGGESTED QUESTIONS:

Find video comprehension questions, answers and video timestamps for finding those answers below.

- *Which flowers grow the cucumbers: male or female? **(female; 1:32)***
- *What big piece of equipment plants cucumbers in rows? **(tractor; 1:12)***

  Teacher Tip: Ask students if they've ever seen a tractor in real life and where. Ask what other machines they might find on a farm.

- *What insects are brought in to pollinate the cucumber plants? Hint: They fly! **(honeybees/ bumblebees; 1:47)***

  Teacher Tip: Ask students what else bees do. (Make honey!)

- *True or false: Each cucumber is picked by hand. **(True; 2:05)***
- *True or false: Cucumbers are cooler on the inside than on the outside. **(True; 1:23)***
- *True or false: Each plant is harvested (picked) one time. **(False; 2:30)***
- *True or false: Cucumbers are a nutritious choice to eat. **(True; 1:42)***

  Teacher Tip: Ask students to name other healthy foods.

- *True or false: Cucumbers do not grow in Florida. **(False; 0:06 / 2:34)***

USING THESE TEACHING TOOLS

Below is an overview and guide for using the teaching tools included in this section, including guided activities, recipes and worksheets. We've included the education standards each tool complements, materials needed for each activity, a brief overview of each tool and tips for building your lessons.

You can find each of these tools on the following pages, along with additional information and pointers.

GUIDED ACTIVITIES

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Video, Discussion Questions and Trivia Toss (in Classroom Guide) *On page 10*	Standard(s) Supported: SC.1.L.14.2, SC.K.L.14.3, SC.1.L.14.1, SC.1.L.16.1, HE.K.CH.3.1, HE.K.PHC.1.1, ELA.K.C.4.1	- 3 buckets, boxes or similar containers - 2 palm-sized balls (enough for each team to have one)	This activity gets students out of their seats as they respond to questions about the Virtual Farm Field Trip video.	
Cucumber Three Ways *On page 16*	Standard(s) Supported: HE.K.CH.3.1, HE.K.PHC.1.1, HE.1.PHC.1.1, SC.1.N.1.2	- Sliced cucumbers - Jar of pickles - Cucumber punch (see Cucumber Punch Recipe)	In this activity, you'll guide students through tasting cucumbers in three different forms – as fresh cucumbers, as pickles and in a cucumber punch.	Start by asking your school nutrition team if they can support you by acquiring and/or preparing the food items. Use this activity to introduce students to new, nutritious foods. Educate them on the nutritional differences between whole foods – like fresh cucumbers – and processed foods – like pickles.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Recipe: Cucumber Punch *On page 18*	Standard(s) Supported: SC.K.N.1.2, SC.1.N.1.2	- Cutting board - Knife - Clear pitcher - Wooden spoon (optional) *Adjust quantities based on class size:* - 6-7 cucumbers (sliced thin) - 6-8 limes and/or lemons (quartered) - 15-20 mint leaves (optional) - 8-9 cups (64-72 oz) drinking water - Ice (optional) - Small cups - Spoons	Use this recipe to prepare your own cucumber punch for the Cucumber Three Ways exercise.	You might demonstrate making a large batch of punch to share with your class or give each student a cup and ingredients to prepare their own.
Food Science: DIY Pickles *On page 19*	Standard(s) Supported: SC.K.N.1.2, SC.1.N.1.2	- Cutting board - Knife - 2 or more Mason jars - Mixing bowl - Spoon - Measuring cup - Measuring spoons - Refrigerator - Forks, plates and napkins for serving (optional) - 2 medium to large cucumbers - 1 cup water - 1 cup rice vinegar - 3 tablespoons maple syrup or sugar - 3 teaspoons salt - Freshly ground black pepper - 4 leafy sprigs of fresh dill - 4 cloves of fresh garlic - 1 bay leaf	Use this activity on its own or to prepare your own pickles for the Cucumber Three Ways activity. With this activity, you will teach students how to turn fresh cucumbers into pickles.	Start by asking your school nutrition team if they can support you by acquiring the food items. What's better than a science experiment you can eat? This activity connects young students with where their food comes from, showing them firsthand how cucumbers are processed to become pickles. It also introduces students to the idea that adding ingredients can change an item's properties.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Sense Explorers: Cucumber Edition *On page 21*	Standard(s) Supported: SC.K.L.14.1, SC.K.N.1.2, SC.1.L.14.1, HE.K.CH.3.1, HE.K.PHC.1.1, SC.1.N.1.2	- 1 cucumber slice per student	This activity encourages students to use their five senses to make observations about cucumbers.	You can also ask your school nutrition team to help provide food for this exercise! Use this activity to teach students how they can use their senses as tools. This activity will also help deepen students' familiarity with cucumbers as a fresh and nutritious food choice.

WORKSHEETS

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Cucumber Plant Needs *On page 22*	Standard(s) Supported: SC.K.L.14.1, SC.1.L.17.1	- Crayons, colored pencils or markers	This simple coloring sheet reinforces students' knowledge of the basic resources plants need to grow.	This tool complements life science lessons about plants.
Letter Practice *On page 23*	Standard(s) Supported: ELA.1.C.1.1	- Scissors - Glue - Writing instrument - Crayons, colored pencils or markers (optional)	This worksheet prompts students to practice writing the word "cucumber."	This lesson also presents an opportunity to practice sounding with students. Get kids out of their seats by asking them to make each of the letters in the word "cucumber" with their bodies! You might put them in groups to make the whole word or demonstrate and make each of the letters together as a class.
Parts of a Cucumber Plant *On page 24*	Standard(s) Supported: SC.K.L.14.1, SC.1.L.14.1, SC.1.L.14.2, ELA.1.F.1.3	- Scissors - Glue - Writing instrument - Crayons, colored pencils or markers	This worksheet asks students to cut out words naming parts of the cucumber plant and paste them in the appropriate spot. Students also have space to practice writing the words.	This worksheet complements life science lessons about parts of the plant. It also provides an opportunity to practice sounding and spelling common science terms.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
How Cucumbers Grow *On page 25*	Standard(s) Supported: SC.1.L.16.1, ELA.1.C.1.2	- Scissors - Glue - Crayons, colored pencils or markers	This worksheet invites students to cut and paste the basic stages of a cucumber's life cycle in the correct order.	This worksheet complements life science lessons about plant life cycles. It also encourages students to think critically about order of events. Try getting kids out of their seats by instructing them to pretend they are a seed, crouched in a ball. Then ask them to stand taller as they simulate the phases of the cucumber plant's growth.
Answer Key *On page 26*			See here for answers to each worksheet.	

CUCUMBER THREE WAYS

This group activity brings the field trip to life as students get the opportunity to taste cucumbers three ways: as fresh slices, as pickles and as an easy-to-make punch.

MATERIALS

Sliced cucumbers

Jar of pickles

Cucumber punch
(see recipe on following pages)

SUGGESTED QUESTIONS

Lead a discussion as your students try cucumbers three different ways. Questions like the following can help kids better connect with their food, think about their preferences and encourage them to make nutritious choices in the future.

Before the tasting:

1. *Have you tried cucumber before? What did you think?*
2. *If not, what do you think it will taste like?*
3. *Did you know pickles are made from cucumbers? Do you know how cucumbers get turned into pickles?*

As they try the fresh cucumbers:

1. *What do you think of the texture of the fresh cucumber? Is it crunchy or soft?*
2. *Do you like the smell of the cucumber? How would you describe it?*
3. *How would you feel about eating fresh cucumbers as a snack? Why? What might you eat them with?*

MAKE YOUR OWN PICKLES

For a bonus activity, make pickles together as a class! See the Guided Activity section for an easy recipe.

COLLABORATE WITH YOUR CAFETERIA

You might also consider partnering with your school nutrition team to obtain these food items and/or prepare a cucumber-themed dish for your taste test. Be sure to contact them ahead of time, discuss the support you will need and show gratitude for their collaboration!

As they try the pickles:

1. *How does the taste of the pickle compare to the fresh cucumber? Is it more sour or salty?*
2. *What do you think about the texture of the pickle compared to the fresh cucumber? Is it softer or crunchier?*
3. *Do you like the smell of the pickle? How would you describe it?*
4. *Have you had pickles before? If so, what do you usually eat them with? If not, would you like to try them again?*

As they try the punch (cucumber water):

1. *Can you taste the cucumber in the water? How strong is the flavor?*
2. *How does the flavor of cucumber water compare to regular water? Is it more refreshing?*
3. *Would you enjoy drinking cucumber water on a hot day? Why or why not?*
4. *Before today, did you know you could change the flavor of water by adding fruit like cucumbers? What other fruit might you add to water, and how might it change the flavor?*

TEACHER TIP:

You can also use this activity as a nutrition lesson for students. Explain how whole foods made of just one ingredient – like a fresh cucumber – are more nutritious than packaged, processed foods with many ingredients.

You can explain that food with lots of ingredients – like pickles – are like a big puzzle with many pieces, and some of those pieces might not be as healthy (like added sugar). The simple food with one ingredient is usually better for your body and helps you feel your best!

You might even pass around a jar of pickles to show the students the list of ingredients on the nutrition label. Then ask them where the fresh cucumber's ingredient list is. (There is none – because there's just one ingredient!)

CUCUMBER PUNCH RECIPE

CUCUMBER PUNCH

Estimated Servings: 100 oz, or (20) 5 oz cups

EQUIPMENT REQUIRED

- Cutting board
- Knife
- Clear pitcher
- Wooden spoon (optional)

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- 6-7 cucumbers (sliced thin)
- 6-8 limes and/or lemons (quartered)
- 15-20 mint leaves (optional)
- 8-9 cups (64-72 oz) drinking water
- Ice (optional)
- Small cups
- Spoons

DIRECTIONS

1. Slice cucumbers, limes and lemon.
2. Place sliced cucumbers, limes, lemons and mint into drinking cup. (*Optional: Lightly mash pieces using a wooden spoon to enhance taste.)*
3. Add water and ice cubes.
4. Enjoy!

You might demonstrate making a large batch of punch to share with your class or give each student a cup and ingredients to prepare their own.

FOOD SCIENCE: DIY PICKLES

Complete this recipe with your students for a fun science experiment they can eat!

SUGGESTED QUESTIONS

Below are discussion questions to ask your class before, during and after this DIY pickle experiment.

Before:

1. *Did you know pickles are made from cucumbers?*
2. *How do you think cucumbers get turned into pickles?*
3. *Have you tasted pickles before? What did you think?*
4. *If not, what do you imagine they taste like?*

During:

1. *What does a fresh cucumber taste like?*
2. *How do you think adding these ingredients will change the flavor of the cucumber?*
3. *How might adding these ingredients change the texture?*
4. *How might adding these ingredients change the smell?*

After:

1. *Does the pickle taste how you expected? Explain.*
2. *How does the taste of the pickle compare to fresh cucumber? Is it more sour or salty?*
3. *What do you think about the texture of the pickle compared to a fresh cucumber? Is it softer or crunchier?*
4. *Do you like the smell of the pickle? How would you describe it?*
5. *Have you had pickles before? If so, what do you usually eat them with? If not, would you like to try them again?*

COLLABORATE WITH YOUR CAFETERIA

Be sure to ask your school nutrition team if they can support you by providing food items!

When we pickle cucumbers, we put them in a special juice called brine, which is often made of water, salt and vinegar. When cucumbers sit in this juice for a long time, they turn into pickles.

This process – called pickling – helps keep cucumbers fresh for a long time. It also changes the texture, making cucumbers crunchier. Best of all, the cucumbers absorb the flavors from the brine, making them tangy!

EASY DIY PICKLES

EQUIPMENT REQUIRED

- Cutting board
- Knife
- 2 or more Mason jars
- Mixing bowl
- Spoon
- Measuring cup
- Measuring spoons
- Refrigerator
- Forks, plates and napkins for serving (optional)

MATERIALS AND INGREDIENTS

- 2 medium to large cucumbers (about 24 ounces total)
- 1 cup water (room temperature or cooler)
- 1 cup rice vinegar
- 3 tablespoons maple syrup or sugar
- 3 teaspoons salt
- 40 twists of freshly ground black pepper
- 4 leafy sprigs of fresh dill, roughly chopped (about ½ cup)
- 4 cloves garlic, peeled and smashed
- 1 bay leaf

DIRECTIONS

1. Slice the cucumbers into thin rounds, about 1/8-inch thick. Set aside.
2. In a liquid measuring cup or bowl, combine the water, vinegar, maple syrup, salt and black pepper. Stir until most of the salt has dissolved into the liquid, about 30 seconds to 1 minute. Set aside.
3. Place the cucumbers into a wide-mouth jar about 3 to 4 inches in diameter, tall enough to offer at least 1 inch of extra space on top.
4. Top the cucumbers with the dill and garlic. Tuck the bay leaf into the side of the jar. Pour all of the liquid over the cucumbers so they're fully submerged.
5. Cover and refrigerate for at least 1 hour. The flavor will continue to develop over the next couple of days. These pickles will keep for up to 3 weeks in the refrigerator.

SENSE EXPLORERS: CUCUMBER EDITION

This simple, hands-on activity invites students to use their five senses as tools. They will make observations about cucumbers, describe the fruit and compare their observations with their classmates.

TEACHER TIP: Be sure to ask your school nutrition team if they can support you by providing cucumbers!

WHAT YOU'LL NEED:

1 CUCUMBER SLICE PER STUDENT

Try to pick a variety of cucumbers – bumpy or smooth, short or long – to provide contrast.

Make sure to keep one cucumber whole to pass around the class.

Consider passing out magnifying glasses so children can observe closely!

ACTIVITY:

Invite your students to use each of their five senses to experience and make observations about cucumbers. Guide them through this activity, one sense at a time. Begin with broad, open-ended questions, followed by more specific questions, as outlined below.

SIGHT:

Look at the cucumber. Notice its green color and smooth skin. Is it long and thin or short and round? Now look with your magnifying glass. Do you notice anything new?

TOUCH:

Feel the cucumber with your fingers. How does it feel? Is it smooth or bumpy? Is it cool to the touch? Is it firm or soft? Is it heavy or light?

SMELL:

Smell the cucumber. What does it smell like? Does it have a fresh, mild scent? Does it remind you of something clean and crisp?

TASTE:

Take a small bite of the cucumber. How does it taste? Is the flavor strong or weak? Sweet or spicy? Juicy or dry? Soft or crunchy?

HEARING:

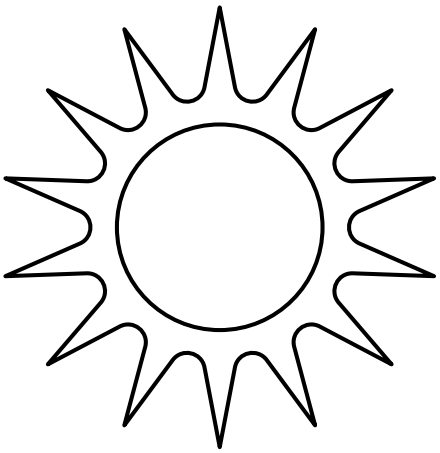
Listen to the sound the cucumber makes when you bite into it. Does it make a crisp, crunching sound?

NEED SOME QUIET TIME — AND A CUTE PHOTO? ***Have the students rest for several minutes with cucumber slices on their eyes! Cucumbers have a high water content and are naturally cool, which can help reduce puffiness as well as soothe and refresh the skin.***

Name _____ **Date** _____

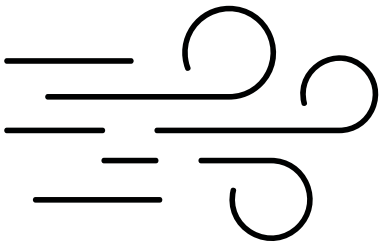
Cucumber Plant Needs

Directions: Color the pictures of what cucumbers need to grow.

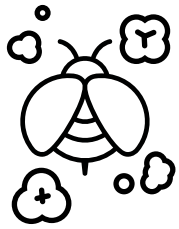


Sun

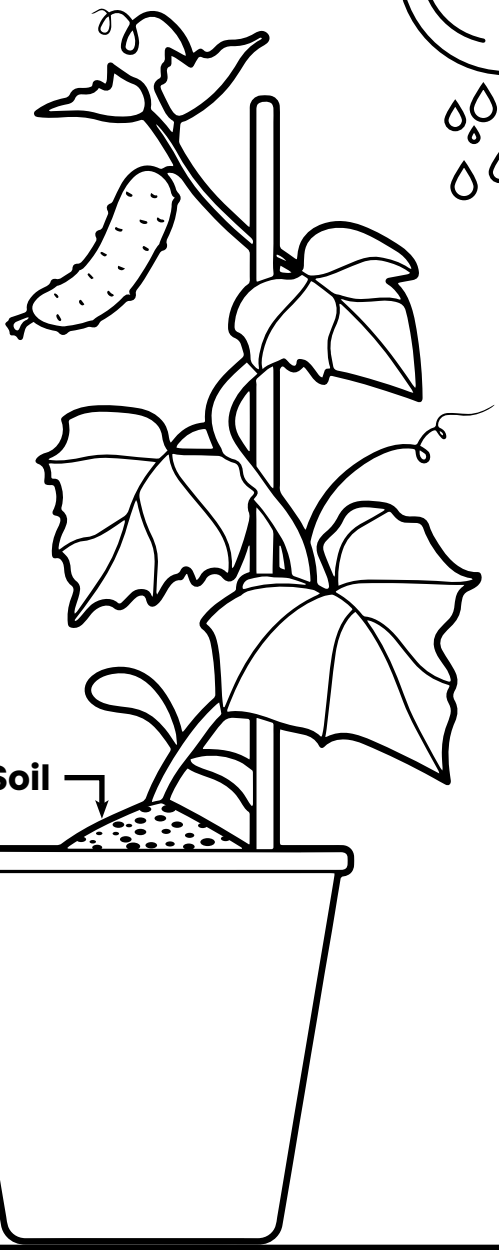
Water



Air



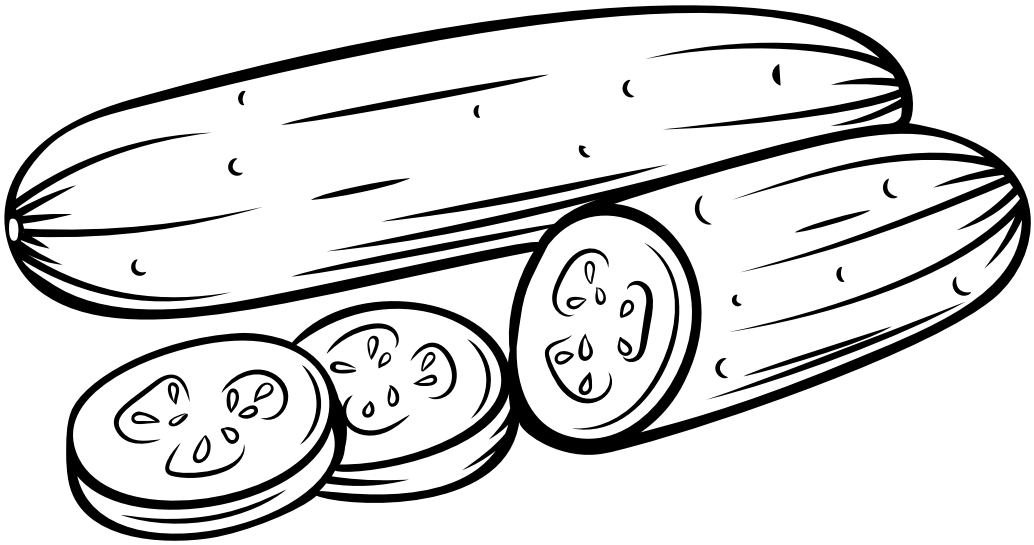
Pollination



Name _____ **Date** _____

Letter Practice

Directions: Follow the instructions below.



Cc is for

Trace it:

Cucumber

Write it:

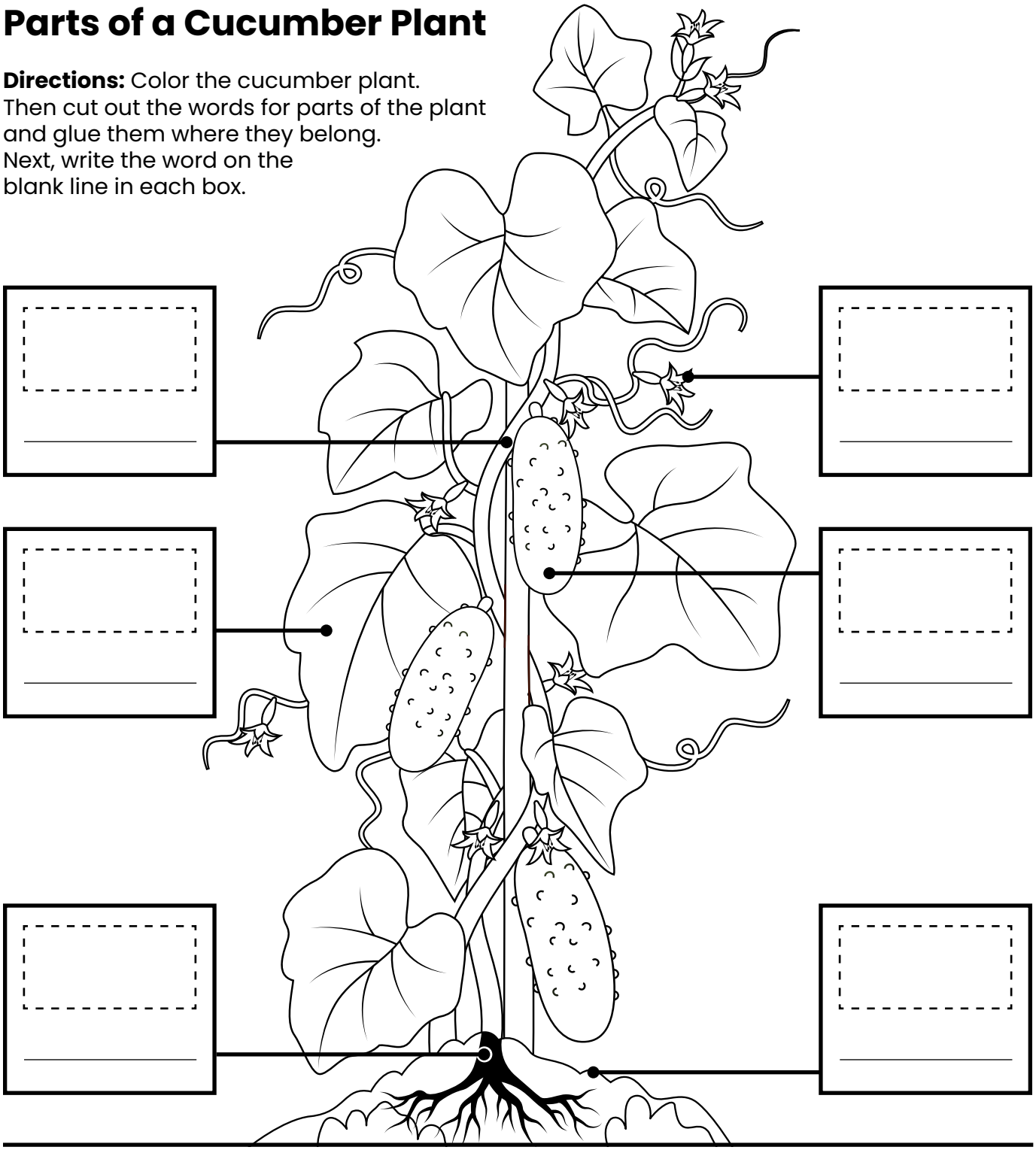
Cut out the letters and glue them in the correct order in the boxes above.

r b C m u u e c

Name _____ **Date** _____

Parts of a Cucumber Plant

Directions: Color the cucumber plant. Then cut out the words for parts of the plant and glue them where they belong. Next, write the word on the blank line in each box.



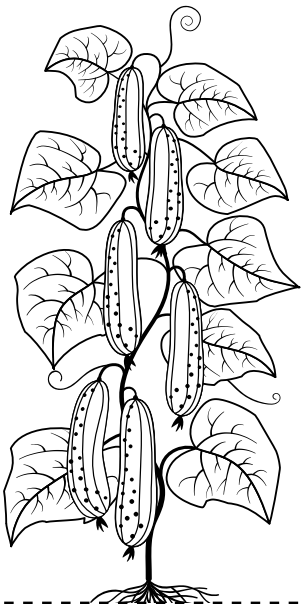
Leaf	Fruit	Stem	Flower	Roots	Soil

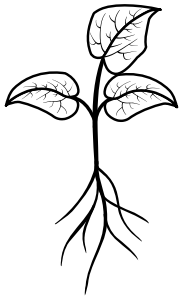
Name _____ **Date** _____

How Cucumbers Grow

Directions: Color, cut and paste the pictures in the correct order to show the life cycle of a cucumber.

1	2	3	4



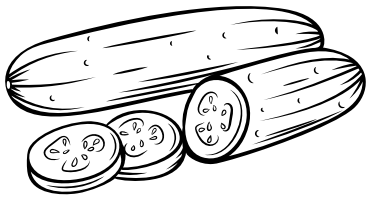


ANSWER KEY

Name _____ Date _____

Letter Practice

Directions: Follow the instructions below.



Cc is for

C u c u m b e r

Trace it: Cucumber

Write it: Cucumber

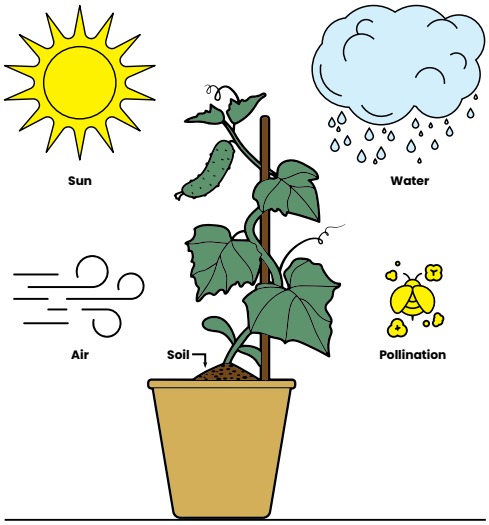
Cut out the letters and glue them in the correct order in the boxes above.

VIRTUAL FARM FIELD TRIPS
K-1 Worksheet
Cucumber

Name _____ Date _____

Cucumber Plants Need

Directions: Color the pictures of what cucumbers need to grow.

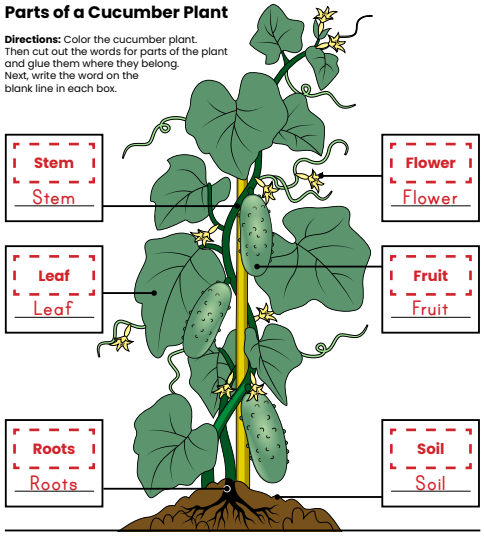


VIRTUAL FARM FIELD TRIPS
K-1 Worksheet
Cucumber

Name _____ Date _____

Parts of a Cucumber Plant

Directions: Color the cucumber plant. Then cut out the words for parts of the plant and glue them where they belong. Next, write the word on the blank line in each box.

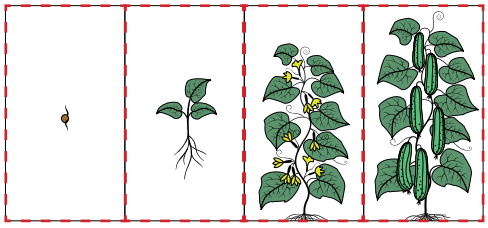


VIRTUAL FARM FIELD TRIPS
K-1 Worksheet
Cucumber

Name _____ Date _____

How Cucumbers Grow

Directions: Color, cut and paste the pictures in the correct order to show the life cycle of a cucumber.



LET'S LEARN ABOUT FLORIDA SWEET CORN!

This Virtual Farm Field Trip unit is all about sweet corn. It begins with an informative 4-minute video, transporting students to Sweet Magnolia Ridge in Havana, Florida. Your students will meet farmers Stephanie and Vincent to learn how Florida sweet corn is planted, grown, harvested and distributed.

We encourage you to expand the learning experience using this section's worksheets and guided activities, including a taste test. You may choose to use all these resources or pick the ones best suited to your classroom.

ACCESS VIRTUAL FARM FIELD TRIP

Scan code or visit:
FarmToSchoolFL.com/FieldTrips

FLORIDA SWEET CORN FUN FACTS

- Florida grows more sweet corn than anywhere else in the United States.
- Sweet corn is a great source of nutrients like vitamin C, which helps boost the immune system and keep us healthy. It is also high in fiber, which helps your tummy feel good.
- Every single strand of silk on an ear of corn has the potential to become a kernel. The average ear of corn has between 500 and 1,000 kernels!
- Corn is usually yellow, but it can come in lots of colors, like green, red and white.
- You probably think of corn as a vegetable, but it's actually a grain and fruit!
- The two most common kinds of corn are sweet corn and field corn, also called dent corn. Sweet corn is harvested early for its soft, sugary kernels – perfect for eating fresh. Dent corn is left to mature fully. Its starchy kernels are used in processed foods, like tortillas and cereal.

BEFORE YOU WATCH: DISCUSSION STARTERS

Get students thinking about agriculture, science and nutrition by asking questions such as:

- *How do you think fruits and vegetables grow?*
- *What kind of fruits or vegetables would you like to grow?*
- *Name some fruits and vegetables that you've tasted.*
- *Where do the fruits and vegetables you eat come from? How did they get there?*
- *How do fruits and vegetables help us stay healthy?*
- *Today, we'll be taking a virtual field trip to visit a Florida sweet corn farm. What do you know about sweet corn?*

AFTER YOU WATCH: CHECK FOR UNDERSTANDING

Trivia Toss

Materials

- **3 buckets, boxes or similar containers**
- **2 palm-sized balls (enough for each team to have one)**

Divide students into two teams. Students work as a team to answer a review question about the video. Then, if they answer correctly, they get a chance to toss a ball into one of three buckets to earn a prize for their team. Prizes might be a homework pass, free time, extra computer time or lunch in the classroom.

The video is full of information. You might want to watch it again after your discussion so students can listen for details they missed!

SUGGESTED QUESTIONS:

Find video comprehension questions, answers and video timestamps for finding those answers below.

- *What does the farmer have to do to the soil before they plant the corn seeds? **("harrow" the soil, which means breaking soil up to make it fluffy; 0:52)***
- *How many ears of corn does one corn plant produce? **(2-3 ears; 1:30)***
- *What three creatures are used to pollinate the plants? **(birds, bees and butterflies; 2:12)***

  Teacher Tip: Ask students how they get to the plants. (They fly!)
- *True or false: The process for growing sweet corn takes 2 to 3 months (or 60 to 90 days). **(True; 1:36)***

  Teacher Tip: Ask students how many days are in a month.
- *True or false: We get popcorn when the corn is picked early, when it's soft and sweet. **(False, popcorn comes from when the corn is hard; 1:38)***
- *True or false: Florida grows more sweet corn than anywhere else in the United States. **(True; 2:16)***
- *True or false: Florida has good weather to grow corn. **(True; 1:24)***

  Teacher Tip: Ask students to describe Florida's weather.
- *True or false: Each ear of corn is picked by hand. **(True; 2:36)***

USING THESE TEACHING TOOLS

Below is an overview and guide for using the teaching tools included in this section, including guided activities, recipes and worksheets. We've included the education standards each tool complements, materials needed for each activity, a brief overview of each tool and tips for building your lessons.

You can find each of these tools on the following pages, along with additional information and pointers.

GUIDED ACTIVITIES

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Video, Discussion Questions and Trivia Toss (in Classroom Guide) *On page 27*	Standard(s) Supported: SC.1.L.14.2, SC.K.L.14.3, SC.1.L.14.1, SC.1.L.16.1, HE.K.CH.3.1, HE.K.PHC.1.1, ELA.K.C.4.1	- 3 buckets, boxes or similar containers - 2 palm-sized balls (enough for each team to have one)	This activity gets students out of their seats as they respond to questions about the Virtual Farm Field Trip video.	
Corn Three Ways *On page 32*	Standard(s) Supported: HE.K.CH.3.1, HE.K.PHC.1.1, HE.1.PHC.1.1, SC.1.N.1.2	- Ear of sweet corn (uncooked) - Cooked corn on the cob (see recipe page) - Popcorn *See Guided Activity overview for a full list of alternate corn food ideas.*	In this activity, you'll guide students through tasting corn in three different forms – as fresh, uncooked corn, as cooked corn and as popcorn.	Start by asking your school nutrition team if they can support you by acquiring and/or preparing the food items. Use this activity to introduce students to new, nutritious foods. Educate them on the nutritional differences between whole foods – like fresh corn – and processed foods – like corn puff cereal.
Recipe: Corn on the Cob *On page 34*		- Microwave - Wet paper towel - Knife (optional) - Ears of sweet corn (with or without husk) - Plates/paper towels (for serving)	If you choose to prepare the cooked corn on the cob yourself, this recipe provides simple microwave instructions.	You might microwave the corn as part of your lesson rather than preparing it ahead of time. That way, you can show students how the corn's properties change in real time.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Sense Explorers: Sweet Corn Edition *On page 35*	Standard(s) Supported: SC.K.L.14.1, SC.K.N.1.2, SC.1.L.14.1, HE.K.CH.3.1, HE.K.PHC.1.1, SC.1.N.1.2	- Ears of fresh sweet corn (cut into pieces for each student)	This activity encourages students to use their five senses to make observations about corn.	You can also ask your school nutrition team to help provide food for this exercise! Use this activity to teach students how they can use their senses as tools. This activity will also help deepen students' familiarity with corn as a fresh and nutritious food choice.

WORKSHEETS

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Sweet Corn Sounds *On page 36*	Standard(s) Supported: ELA.1.F.1.3	- Writing instrument - Crayons, colored pencils or markers (optional)	This sounding worksheet prompts students to identify the beginning sounds in common farm words.	You might build upon this lesson by encouraging students to think of and spell out other common farm words.
Letter Practice *On page 37*	Standard(s) Supported: ELA.1.C.1.1	- Scissors - Glue - Writing instrument - Crayons, colored pencils or markers (optional)	This worksheet prompts students to practice writing the words "sweet corn."	This lesson also presents an opportunity to practice sounding with students. Get kids out of their seats by asking them to make each of the letters in the words "sweet corn" with their bodies! You might put them in groups to make the whole phrase or demonstrate and make each of the letters together as a class.
Parts of a Sweet Corn Plant *On page 38*	Standard(s) Supported: SC.K.L.14.1, SC.1.L.14.1, SC.1.L.14.2, ELA.1.F.1.3	- Scissors - Glue - Writing instrument - Crayons, colored pencils or markers	This worksheet asks students to cut out words naming parts of the plant and paste them in the appropriate spot. Students also have space to practice writing the words.	This worksheet complements life science lessons about parts of the plant. It also provides an opportunity to practice sounding and spelling common science terms.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
How Sweet Corn Grows *On page 39*	Standard(s) Supported: SC.1.L.16.1, ELA.1.C.1.2	- Scissors - Glue - Crayons, colored pencils or markers	This worksheet invites students to cut and paste the basic stages of corn's life cycle in the correct order.	This worksheet complements life science lessons about plant life cycles. It also encourages students to think critically about order of events. Try getting kids out of their seats by instructing them to pretend they are a seed, crouched in a ball. Then ask them to stand taller as they simulate the phases of the corn plant's growth.
Answer Key *On page 40*			See here for answers to each worksheet.	

CORN THREE WAYS

This group activity brings the field trip to life as students get the opportunity to not only taste corn but also begin to recognize its many uses in popular food products, like popcorn and cereal.

MATERIALS

Ear of sweet corn
(uncooked)

Cooked corn on the cob
(see instructions on the following pages)

Popcorn
(be sure to reserve an unpopped kernel to show)

ALTERNATE IDEAS

With so many uses for corn, finding options that intrigue your students is easy. You could easily substitute a microwavable bag of frozen corn or canned corn for cooked corn on the cob.

Other creative options for taste testing or show and tell (with items likely already in your pantry) include:

- **Cornbread**
- **Grits**
- **Corn flakes cereal**
- **Puffed corn cereal**
- **Corn syrup**
- **Cornmeal**
- **Corn muffins**
- **Rice cakes**
- **Most brands of chips, including corn tortilla chips**

COLLABORATE WITH YOUR CAFETERIA

You might also consider partnering with your school nutrition team to obtain these food items and/or prepare a corn-themed dish for your taste test. Be sure to contact them ahead of time, discuss the support you will need and show gratitude for their collaboration!

SUGGESTED QUESTIONS

Lead a discussion as your students try corn three different ways. Questions like the following can help kids better connect with their food, think about their preferences and encourage them to make nutritious choices in the future.

Before the tasting:

1. *Have you tried corn before? What did you think?*
2. *If not, what do you think it will taste like?*
3. *Did you know popcorn and many chips are made from corn?*

As they try the fresh sweet corn:

1. *What do you think of the texture of the uncooked corn? Is it crunchy or soft?*
2. *Describe the flavor. Is it like corn you've tasted before? If yes, how so? If not, how is it different?*
3. *Before today, did you know you could eat sweet corn right off the cob, without cooking it? What other fruits or vegetables can you eat fresh and cooked? (Examples: Broccoli, carrots, sweet peppers, peaches.)*

As they try the cooked sweet corn:

1. *How is this corn similar to the uncooked corn you just tried? Prompt students to comment on taste, temperature, texture, etc.*
2. *How is it different?*
3. *Have you eaten corn like this before? What did you think?*
4. *How would you feel about eating fresh corn with a meal or as a snack? Why? What else might you eat with corn?*

As they try the popcorn:

Teacher Tip: Explain to students why the popcorn pops! The hard outer shell traps steam from the moisture inside the kernel as it heats up. When the internal temperature reaches around 356 °F, the pressure causes the kernel to burst open, turning the starchy interior into the fluffy, white popcorn we eat!

1. *Show the students an un-popped kernel. Here is a kernel of popcorn before it's heated up and it expands. How does this look like the fresh sweet corn? How is it different?*
2. *Describe the flavor of the popcorn. Does it taste like the fresh corn at all? If yes, how so? If not, how is it different?*
3. *How do you think corn turns into popcorn? (See explanation above.)*
4. *What do you think of the texture of the popcorn? Is it soft or crispy?*

TEACHER TIP:

You can also use this activity as a nutrition lesson for students! Explain how whole foods made of just one ingredient – like a fresh ear of corn – are more nutritious than packaged, processed foods with many ingredients.

You can explain that food with lots of ingredients – like chips or cereal – are like a big puzzle with many pieces, and some of those pieces might not be as healthy (like added sugar). The simple food with one ingredient is usually better for your body and helps you feel your best! You might even pass around a processed food item to show the students the list of ingredients on the nutrition label. Then ask them where the fresh corn's ingredient list is. (There is none – because there's just one ingredient!)

PREPARING CORN ON THE COB

CORN ON THE COB

EQUIPMENT REQUIRED

- Microwave
- Wet paper towel
- Knife (optional)

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- Ears of corn (with or without husk)
- Plates/paper towels (for serving to students)

DIRECTIONS

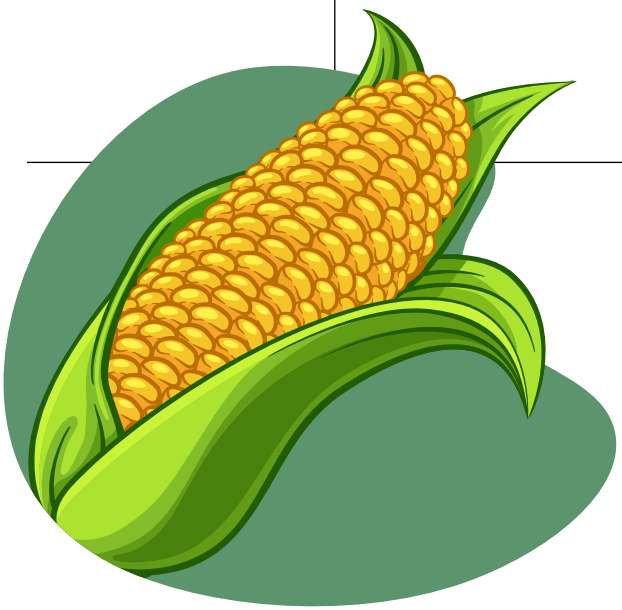
Microwaving corn on the cob is quick and easy. Here are the steps to microwave corn on the cob:

With the Husk:

1. Place the ear of corn with the husk on in the microwave.
2. Microwave on high for 3 minutes. If needed, add an additional 30 seconds.
3. Let the corn cool for a few minutes, then shuck the corn before eating.

Without the Husk:

1. Wet a paper towel and wring it out. Wrap the ear of corn in the damp paper towel.
2. Microwave on high for 3 minutes.
3. Carefully remove the paper towel and serve.



TIPS:

- **You could give every student an ear of corn or cut each ear into two or three pieces.**
- **For multiple ears of corn, adjust the cooking time:**
  - **1 ear: 2 minutes**
  - **2 ears: 4 minutes**
  - **3 ears: 5 minutes**
  - **4 ears: 6 minutes**

SENSE EXPLORERS: SWEET CORN EDITION

This simple, hands-on activity invites students to use their five senses as tools. They will make observations about corn, describe it and compare their observations with their classmates.

TEACHER TIP: Be sure to ask your school nutrition team if they can support you by providing sweet corn!

WHAT YOU'LL NEED:

1 PIECE OF SWEET CORN ON THE COB PER STUDENT

Be sure to hold on to 1 full ear of sweet corn with the husk on for demonstration.

Consider passing out magnifying glasses so children can observe closely!

ACTIVITY:

Invite your students to use each of their five senses to experience and make observations about corn. Guide them through this activity, one sense at a time. Begin with broad, open-ended questions, followed by more specific questions, as outlined below.

SIGHT:

Look at the corn. Describe what it looks like. How would you describe the shape of the cob? Are the kernels all the same size? How many rows of kernels do you count?

TOUCH:

Run your fingers across the kernels. How do they feel? Are they smooth or bumpy? Soft or hard? How do the kernels feel different from the center of the cob?

SMELL:

Smell the corn. What does it smell like? Fresh and earthy? Does the corn smell different when it is cooked and seasoned?

TASTE:

Like Mr. Vincent said in the video, you can eat sweet corn raw! Take a bite. How would you describe the flavor? Is it sweet or sour? Juicy or dry? How are the taste and texture different from cooked corn?

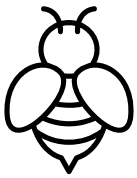
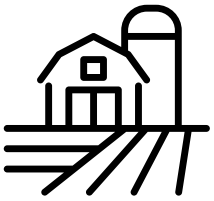
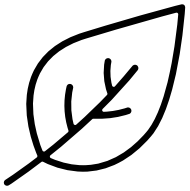
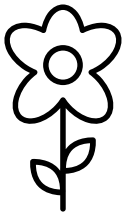
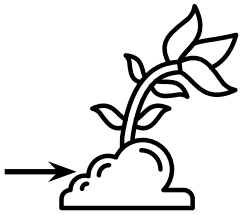
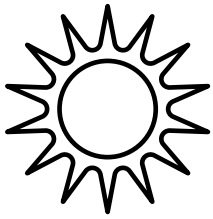
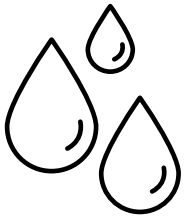
HEARING:

Listen as I shuck the corn. Can you hear the sound of the husk being pulled away? What does it sound like? Can you hear the crunch as you take a bite?

Name _____ **Date** _____

Sweet Corn Sounds

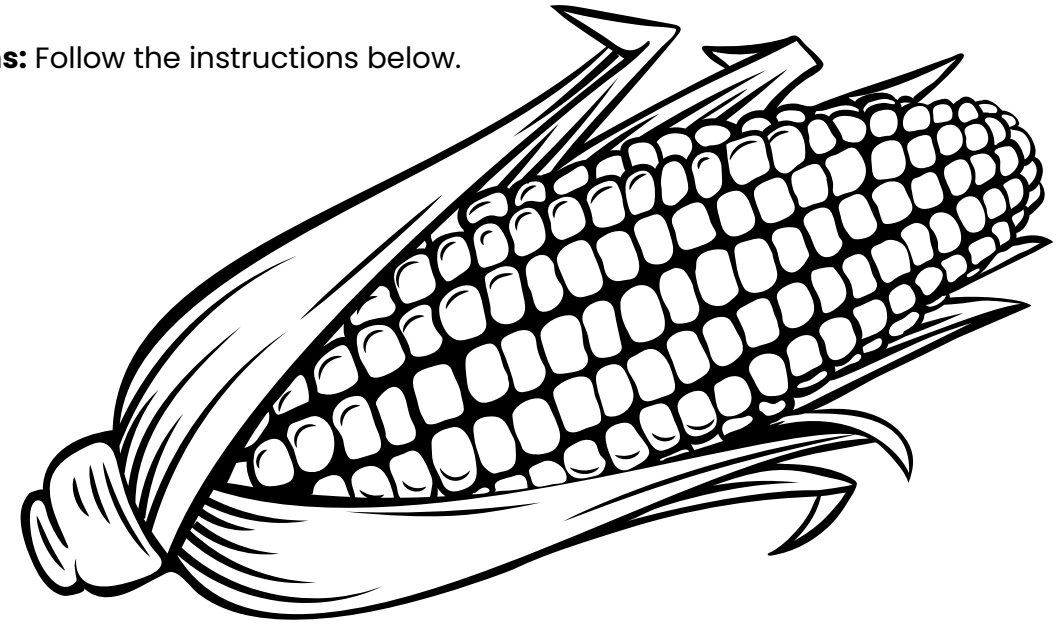
Directions: Below are words for things you can find on the sweet corn farm. Write the beginning sound of each word in the box.

☐ o r n	 ☐ e e	 ☐ a r m
 ☐ e a f	☐ ☐ a n t	 ☐ ☐ o w e r
 ☐ o i l	 ☐ u n	 ☐ a t e r

Name _____ **Date** _____

Letter Practice

Directions: Follow the instructions below.



Ss is for Cc is for

Trace it:

Sweet Corn

Write it:

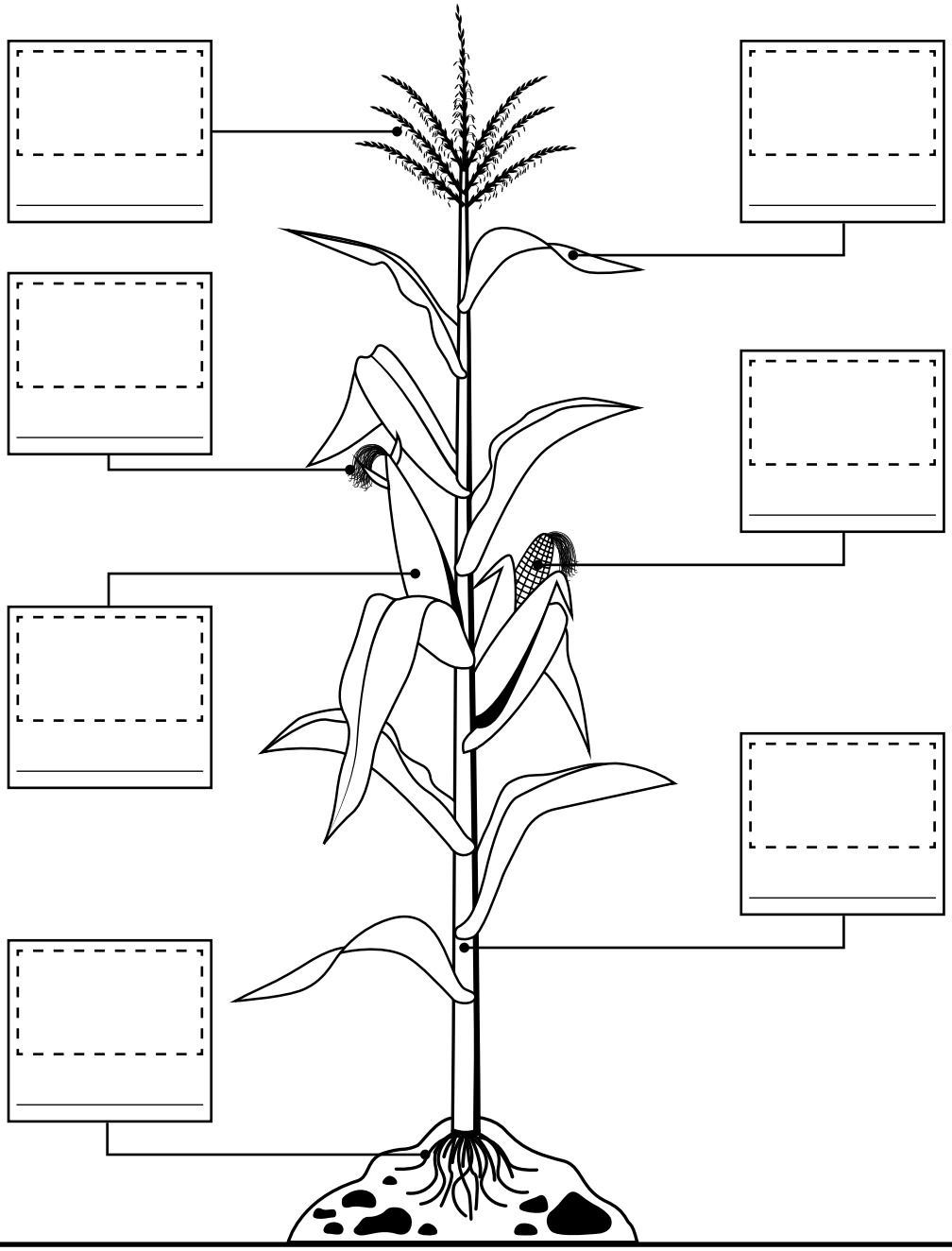
Cut out the letters and glue them in the correct order in the boxes above.

e S t w n o C r e

Name _____ **Date** _____

Parts of a Sweet Corn Plant

Directions: Color the sweet corn plant. Then cut out the words for parts of the plant and glue them where they belong to label parts of the plant. Next, write the word on the blank line under each box.



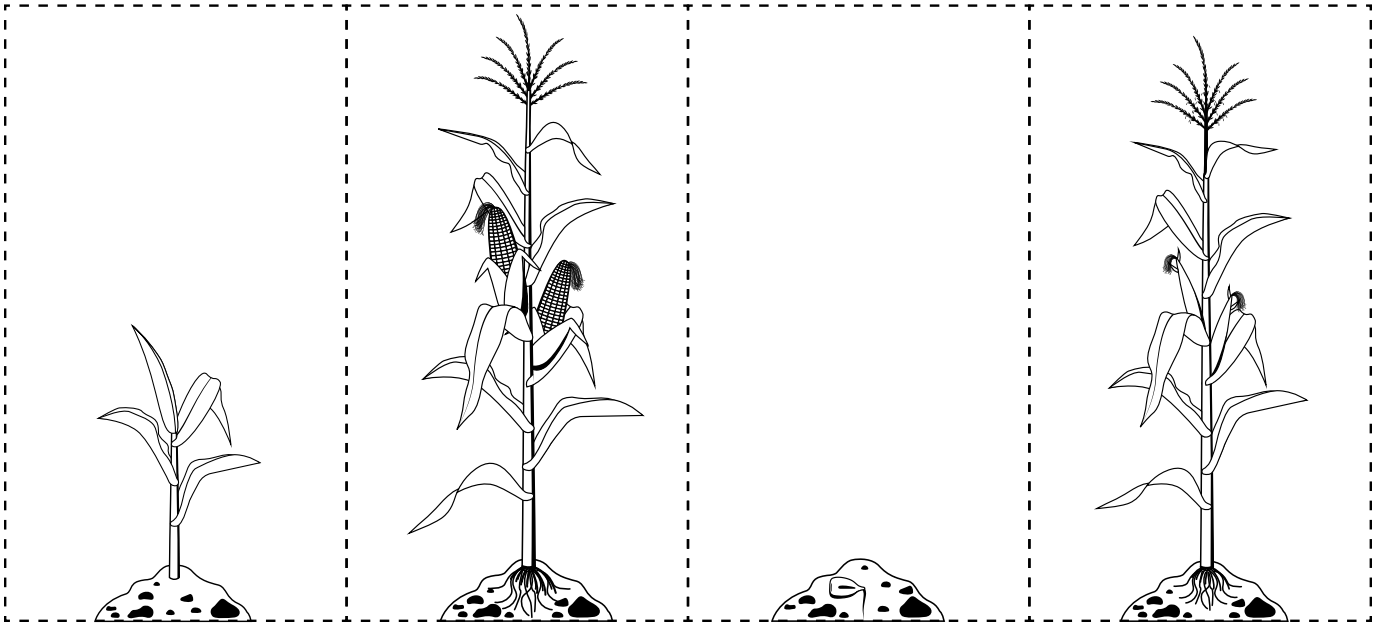
Tassel	**Leaf**	**Silk**	**Ear of corn**	**Husk**	**Stalk**	**Roots**

Name _____ **Date** _____

How Sweet Corn Grows

Directions: Color, cut and paste the pictures in the correct order to show the life cycle of a stalk of sweet corn.

1	2	3	4



ANSWER KEY

Name _____ Date _____

Sweet Corn Sounds

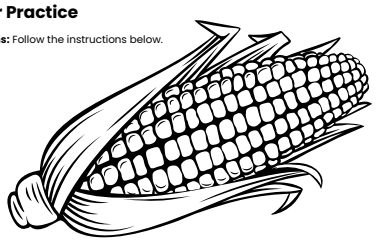
Directions: Below are words for things you can find on the sweet corn farm. Write the beginning sound of each word in the box.

c o r n	b e e	f a r m
l e a f	p l a n t	f l o w e r
s o i l	s u n	w a t e r

Name _____ Date _____

Letter Practice

Directions: Follow the instructions below.



Ss is for Sweet

Cc is for Corn

Trace it: Sweet Corn

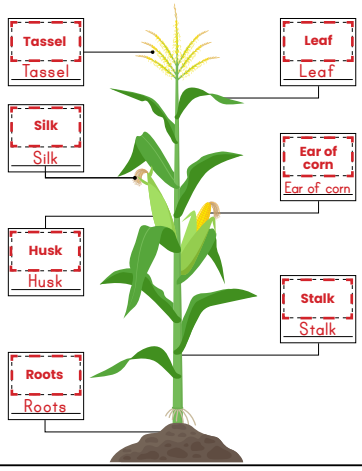
Write it: Sweet Corn

Cut out the letters and glue them in the correct order in the boxes above.

Name _____ Date _____

Parts of a Sweet Corn Plant

Directions: Color the sweet corn plant. Then cut out the words for parts of the plant and glue them where they belong to label parts of the plant. Next, write the word on the blank line under each box.

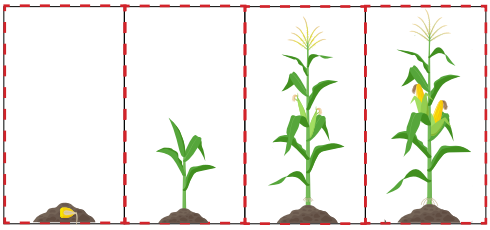


Tassel	Leaf	Silk	Ear of corn	Husk	Stalk	Roots

Name _____ Date _____

How Corn Grows

Directions: Color, cut and paste the pictures to sequence the life cycle of a stalk of corn.

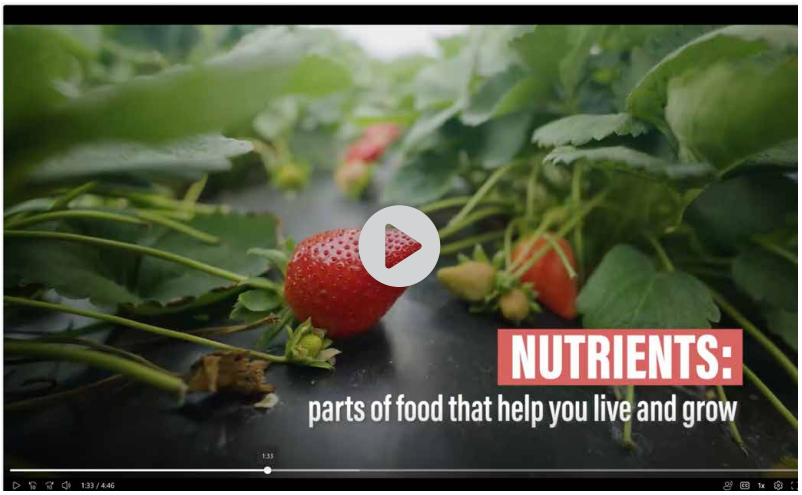


Standard(s) Supported: SC.1.L.14.2, SC.K.L.14.3, SC.1.L.14.1, SC.1.L.16.1, HE.K.CH.3.1, HE.K.PHC.1.1, ELA.K.C.4.1

LET'S LEARN ABOUT FLORIDA STRAWBERRIES!

This Virtual Farm Field Trip unit is all about strawberries. It begins with an informative 5-minute video, transporting students to Astin Farms in Plant City, Florida – the winter strawberry capital of the world! Your students will meet farmers and sisters Madison and Payton to learn how Florida strawberries are planted, grown, harvested and distributed.

We encourage you to expand the learning experience using this section's worksheets and guided activities, including a taste test. You may choose to use all these resources or pick the ones best suited to your classroom.



ACCESS VIRTUAL FARM FIELD TRIP

Scan code or visit:
FarmToSchoolFL.com/FieldTrips

FLORIDA STRAWBERRY FUN FACTS

- **Strawberries have nutrients like fiber, potassium and vitamin C. Eating foods with fiber makes you feel full, potassium helps your muscles move properly and vitamin C helps your body heal cuts and scrapes.**
- **Strawberries are the only fruit with seeds on the outside – and each strawberry has about 200 of them.**
- **Strawberries are technically part of the rose family.**
- **People love strawberries! In the United States, 94% of households eat strawberries.**
- **Unlike other fruits, like bananas or avocados, strawberries stop ripening as soon as they are harvested. That's why you want to eat them as soon as you can.**
- **While we put strawberries in the refrigerator to make them last longer, they actually taste best at room temperature. That's why they are so delicious right off the plant!**

BEFORE YOU WATCH: DISCUSSION STARTERS

Get students thinking about agriculture, science and nutrition by asking questions such as:

- *What are some examples of fruit?*
- *What fruits have you tasted? Which is your favorite?*
- *Have you ever picked your own fruit at a farm or in a garden? What did you pick?*
- *How do you think the food we eat gets from the farm to our table – at home and in school?*
- *Today we're going to talk about strawberries. How do you think they are grown and harvested?*

AFTER YOU WATCH: CHECK FOR UNDERSTANDING

Trivia Toss

Materials

- **3 buckets, boxes or similar containers**
- **2 palm-sized balls (enough for each team to have one)**

Divide students into two teams. Students work as a team to answer a review question about the video. Then, if they answer correctly, they get a chance to toss a ball into one of three buckets to get a prize for their team. Prizes might be a homework pass, free time, extra computer time or lunch in the classroom.

The video is full of information. You might want to watch it again after your discussion so students can listen for details they missed!

SUGGESTED QUESTIONS:

Find video comprehension questions, answers and video timestamps for finding those answers below.

- *How are strawberry seeds different from other fruit seeds?* ***(seeds grow on the outside; 2:41)***

  Teacher Tip: Ask students to name fruits with seeds on the inside (like apples, kiwis and tomatoes).
- *How many seeds does each strawberry have?* ***(200; 2:48)***
- *What do you call the shape of a strawberry?* ***(conical, or like a cone; 2:12)***

  Teacher Tip: Ask students what other things are shaped like a cone.
- *True or false: There is only one kind of strawberry.* ***(False; 1:58)***
- *True or false: Eight strawberries have more vitamin C than one orange.* ***(True; 3:01)***
- *True or false: Strawberries are picked by machines.* ***(False, they are picked by hand; 3:19)***
- *True or false: An acre is the size of a basketball court.* ***(False, it's almost the size of a football field; 1:39)***
- *True or false: Strawberries ripen – get sweet and juicy! – faster when it's warmer outside.* ***(True; 2:25)***

  Teacher Tip: Ask students to name other things that change based on the temperature outside. (Like ice cream melting in the heat.)
- *True or false: Strawberries are nutritious for you.* ***(True; 3:57)***

USING THESE TEACHING TOOLS

Below is an overview and guide for using the teaching tools included in this section, including guided activities, recipes and worksheets. We've included the education standards each tool complements, materials needed for each activity, a brief overview of each tool and tips for building your lessons.

You can find each of these tools on the following pages, along with additional information and pointers.

GUIDED ACTIVITIES

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Video, Discussion Questions and Trivia Toss (in Classroom Guide) *On page 41*	Standard(s) Supported: SC.1.L.14.2, SC.K.L.14.3, SC.1.L.14.1, SC.1.L.16.1, HE.K.CH.3.1, HE.K.PHC.1.1, ELA.K.C.4.1	- 3 buckets, boxes or similar containers - 2 palm-sized balls (enough for each team to have one)	This activity gets students out of their seats as they respond to questions about the Virtual Farm Field Trip video.	
Strawberry Three Ways *On page 46*	Standard(s) Supported: HE.K.CH.3.1, HE.K.PHC.1.1, HE.1.PHC.1.1, SC.1.N.1.2	- Fresh strawberries - Strawberry jam/jelly - Strawberry smoothie (see recipe)	In this activity, you'll guide students through tasting strawberries in three different forms – as fresh strawberries, as strawberry jam and in a smoothie.	Start by asking your school nutrition team if they can support you by acquiring and/or preparing the food items. Use this activity to introduce students to new, nutritious foods. Educate them on the nutritional differences between whole foods – like fresh strawberries – and processed foods – like strawberry jam.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Recipe: Strawberry Smoothie *On page 48*	Standard(s) Supported: SC.K.N.1.2, SC.1.N.1.2	- Blender - Cutting board - Knife - Measuring cup - Tablespoon *Adjust quantities based on class size:* - 1 cup fresh strawberries - 1 banana - ½ cup yogurt - ½ cup milk (or water) - 1 tablespoon honey - Small cups (ideally clear) - Spoons	Use this recipe to prepare your own strawberry smoothie for the Strawberry Three Ways exercise.	You might prepare your smoothie before the lesson or demonstrate for the class for an added learning opportunity.
Sense Explorers: Strawberry Edition *On page 49*	Standard(s) Supported: SC.K.L.14.1, SC.K.N.1.2, SC.1.L.14.1, HE.K.CH.3.1, HE.K.PHC.1.1, SC.1.N.1.2	- 1 strawberry for every student	This activity encourages students to use their five senses to make observations about strawberries.	You can also ask your school nutrition team to help provide food for this exercise! Use this activity to teach students how they can use their senses as tools. This activity will also help deepen students' familiarity with strawberries as a fresh and nutritious food choice.

WORKSHEETS

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Counting Seeds *On page 50*	Standard(s) Supported: MA.1.NSO.1.1, MA.1.NSO.1.2	- Writing instrument - Crayons, colored pencils or markers (optional)	This simple math worksheet asks students to count and write the number of seeds shown on nine illustrated strawberries.	This tool reinforces students' counting skills, while also having them practice identifying and writing numbers between 1 and 15.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Letter Practice *On page 51*	Standard(s) Supported: ELA.1.C.1.1	- Scissors - Glue - Writing instrument - Crayons, colored pencils or markers (optional)	This worksheet prompts students to practice writing the word "strawberry."	This lesson also presents an opportunity to practice sounding with students. Get kids out of their seats by asking them to make each of the letters in the word "strawberry" with their bodies! You might put them in groups to make the whole word or demonstrate and make each of the letters together as a class.
Parts of a Strawberry Plant *On page 52*	Standard(s) Supported: SC.K.L.14.1, SC.1.L.14.1, SC.1.L.14.2, ELA.1.F.1.3	- Scissors - Glue - Writing instrument - Crayons, colored pencils or markers	This worksheet asks students to cut out words naming parts of the plant and paste them in the appropriate spot. Students also have space to practice writing the words.	This worksheet complements life science lessons about parts of the plant. It also provides an opportunity to practice sounding and spelling common science terms.
How Strawberries Grow *On page 53*	Standard(s) Supported: SC.1.L.16.1, ELA.1.C.1.2	- Scissors - Glue - Crayons, colored pencils or markers	This worksheet invites students to cut and paste the basic stages of a strawberry's life cycle in the correct order.	This worksheet complements life science lessons about plant life cycles. It also encourages students to think critically about order of events. Try getting kids out of their seats by instructing them to pretend they are a seed, crouched in a ball. Then ask them to stand taller as they simulate the phases of the strawberry plant's growth.
Answer Key *On page 54*			See here for answers to each worksheet.	

STRAWBERRY THREE WAYS

This group activity brings the field trip to life as students get the opportunity to taste strawberries three ways: as fresh berries, as strawberry jam or jelly and in a strawberry smoothie.

MATERIALS

Fresh strawberries

Strawberry jam/jelly

Strawberry smoothie
(see recipe on following pages)

Don't have time to prep or make a recipe? Swap the smoothie for a store-bought smoothie, strawberry yogurt or strawberry ice cream.

SUGGESTED QUESTIONS

Lead a discussion as your students try strawberries three different ways. Questions like the following can help kids better connect with their food, think about their preferences and encourage them to make nutritious choices in the future.

Before the tasting:

1. *Have you tried a strawberry before? What did you think?*
2. *If not, what do you think it will taste like?*
3. *Have you tried any foods with strawberries in them? What about foods that were strawberry flavored? What were they and what did you think?*

As they try the fresh strawberries:

1. *What do you think of the texture of the fresh strawberry? Is it crunchy or soft?*
2. *Do you like the smell of the strawberry? How would you describe it?*
3. *How would you feel about eating fresh strawberries as a snack? Why? What might you eat them with?*

COLLABORATE WITH YOUR CAFETERIA

You might also consider partnering with your school nutrition team to obtain these food items and/or prepare a strawberry-themed dish for your taste test. Be sure to contact them ahead of time, discuss the support you will need and show gratitude for their collaboration!

As they try the strawberry jam/jelly:

1. *How do you think they turn the strawberries into jam?*
2. *How does the taste of the jam compare to the fresh strawberries? How is it different and how is it the same?*
3. *What do you think about the texture of the jam compared to the fresh strawberries?*
4. *Have you had strawberry jam before? If so, what do you usually eat it with? If not, would you like to try it again?*
5. *Before today, did you know strawberry jam is made from fresh strawberries? What other fruits are turned into jam?*

As they try the strawberry smoothie:

1. *Can you taste the strawberries in the smoothie? How strong is the flavor?*
2. *What other flavors can you taste? Can you guess which other fruit(s) is (are) in the smoothie?*
3. *How does the flavor of the smoothie compare to the fresh strawberries?*
4. *What is the same about the fresh strawberries and the smoothie? What is different?*
5. *If you were making a fruit smoothie, what fruits would you add?*

TEACHER TIP:

You can also use this activity as a nutrition lesson for students! Explain how whole foods made of just one ingredient – like a fresh strawberry – are more nutritious than packaged, processed foods with many ingredients.

You can explain that food with lots of ingredients – like the jam – are like a big puzzle with many pieces, and some of those pieces might not be as healthy (like added sugar). The simple food with one ingredient is usually better for your body and helps you feel your best!

You might even pass around a processed food item to show the students the list of ingredients on the nutrition label. Then ask them where the fresh strawberry's ingredient list is. (There is none – because there's just one ingredient!)

STRAWBERRY SMOOTHIE RECIPE

STRAWBERRY SMOOTHIE

Estimated Servings: 20 oz, or (6-7) 3 oz tasters

EQUIPMENT REQUIRED

- Blender
- Cutting board
- Knife
- Measuring cup
- Tablespoon
- Small cups (ideally clear)
- Spoons

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- 1 cup fresh strawberries
- 1 banana
- ½ cup yogurt
- ½ cup milk (or water)
- 1 tablespoon honey

DIRECTIONS

1. Wash berries and cut away strawberry stems.
2. Combine all ingredients in a blender. Blend until smooth.
3. Pour into individual cups for serving and enjoy!

You might prepare your smoothie before the lesson or demonstrate for the class for an added learning opportunity!

CUSTOMIZE YOUR SMOOTHIE

Mix up your smoothie by adding other fresh ingredients like blueberries, pineapple chunks, orange segments, kiwis or even spinach! If you're demonstrating for your students, they can help decide which ingredients get added. Children are more likely to be excited about eating food they choose and help prepare themselves!

If you prep the recipe ahead of time, ask them to guess what else you added.

SENSE EXPLORERS: STRAWBERRY EDITION

This simple, hands-on activity invites students to use their five senses as tools. They will make observations about strawberries, describe the fruit and compare their observations with their classmates.

TEACHER TIP: Be sure to ask your school nutrition team if they can support you by providing strawberries!

WHAT YOU'LL NEED:

1 STRAWBERRY FOR EVERY STUDENT

Alternatively, you might cut strawberries in half vertically, so each student can experience the outside and inside of the strawberry.

Consider passing out magnifying glasses so children can observe closely!

ACTIVITY:

Invite your students to use each of their five senses to experience and make observations about strawberries. Guide them through this activity, one sense at a time. Begin with broad, open-ended questions, followed by more specific questions, as outlined below.

SIGHT:

Look at the strawberry. Describe what it looks like. Notice the colors of its body, leaves and seeds. Does it look smooth or bumpy? Is it big or small, thin or round?

TOUCH:

Feel the strawberry with your fingers. How does it feel? Is it smooth or bumpy? Is it firm or soft? Is it heavy or light? Compare how the body and the leaves feel.

SMELL:

Smell the strawberry. What does it smell like? Does the smell remind you of anything else? Do you like the smell?

TASTE:

Take a small bite of the strawberry. Describe the taste. Is it sweet or salty? Soft or hard? Can you feel the seeds on your tongue?

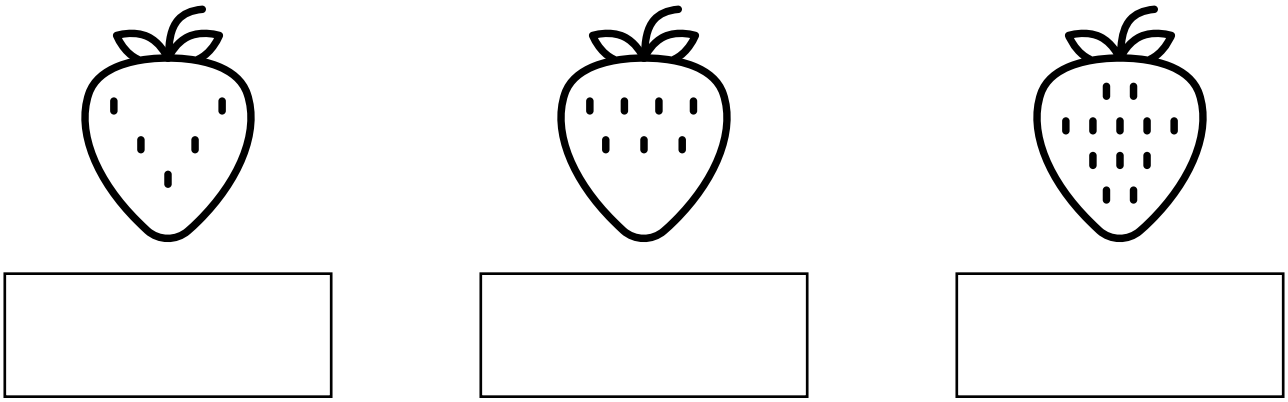
HEARING:

Listen to the sound the strawberry makes when you bite into it. Does it make a sound? Is it loud or soft?

Name _____ **Date** _____

Counting Seeds

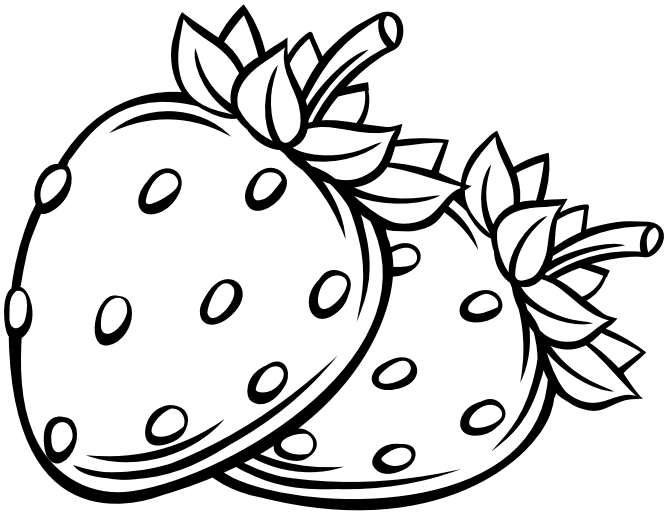
Directions: Count the number of seeds on each strawberry. Write the number below the strawberry. Then color each of the strawberries!



Name _____ **Date** _____

Letter Practice

Directions: Follow the instructions below.



Ss is for

Trace it:

Strawberry

Write it:

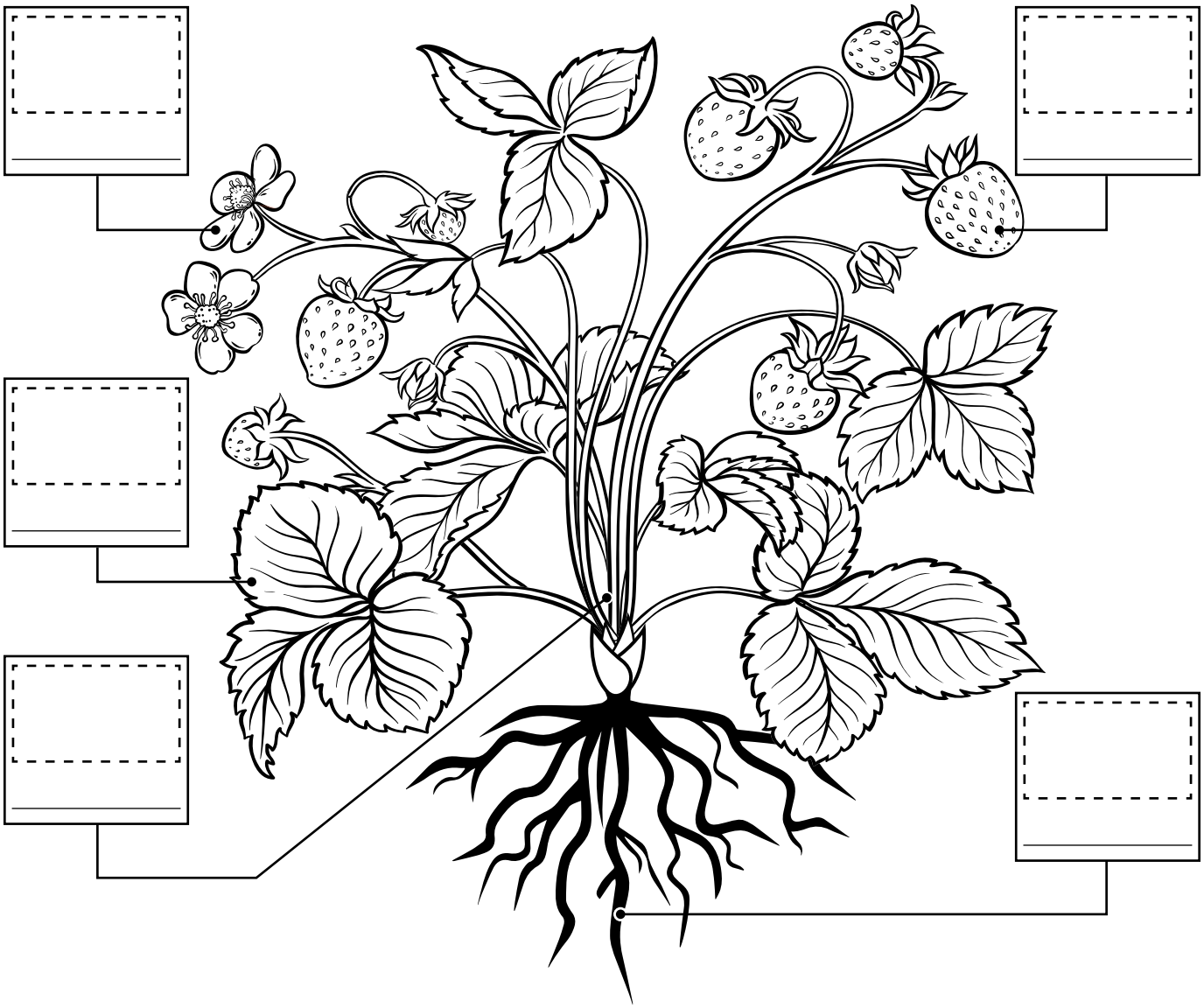
Cut out the letters and glue them in the correct order in the boxes above.

t r S a w e r b r y

Name _____ **Date** _____

Parts of a Strawberry Plant

Directions: Color the strawberry plant. Then cut out the words for parts of the plant and glue them where they belong to label parts of the plant. Next, write the word on the blank line under each box.



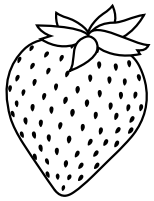
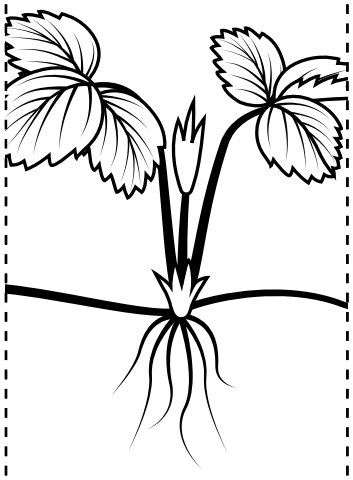
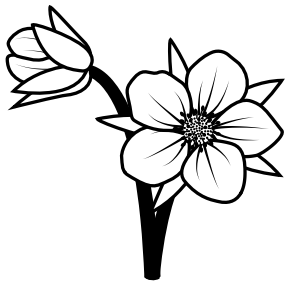
Leaf	Fruit	Stem	Flower	Roots

Name _____ **Date** _____

How Strawberries Grow

Directions: Color, cut and paste the pictures in the correct order to show the life cycle of a strawberry.

1	2	3	4

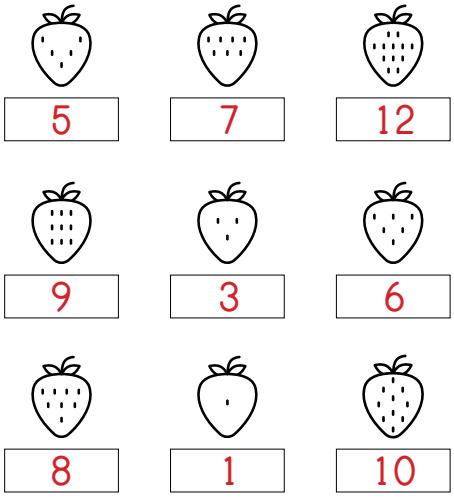




ANSWER KEY

Name _____ Date _____

Counting Seeds

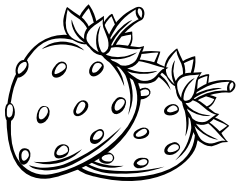
Directions: Count the number of seeds on each strawberry. Write the number below the strawberry. Then color each of the strawberries!



Name _____ Date _____

Letter Practice

Directions: Follow the instructions below.



Ss is for

S t r a w b e r r y

Trace it: Strawberry

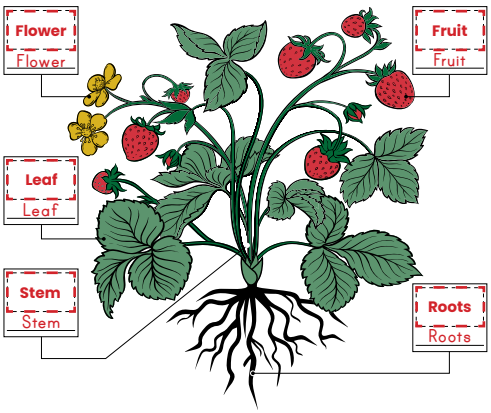
Write it: Strawberry

Cut out the letters and glue them in the correct order in the boxes above.

Name _____ Date _____

Parts of a Strawberry Plant

Directions: Color the strawberry plant. Then cut out the words for parts of the plant and glue them where they belong to label parts of the plant. Next, write the word on the blank line under each box.

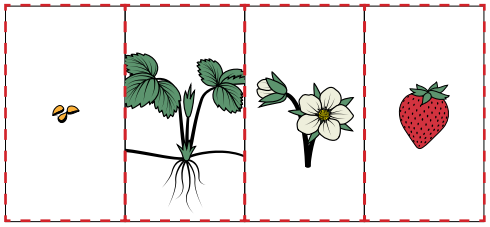


_____

Name _____ Date _____

How Strawberries Grow

Directions: Color, cut and paste the pictures in the correct order to show the life cycle of a strawberry.



LET'S LEARN ABOUT FLORIDA LETTUCE!

This Virtual Farm Field Trip unit is all about lettuce. It begins with an informative 5-minute video, transporting students to Traders Hill Farm in Hilliard, Florida. Your students will meet farmers Tracy and Kathy to learn how Florida lettuce is planted, grown, harvested and distributed.

We encourage you to expand the learning experience using this section's worksheets and guided activities, including a taste test. You may choose to use all these resources or pick the ones best suited to your classroom.

ACCESS VIRTUAL FARM FIELD TRIP

Scan code or visit:
FarmToSchoolFL.com/FieldTrips

FLORIDA LETTUCE FUN FACTS

- **Fresh lettuce is mostly water. Eating it helps you stay hydrated.**
- **Lettuce has vitamin K for strong bones.**
- **Lettuce comes in many colors: green, red and even purple.**
- **Romaine is the second most common type of lettuce grown in the U.S. behind iceberg, both of which are grown right here in Florida.**
- **Lettuce can grow in different ways! Field lettuce grows outside in the dirt, drinking rain and soaking up sunshine. Hydroponic lettuce grows with its roots right in water filled with plant food. Aquaponic lettuce grows in water too, but with fish. The nutrients from the fish feed the plants.**
- **In Florida, lettuce is largely grown outside in the rich soils south of Lake Okeechobee.**

BEFORE YOU WATCH: DISCUSSION STARTERS

Get students thinking about agriculture, science and nutrition by asking questions such as:

- *What do plants need to grow? What happens if they don't get what they need?*
- *Can a plant grow without dirt? What might it need instead?*
- *Let's name some vegetables. Can you think of any that are green?*
- *Close your eyes and imagine you are at a farm. What do you see? Hear? Smell?*
- *Today, we'll be taking a virtual field trip to visit a Florida lettuce farm. What do you know about lettuce?*
- *Have you eaten lettuce before? What did it taste like?*

AFTER YOU WATCH: CHECK FOR UNDERSTANDING

Trivia Toss

Materials

- **3 buckets, boxes or similar containers**
- **2 palm-sized balls (enough for each team to have one)**

Divide students into two teams. Students work as a team to answer a review question about the video. Then, if they answer correctly, they get a chance to toss a ball into one of three buckets to get a prize for their team. Prizes might be a homework pass, free time, extra computer time or lunch in the classroom.

Some teachers have shared that cornhole is a student favorite and works well for this exercise, too!

SUGGESTED QUESTIONS:

Find video comprehension questions, answers and video timestamps for finding those answers below.

- *What animal helps the lettuce grow on this farm?* ***(Fish, tilapia; 0:43)***
- *True or false: This farm grows lettuce in water instead of dirt.* ***(True; 0:36)***
- *True or false: This lettuce is ready to pick in about three months.* ***(False, about one month or 35-40 days; 0:59)***
- *True or false: Lettuce is mostly water.* ***(True; 1:45)***
- *Does lettuce like it warm or freezing cold?* ***(Warm, about 70 degrees, like our classroom; 2:02)***

Teacher Tip: 70°F is about the same comfy temperature we keep inside our homes and classrooms — lettuce likes the same cozy conditions we do. Ask why growing lettuce inside helps farmers keep it perfect all year, even when it's really hot or really cold outside.

- *True or false: Lettuce helps keep your bones strong.* ***(True; 2:53)***

Teacher Tip: Ask students what other foods keep bones strong. (Dairy!)

- *Where do the baby lettuce plants start growing?* ***(In the nursery; 4:00)***
- *True or false: An outdoor farm can grow more lettuce in less space than a greenhouse using hydroponics or aquaponics.* ***(False, this greenhouse grows 5 times more lettuce in the same space; 1:50)***
- *Which flowers is lettuce related to?* ***(Sunflowers, daisies and marigolds; 3:51)***

USING THESE TEACHING TOOLS

Below is an overview and guide for using the teaching tools included in this section, including guided activities, recipes and worksheets. We've included the education standards each tool complements, materials needed for each activity, a brief overview of each tool and tips for building your lessons.

You can find each of these tools on the following pages, along with additional information and pointers.

GUIDED ACTIVITIES

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Video, Discussion Questions and Trivia Toss (in Classroom Guide) *On page 55*	Standard(s) Supported: SC.1.L.14.2, SC.K.L.14.3, SC.1.L.14.1, HE.K.CH.3.1, HE.K.PHC.1.1, ELA.K.C.4.1, SS.K.G.3.3, HE.K.R.1.2	- 3 buckets, boxes or similar containers - 2 palm-sized balls (enough for each team to have one)	This activity gets students out of their seats as they respond to questions about the Virtual Farm Field Trip video.	Divide the class into two teams and keep the questions moving so every student gets a turn. If a team answers incorrectly, offer the question to the other team before moving on. Some teachers have shared that cornhole works well for this exercise, too.
Lettuce Three Ways *On page 60*	Standard(s) Supported: SC.K.L.14.1, SC.1.L.14.1, SC.1.N.1.2, HE.K.PHC.1.1, HE.1.PHC.1.1	- Head of romaine lettuce - Lemon and/or salt, or a homemade vinaigrette (see recipe on following pages) - Store-bought creamy salad dressing	In this activity, you'll guide students through tasting lettuce in three different forms – plain, with a simple seasoning and with a creamy dressing.	Start by asking your school nutrition team if they can support you by acquiring and/or preparing the food items. Use this activity to introduce students to new, nutritious foods. Educate them on the nutritional differences between whole foods – like fresh lettuce – and packaged foods with long ingredient lists – like store-bought dressing.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Recipe: Lemon and Olive Oil Vinaigrette *On page 62*	Standard(s) Supported: SC.K.N.1.2, SC.1.N.1.2, HE.K.R.1.2	Equipment required: - Small jar with a tight-fitting lid - Measuring cup - Measuring spoons - Paper or cloth towels for spills - Bowls or cups to serve Ingredients (adjust quantities based on class size): - ⅓ cup extra virgin olive oil - 1 tablespoon white wine vinegar or apple cider vinegar - 1 tablespoon lemon juice - 2 teaspoons honey or sugar - ¼ teaspoon garlic powder - ¼ teaspoon salt - Pinch black pepper	Use this recipe to prepare your own vinaigrette for the Lettuce Three Ways exercise.	You might demonstrate making one batch to share with your class or divide students into groups of four so each group can shake their own jar and watch the oil and vinegar temporarily combine.
Sense Explorers: Lettuce Edition *On page 63*	Standard(s) Supported: SC.K.L.14.1, SC.K.N.1.2, MA.K.NSO.1.1 / SC.1.L.14.1, SC.1.N.1.2, MA.1.M.1.1, MA.1.M.1.2	- 1 lettuce leaf per student (pick a variety of leaves, ranging in size and color, to provide contrast) - Magnifying glasses (optional) - Rulers	This activity encourages students to use their five senses to make observations about lettuce, then measure and compare their leaves.	You can also ask your school nutrition team to help provide food for this exercise! Use this activity to teach students how they can use their senses as tools. It will also help deepen students' familiarity with lettuce as a fresh and nutritious food choice.

WORKSHEETS

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Lettuce Plant Needs *On page 64*	Standard(s) Supported: SC.1.L.17.1	- Crayons, colored pencils or markers	This simple coloring sheet reinforces students' knowledge of the basic resources plants need to grow, and compares what lettuce needs when it is grown in soil with what it needs when it is grown in water.	This tool complements life science lessons about plants. Because it sets what lettuce needs in soil beside what it needs in water, it also gives students a concrete way into the idea of aquaponics before they meet the word itself.
Letter Practice *On page 65*	Standard(s) Supported: ELA.1.C.1.1	- Scissors - Glue - Writing instrument - Crayons, colored pencils or markers	This worksheet prompts students to practice writing the word "lettuce."	This lesson also presents an opportunity to practice sounding out with students. Get kids out of their seats by asking them to make each of the letters in the word "lettuce" with their bodies! You might put them in groups to make the whole word or demonstrate and make each of the letters together as a class.
Parts of a Lettuce Plant *On page 66*	Standard(s) Supported: SC.1.L.14.1, SC.1.L.14.2	- Scissors - Glue - Writing instrument - Crayons, colored pencils or markers	This worksheet asks students to cut out words naming parts of the lettuce plant and glue them in the appropriate spot. Students also have space to practice writing the words.	This worksheet complements life science lessons about parts of the plant. It also provides an opportunity to practice sounding out and spelling common science terms.
How Lettuce Grows *On page 67*	Standard(s) Supported: ELA.1.C.1.2	- Scissors - Glue - Crayons, colored pencils or markers	This worksheet invites students to color, cut and glue the basic stages of a lettuce plant's life cycle in the correct order.	This worksheet complements life science lessons about plant life cycles. It also encourages students to think critically about order of events. Try getting kids out of their seats by instructing them to pretend they are a seed, crouched in a ball. Then ask them to stand taller as they simulate the phases of the lettuce plant's growth.
Answer Key *On page 68*			See here for answers to each worksheet.	

LETTUCE THREE WAYS

This group activity brings the field trip to life as students get the opportunity to taste lettuce three ways: plain, with simple seasoning or with a creamy dressing.

MATERIALS

Head of romaine lettuce

Lemon and/or salt, or a homemade vinaigrette *(see recipe on following pages)*

Store-bought creamy salad dressing

COLLABORATE WITH YOUR CAFETERIA

Consider partnering with your school nutrition team to obtain these food items and/or prepare a lettuce-wrap-style dish for your taste test. Be sure to contact them ahead of time, discuss the support you will need and show gratitude for their collaboration!

SUGGESTED QUESTIONS

Lead a discussion as your students try lettuce three different ways. Questions like the following can help kids better connect with their food, think about their preferences and encourage them to make nutritious choices in the future.

Before the tasting:

1. *Have you tried romaine lettuce before? How did you eat it? What did you think?*
2. *If not, what do you think it will taste like?*
3. *Did you know that there are hundreds of lettuce types? How do you think the different kinds look, feel and taste different from each other?*

As they try the plain lettuce:

1. *What do you think of the texture of the plain lettuce? Is it crunchy or soft?*
2. *Describe the flavor. Is it like lettuce you've tasted before? If yes, how so? If not, how is it different?*
3. *How would you feel about eating fresh lettuce as a snack? Why? What might you eat it with?*

As they try the lettuce with a squeeze of lemon, sprinkle of salt or homemade vinaigrette:

1. *How is this lettuce similar to the plain lettuce you just tried?*
2. *How is it different?*
3. *Have you eaten lettuce like this before? How else have you had it? Which way do you prefer?*

As they try the lettuce with the creamy dressing:

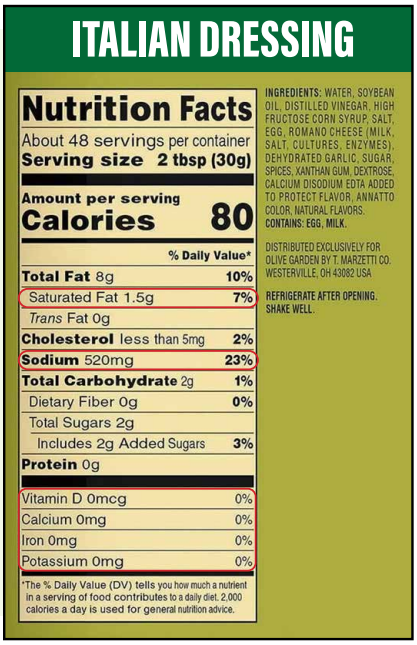
1. *How does the texture of this lettuce compare to the other lettuce you tried?*
2. *Describe how the creamy dressing looks and tastes. How is it the same or different from the lemon, salt or vinaigrette you tried?*
3. *Before today, did you know that adding different dressings can change the texture of the lettuce? What other dips, dressings or sauces might you try eating with lettuce?*
4. *What's one new way you'd like to try eating lettuce after today?*

TEACHER TIP:

Use this as a quick nutrition lesson. Explain that whole foods with just one ingredient — like fresh lettuce — are usually more nutritious than packaged foods with a long list of ingredients.

A food with lots of ingredients — like store-bought dressing — is like a puzzle with many pieces, and some pieces might not be so nutritious (like added sugar). Simple foods you recognize are better for your body and help you feel your best.

Pass around the dressing bottle and read the ingredient list together. Ask: "Any long words we can't say?" Then you may point out the amount of sodium and saturated fat, and lack of vitamins in one serving. Encourage students to compare this to fresh lettuce. There isn't an ingredient list — because it's just lettuce!



ALTERNATE IDEAS

If you have extra time to prepare, or if your school's nutrition team agrees to prepare a dish for your taste test, here are some great options to use in place of either of the dressing options:

- **Lettuce varieties side by side**
- **Chilled vs. room-temperature lettuce**
- **Lettuce as a dipper (with hummus or ranch)**
- **"Massaged" romaine (massage vinaigrette into lettuce for a change in taste and texture)**
- **Lettuce wrap burger sliders**
- **Lettuce boats with Southwestern style fillings**
- **Lettuce cups with Asian-inspired chicken filling**

LEMON AND OLIVE OIL VINAIGRETTE RECIPE

Estimated Yield: About ½ cup dressing (4 two-tablespoon servings)

EQUIPMENT REQUIRED

- Small jar with a tight-fitting lid
- Measuring cup
- Measuring spoons
- Paper or cloth towels for spills
- Bowls or cups to serve

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- ⅓ cup extra virgin olive oil
- 1 tablespoon white wine vinegar or apple cider vinegar
- 1 tablespoon lemon juice
- 2 teaspoons honey or sugar
- ¼ teaspoon garlic powder
- ¼ teaspoon salt
- Pinch black pepper

DIRECTIONS

1. Combine all ingredients in the small jar.
2. Seal jar tightly and shake vigorously until dressing appears combined and slightly cloudy.
3. Serve over chopped romaine.

TIP: You might choose to demonstrate how to make the dressing for the class, or have students work in small groups to shake and mix their own jars as a hands-on activity. Observe how the oil and vinegar combine/emulsify, then discuss why they eventually separate into distinct layers.

CUSTOMIZE YOUR DRESSING

Switch up your dressing by experimenting with other flavors. Stir in a tablespoon of grated Parmesan cheese for a richer, cheesy flavor. Add a teaspoon of Dijon mustard to add a little kick and help the dressing emulsify. Or have fun playing with different seasonings and herbs like basil, Italian seasoning or chives.

SENSE EXPLORERS: LETTUCE EDITION

This simple, hands-on activity invites students to use their five senses as tools. They will make observations about lettuce, describe the vegetable and compare their observations with their classmates.

TEACHER TIP: Be sure to ask your school nutrition team if they can support you by providing romaine lettuce!

WHAT YOU'LL NEED:

1 LETTUCE LEAF PER STUDENT

Try to pick a variety of leaves, ranging in size and color, to provide contrast.

Consider passing out magnifying glasses so children can observe closely!

ACTIVITY:

Invite your students to use each of their five senses to experience and make observations about lettuce. Guide them through this activity, one sense at a time. Begin with broad, open-ended questions, followed by more specific questions, as outlined below.

SIGHT:

Look at the lettuce with your eyes. Describe what it looks like. What is it shaped like? Is it light green or dark green? Is it all the same color, or are some parts different? How big is it? Now observe through your magnifying glass. Do you notice anything different?

TOUCH:

Run your fingers over the leaf. How does it feel? Is it smooth or bumpy? Is it sticky or waxy? Wet or dry? Is it cool to the touch? Is it heavy or light? Does it break when you bend it?

SMELL:

Smell the lettuce. What does it smell like? Fresh and earthy? Is it a very strong scent? Does it remind you of any other smells or other vegetables you've tried?

TASTE:

Take a bite of the lettuce. How does it taste? Is the flavor strong or weak? Sweet or bitter? What other foods does the taste remind you of?

HEARING:

Listen to the sound the lettuce makes as you tear it. Does it make a crisp or crunchy sound? Is it loud or soft? Can you hear the sound as you take a bite and chew?

MEASUREMENT MOMENT!

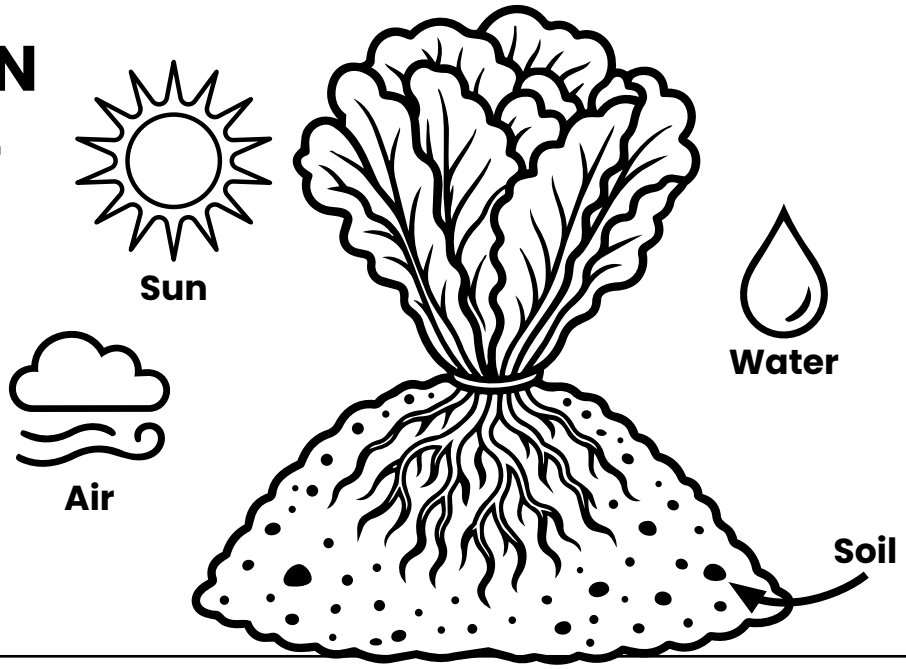
Group students in trios and have them put their lettuce leaves in size order, shortest to longest. Then, have them estimate how long the longest leaf is. Hand out rulers and have students measure and compare their findings with other groups.

Name _____ **Date** _____

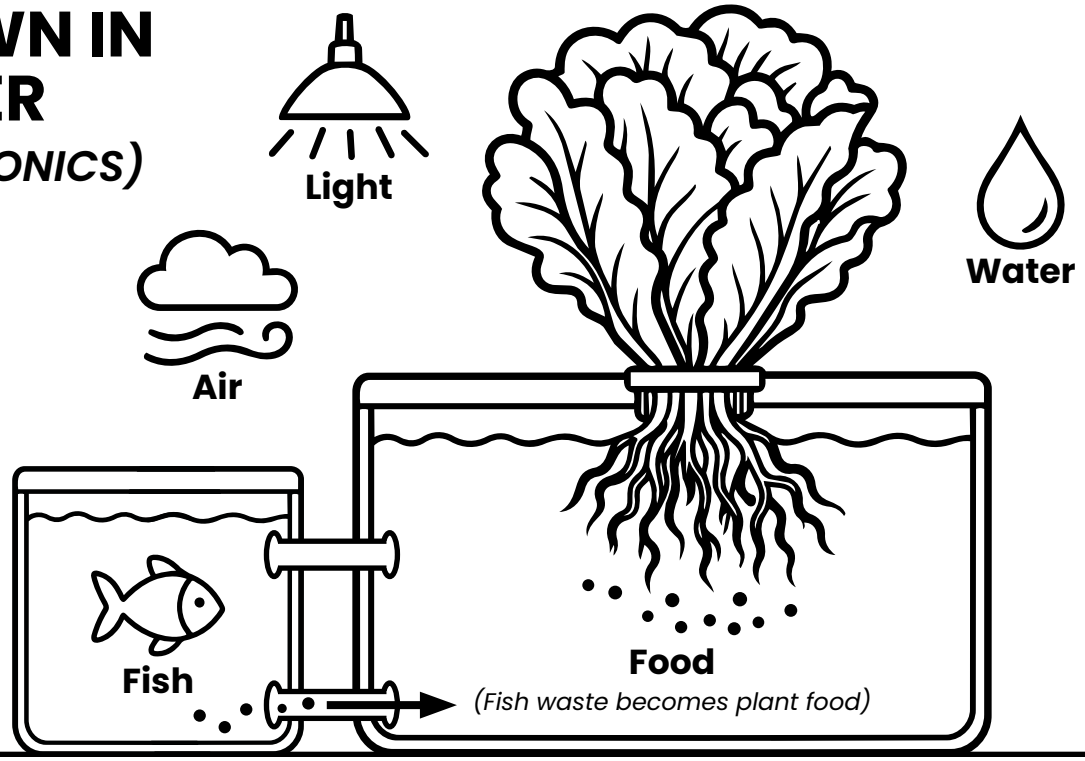
Lettuce Plant Needs

Directions: Color the pictures of what lettuce needs to grow, in the field with soil or in the greenhouse with water and fish.

GROWN IN SOIL



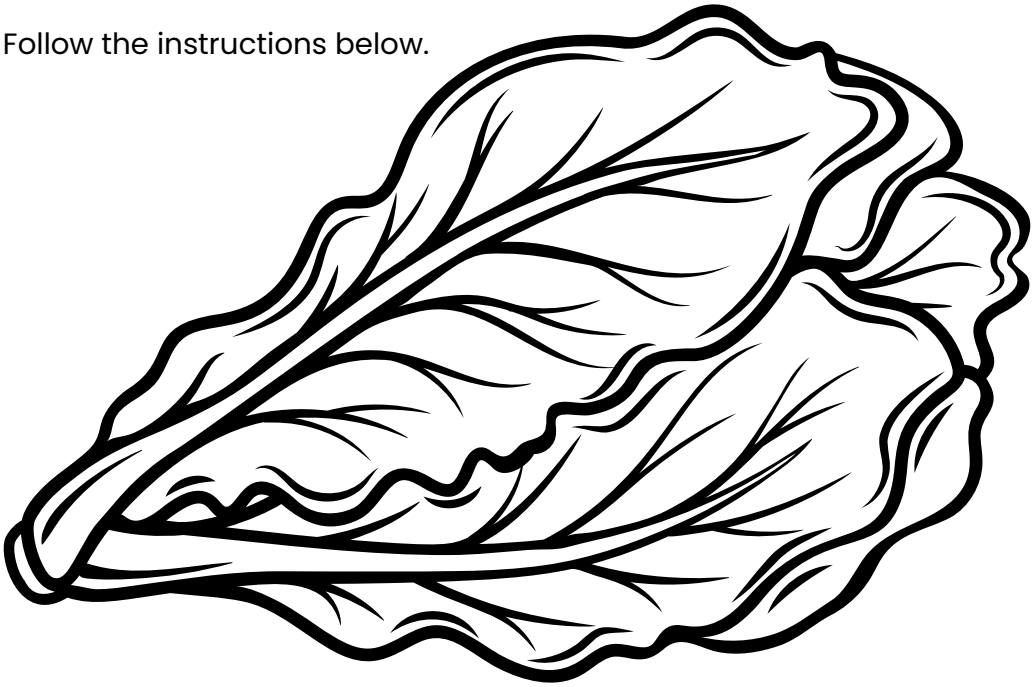
GROWN IN WATER *(AQUAPONICS)*



Name _____ **Date** _____

Letter Practice

Directions: Follow the instructions below.



Ll is for

Trace it:

Lettuce

Write it:

_____

_____

_____

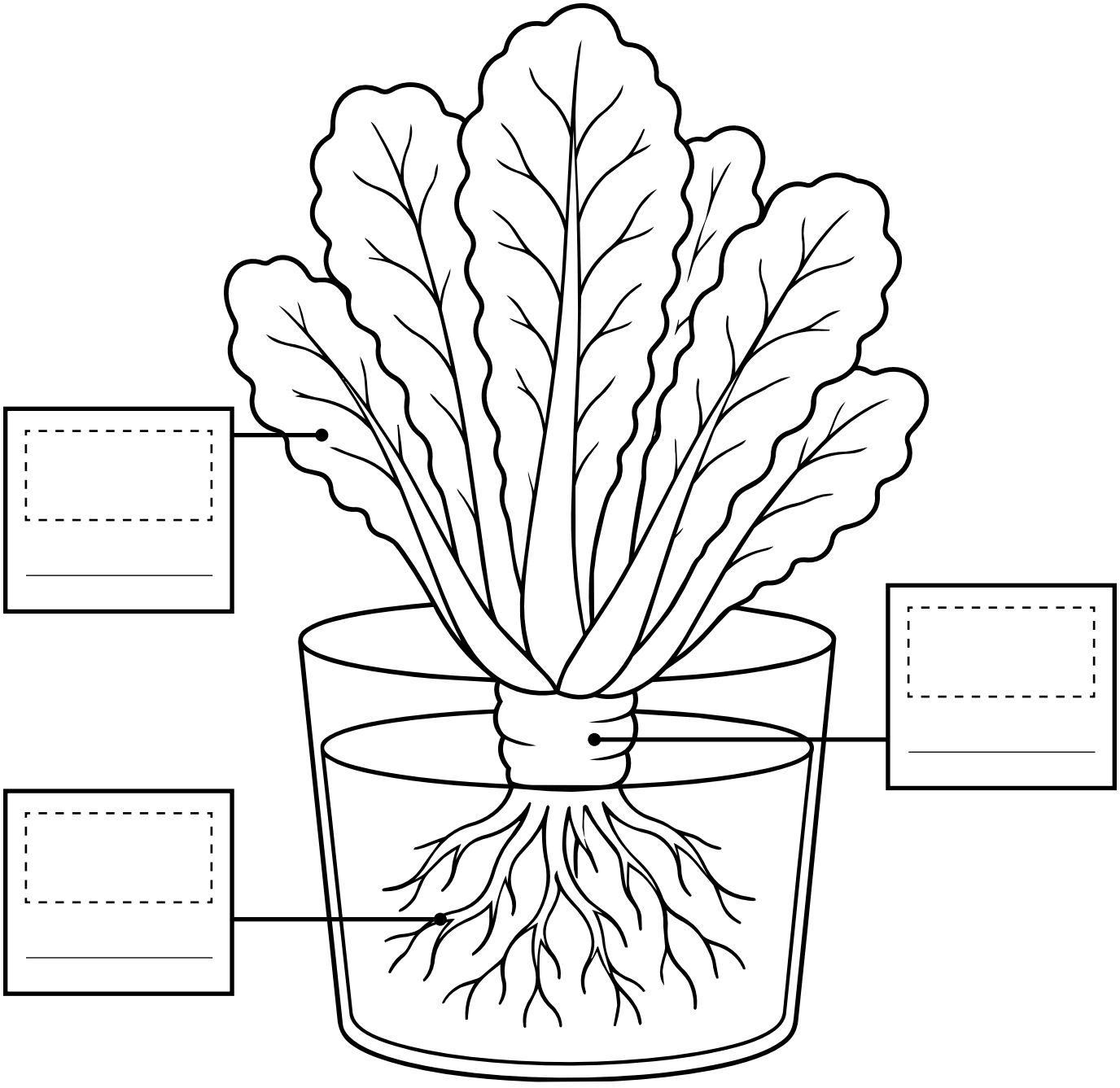
Cut out the letters and glue them in the correct order in the boxes above.

e t L e u t c

Name _____ **Date** _____

Parts of a Lettuce Plant

Directions: Color the lettuce plant. Then cut the words for parts of the plant and glue them where they belong. Next, write the word on the blank line in each box.



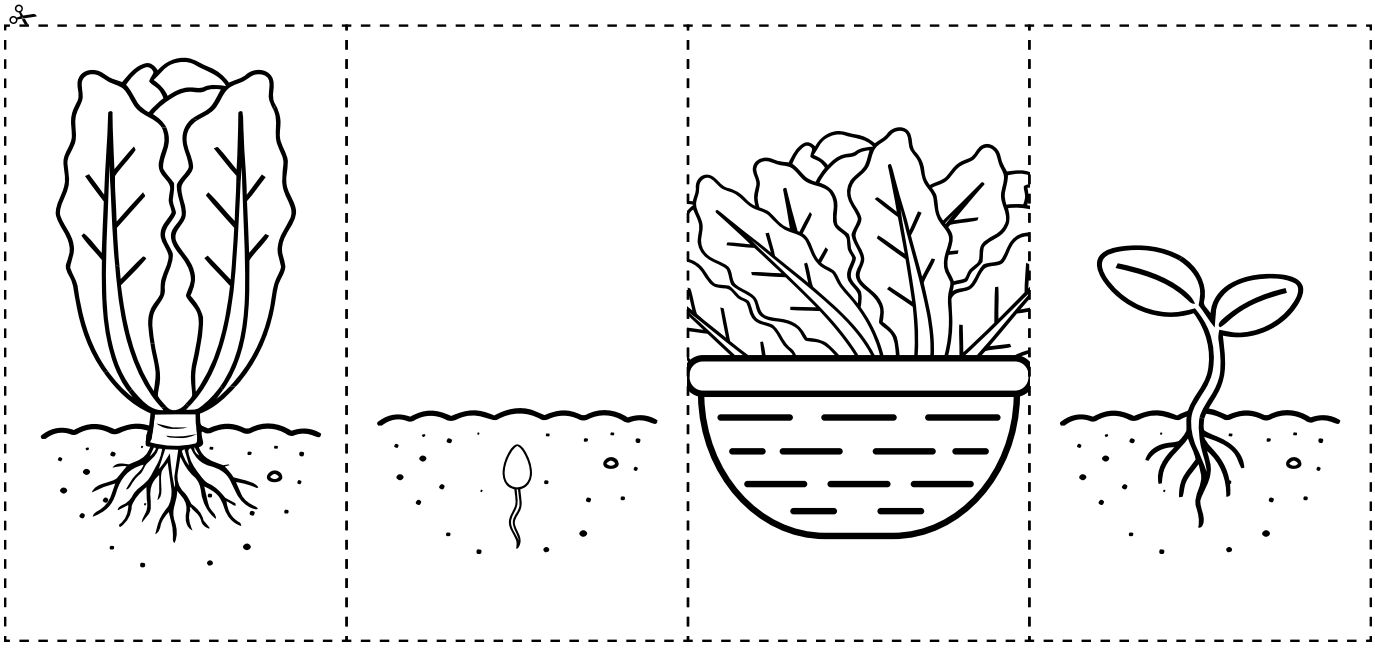
Leaf	Root	Stem

Name _____ **Date** _____

How Lettuce Grows

Directions: This lettuce grows in soil (dirt!). Color, cut and glue the pictures in the correct order to show the life cycle of lettuce.

1	2	3	4

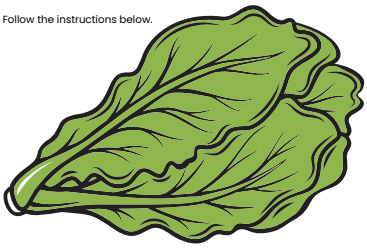


ANSWER KEY

Name _____ Date _____

Letter Practice

Directions: Follow the instructions below.



Ll is for

L e t t u c e

Trace it:

Lettuce

Write it:

Lettuce

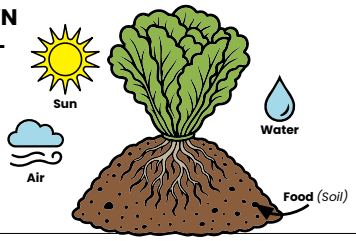
Cut out the letters and glue them in the correct order in the boxes above.

Name _____ Date _____

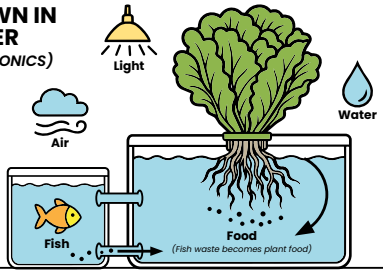
Lettuce Plant Needs

Directions: Color the pictures of what lettuce needs to grow, in the field or in the greenhouse.

GROWN IN SOIL



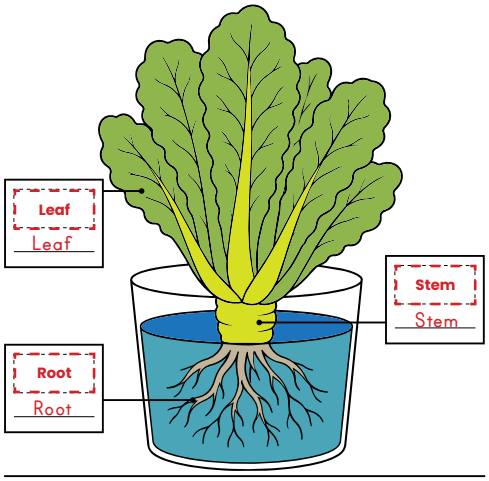
GROWN IN WATER *(AQUAPONICS)*



Name _____ Date _____

Parts of a Lettuce Plant

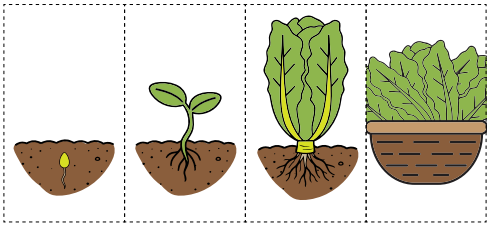
Directions: Color the lettuce plant. Then cut the words for parts of the plant and glue them where they belong. Next, write the word on the blank line in each box.



Name _____ Date _____

How Lettuce Grows

Directions: This lettuce grows in soil (dirt). Color, cut and glue the pictures in the correct order to show the life cycle of lettuce.



LET'S LEARN ABOUT FLORIDA GREEN BEANS!

This Virtual Farm Field Trip unit is all about green beans. It begins with an informative 4.5-minute video, transporting students to R.C. Hatton Farms near Hobe Sound, Florida. Your students will meet farmers Charlie and Jonathan to learn how Florida green beans are planted, grown, harvested and distributed.

We encourage you to expand the learning experience using this section's worksheets and guided activities, including a taste test. You may choose to use all these resources or pick the ones best suited to your classroom.

ACCESS VIRTUAL FARM FIELD TRIP

Scan code or visit:
FarmToSchoolFL.com/FieldTrips

FLORIDA GREEN BEAN FUN FACTS

- **Green beans are part of the legume family, like black beans, lima beans and chickpeas.**
- **Green beans have vitamin C, which helps keep your body fueled, and fiber, which helps your body digest food.**
- **Green beans make a snap when you break them in half. That's why they're often called snap beans.**
- **Green beans used to be called "string beans" because some varieties had a tough string along the pod you had to pull off before eating. Farmers later created stringless beans, but the nickname stuck around.**
- **Some green beans climb up tall like a vine, and some grow on short, bushy plants.**
- **We eat green beans as a vegetable, but scientists consider them a fruit because they are the seed-holding pod of the plant. Open one up and you'll find tiny bean seeds tucked inside!**

BEFORE YOU WATCH: DISCUSSION STARTERS

Get students thinking about agriculture, science and nutrition by asking questions such as:

- *What do plants need to grow? What happens if they don't get what they need?*
- *Let's name some vegetables. Can you think of any that are green?*
- *The weather changes with the seasons. What kind of weather do you think green beans need to grow well? Do you think farmers can grow them all year long?*
- *Close your eyes and imagine you are at a farm. What do you see? Hear? Smell?*
- *Today, we'll be taking a virtual field trip to visit a Florida green bean farm. What do you know about green beans?*
- *Have you eaten green beans before? What did they taste like?*

AFTER YOU WATCH: CHECK FOR UNDERSTANDING

Trivia Toss - Materials

- **3 buckets, boxes or similar containers**
- **2 palm-sized balls (enough for each team to have one)**

Divide students into two teams. Students work as a team to answer a review question about the video. Then, if they answer correctly, they get a chance to toss a ball into one of three buckets to get a prize for their team. Prizes might be a homework pass, free time, extra computer time or lunch in the classroom.

Some teachers have shared that cornhole is a student favorite and works well for this exercise, too!

SUGGESTED QUESTIONS:

Find video comprehension questions, answers and video timestamps for finding those answers below.

- *True or false: Green beans grow underground like potatoes.* ***(False; they grow on plants above the ground; 0:55)***
- *What are two other names for green beans?* ***(Snap beans and string beans; 1:33)***
- *True or false: The little white flowers on a green bean plant can turn into bean pods.* ***(True; 1:05)***
- *True or false: Green beans are part of the legume family.* ***(True; 2:33)***

  Teacher Tip: Ask students to name other foods in the legume family. Answers might include black beans, kidney beans, chickpeas and lentils.

- *True or false: The green beans grown on this farm are sent to schools and stores around Florida.* ***(True; 0:26)***
- *About how many green bean pods does a farmer hope to get from each plant?* ***(About 20 pods per plant; 0:58)***
- *How do the green beans on the farm get their water?* ***(From canals of water on the farm; 1:39)***

  Teacher Tip: Ask students why farmers water their crops. Encourage them to consider why farmers don't rely on the weather alone to give plants the water they need.

- *True or false: Beds are areas of raised soil where crops grow.* ***(True; 0:34)***
- *How long does it take a tiny bean pod to grow into a full-sized pod?* ***(About 3 weeks; 1:18)***

TEACHER TIP: The video is full of information. You might want to watch it again after your discussion so students can listen for details they missed!

USING THESE TEACHING TOOLS

Below is an overview and guide for using the teaching tools included in this section, including guided activities, recipes and worksheets. We've included the education standards each tool complements, materials needed for each activity, a brief overview of each tool and tips for building your lessons.

You can find each of these tools on the following pages, along with additional information and pointers.

GUIDED ACTIVITIES

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Video, Discussion Questions and Trivia Toss (in Classroom Guide) *On page 69*	Standard(s) Supported: SC.1.L.14.2, SC.K.L.14.3, SC.1.L.14.1, HE.K.CH.3.1, HE.K.PHC.1.1, ELA.K.C.4.1, SS.K.G.3.3, HE.K.R.1.2	- 3 buckets, boxes or similar containers - Palm-sized balls (enough for each team to have one)	This activity gets students out of their seats as they respond to questions about the Virtual Farm Field Trip video.	Divide the class into two teams and keep the questions moving so every student gets a turn. If a team answers incorrectly, offer the question to the other team before moving on. Some teachers have shared that cornhole works well for this exercise, too.
Green Beans Three Ways *On page 75*	Standard(s) Supported: SC.K.L.14.1, SC.1.L.14.1, SC.1.N.1.2, HE.K.PHC.1.1, HE.1.PHC.1.1	- Raw green beans in the pod - Freshly steamed green beans (see Quick Steam Green Beans Recipe) - Quick-pickled "dilly" beans (see Dilly Beans Recipe)	In this activity, you'll guide students through tasting green beans three ways – fresh in the pod, steamed and quickly pickled.	Start by asking your school nutrition team if they can support you by acquiring and/or preparing the food items. Use this activity to introduce students to new, nutritious foods. Educate them on the nutritional differences between whole foods – like fresh green beans – and packaged foods with long ingredient lists – like frozen, breaded green beans.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Recipe: Quick Steam Green Beans *On page 77*	Standard(s) Supported: HE.K.R.1.2, SC.K.L.14.1, SC.1.L.14.1	- Large microwave-safe bowl - Microwave-safe plate or lid - Tongs - Measuring spoons - Bowls or cups to serve - Small microwave-safe bowl (optional, for customizing) - Adjust quantities based on class size: 1 pound fresh green beans, washed with ends trimmed - 2 tablespoons water	Use this recipe to prepare the steamed green beans for the Green Beans Three Ways exercise.	Handle the microwave and the hot bowl yourself, and let the beans cool before serving. Plain raw green beans on their own still support the tasting, so no special ingredients are required if time is short.
Recipe: Dilly Beans *On page 78*	Standard(s) Supported: SC.K.L.14.1, SC.1.L.14.1, HE.K.R.1.2	Equipment needed: - 1 quart-sized mason jar with lid - Measuring cup - Spoon to stir - Kid-safe scissors - Small saucepan - Heat source, such as a stovetop, hot plate or classroom-approved cooking appliance (for teacher use only). Materials and ingredients (adjust quantities based on class size): - 1 pound green beans, washed and trimmed to fit the jar standing upright - 1 cup white vinegar - 1 cup water - 1 tablespoon kosher salt - 3 cloves garlic, cut in half - 2 tablespoons fresh dill - 2 tablespoons sugar (optional)	Use this recipe to prepare the quick-pickled “dilly” beans for the Green Beans Three Ways exercise.	Run this one as a teacher demonstration at this grade level. Students can help wash and pack the beans and measure ingredients while you heat the brine and pour the hot liquid. Start at least two days ahead so the beans have time to pickle before the tasting.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Sense Explorers: Green Bean Edition *On page 79*	Standard(s) Supported: SC.K.L.14.1, SC.K.N.1.2, MA.K.M.1.1 / SC.1.L.14.1, SC.1.N.1.2, MA.1.M.1.1, MA.1.M.1.2	- 5 green beans per student, in a variety of lengths for contrast - Rulers, for the Measurement Moment	This activity encourages students to use their five senses to make observations about green beans, then count, order and measure their beans.	You can also ask your school nutrition team to help provide food for this exercise! Try to pick a variety of green beans — ranging in length especially — to provide contrast. Use this activity to teach students how they can use their senses as tools. It will also help deepen students' familiarity with green beans as a fresh and nutritious food choice.
Germinate a Bean in a Bag (Teacher Guide) *On page 80*	Standard(s) Supported: SC.K.N.1.5, SC.1.L.17.1, SC.1.N.1.2	- 1 resealable sandwich-size plastic bag per student - 1 paper towel per student - 2–3 dried green bean seeds per student - Water - Water dropper, or another small instrument for adding water as needed - Tape - A sunny window with space for the whole class's bags - Magnifying glasses (optional) - Crayons and paper, or a science notebook, for the drawing step (optional)	Each student tucks bean seeds and a damp paper towel inside a plastic bag and tapes it to a sunny window. Over one to two weeks, the class watches a root grow down and a shoot grow up with no soil at all.	Plant 2–3 seeds in each bag so every student is likely to get at least one sprout to watch, and start the activity early in the week so there is visible change by the end of the week. Keep the paper towel damp but not soaked; a bag that is too wet can cause the seeds to rot instead of sprout.

WORKSHEETS

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Green Bean Plant Needs *On page 82*	Standard(s) Supported: SC.1.L.17.1	- Crayons, colored pencils or markers	This simple coloring sheet reinforces students' knowledge of the basic resources green beans need to grow: soil, water, sun and air.	This tool complements life science lessons about plants. It pairs well with Germinate a Bean in a Bag, where students can see for themselves which of those needs a seed uses first.
Letter Practice *On page 83*	Standard(s) Supported: ELA.1.C.1.1	- Scissors - Glue - Writing instrument - Crayons, colored pencils or markers (optional)	This worksheet prompts students to trace and write the words "green beans," then cut out letters and glue them in the correct order.	This lesson also presents an opportunity to practice sounding out with students. Get kids out of their seats by asking them to make each of the letters with their bodies! You might put them in groups to make the whole word or demonstrate and make each of the letters together as a class.
Parts of a Green Bean Plant *On page 84*	Standard(s) Supported: SC.1.L.14.1, SC.1.L.14.2	- Scissors - Glue - Writing instrument - Crayons, colored pencils or markers	This worksheet asks students to color the plant, cut out words naming parts of the green bean plant and glue them in the appropriate spot. Students also have space to practice writing the words.	This worksheet complements life science lessons about parts of the plant. It also provides an opportunity to practice sounding out and spelling common science terms.
How Green Beans Grow *On page 85*	Standard(s) Supported: ELA.1.C.1.2	- Scissors - Glue - Crayons, colored pencils or markers	This worksheet invites students to color, cut and glue the basic stages of a green bean plant's life cycle in the correct order.	This worksheet complements life science lessons about plant life cycles. It also encourages students to think critically about order of events. Try getting kids out of their seats by instructing them to pretend they are a seed, crouched in a ball. Then ask them to stand taller as they simulate the phases of the green bean plant's growth.
Answer Key *On page 86*			See here for answers to each worksheet.	

GREEN BEANS THREE WAYS

This group activity brings the field trip to life as students get the opportunity to taste green beans three ways: fresh in the pod, steamed and quickly pickled.

MATERIALS

Raw green beans in the pod

Freshly steamed green beans *(see recipe on following pages)*

Quick-pickled "dilly" beans *(see recipe on following pages)*

COLLABORATE WITH YOUR CAFETERIA

Consider partnering with your school nutrition team to obtain these food items. You can even prepare a green bean-themed dish for your taste test. Be sure to contact them ahead of time, discuss the support you will need and show gratitude for their collaboration!

SUGGESTED QUESTIONS

Lead a discussion as your students try green beans three different ways. Questions like the following can help kids better connect with their food, think about their preferences and encourage them to make nutritious choices in the future.

Before the tasting:

- *Have you tried green beans before? What did you think?*
- *If not, what do you think they will taste like?*
- *Did you know that you can pickle green beans? Do you know what that means? How do you think pickling might change the green beans' texture or flavor?*

  Teacher Note: Pickling is a way of preserving food by soaking it in a salty or vinegar-based liquid, which can change its flavor and texture.

As they try the fresh green beans:

- *As you bit into the raw green bean, what did you hear? What did it feel like?*
- *Do you like the smell of the fresh green beans? How would you describe it?*
- *Describe the flavor. Is it like green beans you've tasted before? If yes, how so? If not, how is it different?*
- *How would you feel about eating fresh green beans as a snack? Why? What might you eat them with?*

As they try the steamed green beans:

- *How is the warm steamed green bean different from the cold, raw one? Does cooking change the way it tastes?*
- *What do you notice about the texture? Is the steamed bean softer or crunchier than the raw one?*
- *What do you notice about the color of the steamed green beans compared to the fresh ones? Is it brighter or darker?*
- *How do you feel after eating the steamed green beans? Would you like to try them again?*

As they try the pickled "dilly" beans:

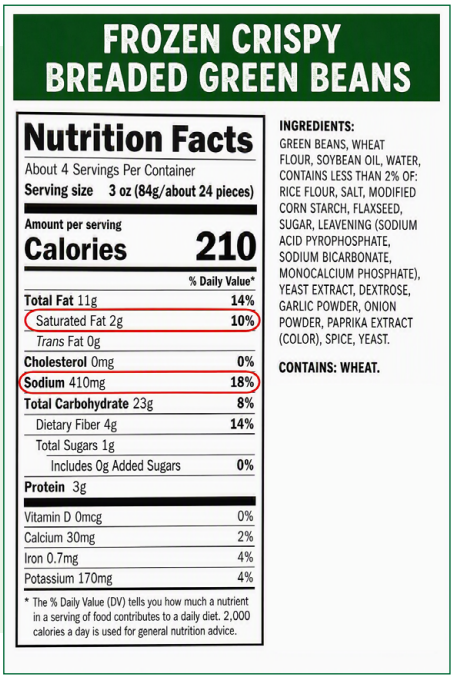
- *Have you had regular pickles before? If so, how are the pickled green beans different from or similar to pickled cucumbers?*
- *How does the flavor of the dilly beans compare to the flavor of the fresh green beans? Is it saltier or more sour?*
- *Would you enjoy having dilly beans as a snack? Why or why not?*
- *Before today, did you know that you could change the taste and texture of vegetables by pickling them yourself? What other vegetables would you like to try pickling?*

TEACHER TIP:

Use this as a quick nutrition lesson. Explain that whole foods with just one ingredient — like fresh green beans — are usually more nutritious than packaged foods with a long list of ingredients.

A food with lots of ingredients — like a frozen package of crispy breaded green beans — is like a puzzle with many pieces, and some pieces might not be so nutritious (like lots of sodium). Simple foods you recognize are better for your body and help you feel your best.

Encourage students to count how many ingredients there are in these frozen breaded green beans. Then you may point out the amount of sodium and saturated fat in one serving. Encourage students to compare this to fresh green beans. There isn't an ingredient list — because it's just green beans!



FROZEN CRISPY BREADED GREEN BEANS

Nutrition Facts

About 4 Servings Per Container

Serving size 3 oz (84g/about 24 pieces)

Amount per serving

Calories 210

	% Daily Value*
Total Fat 11g	14%
Saturated Fat 2g	10%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 410mg	18%
Total Carbohydrate 23g	8%
Dietary Fiber 4g	14%
Total Sugars 1g	
Includes 0g Added Sugars	0%
Protein 3g	
Vitamin D 0mcg	0%
Calcium 30mg	2%
Iron 0.7mg	4%
Potassium 170mg	4%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

INGREDIENTS: GREEN BEANS, WHEAT FLOUR, SOYBEAN OIL, WATER, CONTAINS LESS THAN 2% OF: RICE FLOUR, SALT, MODIFIED CORN STARCH, FLAXSEED, SUGAR, LEAVENING (SODIUM ACID PYROPHOSPHATE, SODIUM BICARBONATE, MONOCALCIUM PHOSPHATE), YEAST EXTRACT, DEXTROSE, GARLIC POWDER, ONION POWDER, PAPRIKA EXTRACT (COLOR), SPICE, YEAST.

CONTAINS: WHEAT.

QUICK STEAM GREEN BEANS RECIPE

Estimated Yield: 1 pound green beans (~6 small servings)

EQUIPMENT REQUIRED

- Large microwave-safe bowl
- Microwave-safe plate or lid
- Tongs
- Measuring spoons
- Bowls or cups to serve
- Small microwave-safe bowl (optional, for customizing)

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- 1 pound fresh green beans, washed with ends trimmed
- 2 tablespoons water

DIRECTIONS

1. Add the green beans and water to the large microwave-safe bowl and cover with the microwave-safe plate or lid.
2. Microwave on high, checking at the halfway point, for 4–6 minutes, or until the beans are bright green and just tender when pierced with a fork. Time may vary.
3. Carefully uncover the beans (watch for steam) and drain any excess water.
4. Serve warm in cups or bowls.

CUSTOMIZE YOUR BEANS

For a more exciting flavor, melt 1 tablespoon butter or olive oil with 1 minced garlic clove (or ¼ teaspoon garlic powder) in the small microwave-safe bowl, microwaving in short bursts until just melted and fragrant. Pour over the drained beans, season with a pinch of black pepper and toss to coat.

You can also finish the beans with a squeeze of lemon juice or a sprinkle of grated Parmesan cheese.

DILLY BEANS RECIPE

TEACHER NOTE:
Pickled green beans are often called "dilly beans" because they're pickled with dill, a leafy herb that gives them a tangy, savory flavor.

Estimated Yield: 1 quart dilly beans

This activity can be completed as a teacher demonstration or in small groups with teacher assistance.

Students can help wash and pack the green beans, measure ingredients and observe the pickling process, while the teacher handles heating the brine — the mixture of water, vinegar and salt used to pickle and preserve foods — and pouring the hot liquid into the jars.

EQUIPMENT REQUIRED

- 1 quart-sized mason jar with lid
- Measuring cup
- Spoon to stir
- Kid-safe scissors
- Small saucepan
- Heat source, such as a stovetop, hot plate or classroom-approved cooking appliance (for teacher use only)

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- 1 pound green beans, washed and trimmed to fit the jar standing upright
- 1 cup white vinegar
- 1 cup water
- 1 tablespoon kosher salt
- 3 cloves garlic, cut in half
- 2 tablespoons fresh dill
- 2 tablespoons sugar (optional)

DIRECTIONS

1. **Students:** Wash the green beans and trim them so they fit inside the jar. Pack the beans upright in the jar with the garlic and dill.
   a. **Tip:** Any beans that don't fit in the jar make a great raw snack — enjoy them fresh!
2. **Students:** Measure the vinegar, water, salt and sugar (if using) into a saucepan.
3. **Teacher:** Heat the mixture on a stovetop until it comes to a gentle boil, stirring until the salt and sugar dissolve.
4. **Teacher:** Carefully remove the brine from the heat and allow it to cool for 2–3 minutes.
5. **Teacher (or older students with close supervision):** Pour the warm brine into the jar until the green beans are completely covered.
6. **Students:** Secure the lid and gently shake the jar to combine the ingredients.
7. Place the jar in the refrigerator and let the beans pickle for at least 2 days before tasting.
8. Store refrigerated and enjoy within about 2 months.

CUSTOMIZE YOUR BEANS

For a spicy punch, add ¼ teaspoon red pepper flakes and ¼ teaspoon whole black peppercorns. Or try swapping half the white vinegar for red wine vinegar.

TEACHER TIP: Have students predict how the green beans' flavor, smell and texture might change during pickling. After tasting, compare the fresh and pickled beans and discuss the differences.

SENSE EXPLORERS: GREEN BEAN EDITION

This simple, hands-on activity invites students to use their five senses as tools. They will make observations about green beans, describe them and compare their observations with their classmates.

TEACHER TIP: Be sure to ask your school nutrition team if they can support you by providing green beans!

WHAT YOU'LL NEED:
5 GREEN BEANS PER STUDENT

Try to pick a variety of green beans — ranging in length especially — to provide contrast.

ACTIVITY:

Invite your students to use each of their five senses to experience and make observations about green beans. Guide them through this activity, one sense at a time. Begin with broad, open-ended questions, followed by more specific questions, as outlined below.

SIGHT:
Look at one of your green beans. Describe the color. What does it remind you of? Is it long and thin or short and wide? Now take another bean. Do you notice anything different?

TOUCH:
Feel a green bean with your fingers. How does it feel? Is it smooth or bumpy? Is it cool to the touch? Is it firm or soft? Is it heavy or light?

SMELL:
Smell a green bean. What does it smell like? Does it have a light, fresh scent? Does it remind you of any other smells, like fresh-cut grass or other vegetables you've tried?

TASTE:
Take a bite of your snapped green bean. How does it taste? Is the flavor strong or weak? Sweet or a little bitter? What other foods does the taste remind you of?

HEARING:
Use listening ears to notice the sound the green bean makes when you break it in half. Does it make a crisp, snapping sound?

MEASUREMENT MOMENT!

In small groups, count out a set of up to 20 green beans together. Then each student picks three beans and puts them in order from shortest to longest. Have them estimate how long the longest bean is, then hand out rulers to measure and compare their findings with other groups.

GERMINATE A BEAN IN A BAG

TEACHER GUIDE

In this activity, each student tucks a bean seed and a damp paper towel inside a plastic bag and tapes it to a sunny window. Over the next week or two, the class watches something amazing happen: With no soil at all, a little root grows down, and a green shoot — the first stem and leaves of the new plant — grows up.

It's a hands-on way for students to observe germination, the process by which a seed sprouts and begins to grow into a new plant. They'll discover what seeds need to grow by practicing careful observation over time.

WHAT YOU'LL NEED (PER STUDENT):

- **1 resealable sandwich-size plastic bag**
- **1 paper towel**
- **2–3 dried green bean seeds**
- **Water**
- **Water dropper, or another small instrument for adding water as needed**
- **Tape**
- **A sunny window with space for the whole class's bags**
- **Magnifying glasses for a closer look (optional)**
- **Crayons and paper, or a science notebook, for the drawing step (optional)**

HOW TO SET IT UP:

1. Dampen a paper towel with water so it is wet but not dripping, then fold it to fit inside the plastic bag.
2. Have each student place 2–3 bean seeds against the paper towel, near the top of the bag so the seeds are easy to see.
3. Seal each bag (leaving a little air inside) and tape it to a sunny window, with the seeds facing into the room.
4. Check the beans each day. Keep the paper towel damp, adding a few drops of water if it starts to dry out.
5. Over the next 1–2 weeks, watch as a root grows down and a shoot grows up.

WATCH AND DRAW:

Guide students to look closely at their beans a few times as they grow, and to draw what they see each time.

- **Day 1:** Draw your bean seed. What color is it? What shape? How big is it?
- **A few days later:** Look again. Has anything changed? Can you find the tiny root starting to grow? Draw your bean now.
- **Near the end:** Draw your bean one more time. Point to the root growing down and the shoot growing up.

OBSERVE AND DISCUSS:

This is a great activity to discuss the different conditions plants need to grow. While the bean in this activity can begin growing in a bag without soil, many plants grow best in soil. Students can explore how plants need water, sunlight, air and nutrients to thrive.

Talk about the beans as a class while they grow, and again at the end. Questions like these help students notice changes and think about what a plant needs:

- Before we start: What do you think will happen to the bean inside the bag?
- Our bean is growing with no dirt at all. What is it using to grow instead? *(Water, light, air, warmth from the sunny window and room to grow inside the bag.)*
- Do you think it could keep growing in the bag forever? Why or why not? *(As the bean grows, it uses food stored inside the seed. Eventually, it will need more nutrients and space to continue growing, which plants often get from soil.)*
- Which way is the root growing? Which way is the shoot growing?
- How is your bean different today from what it was on the first day? How can you tell?
- What do you think would happen if the paper towel dried out completely? Why?

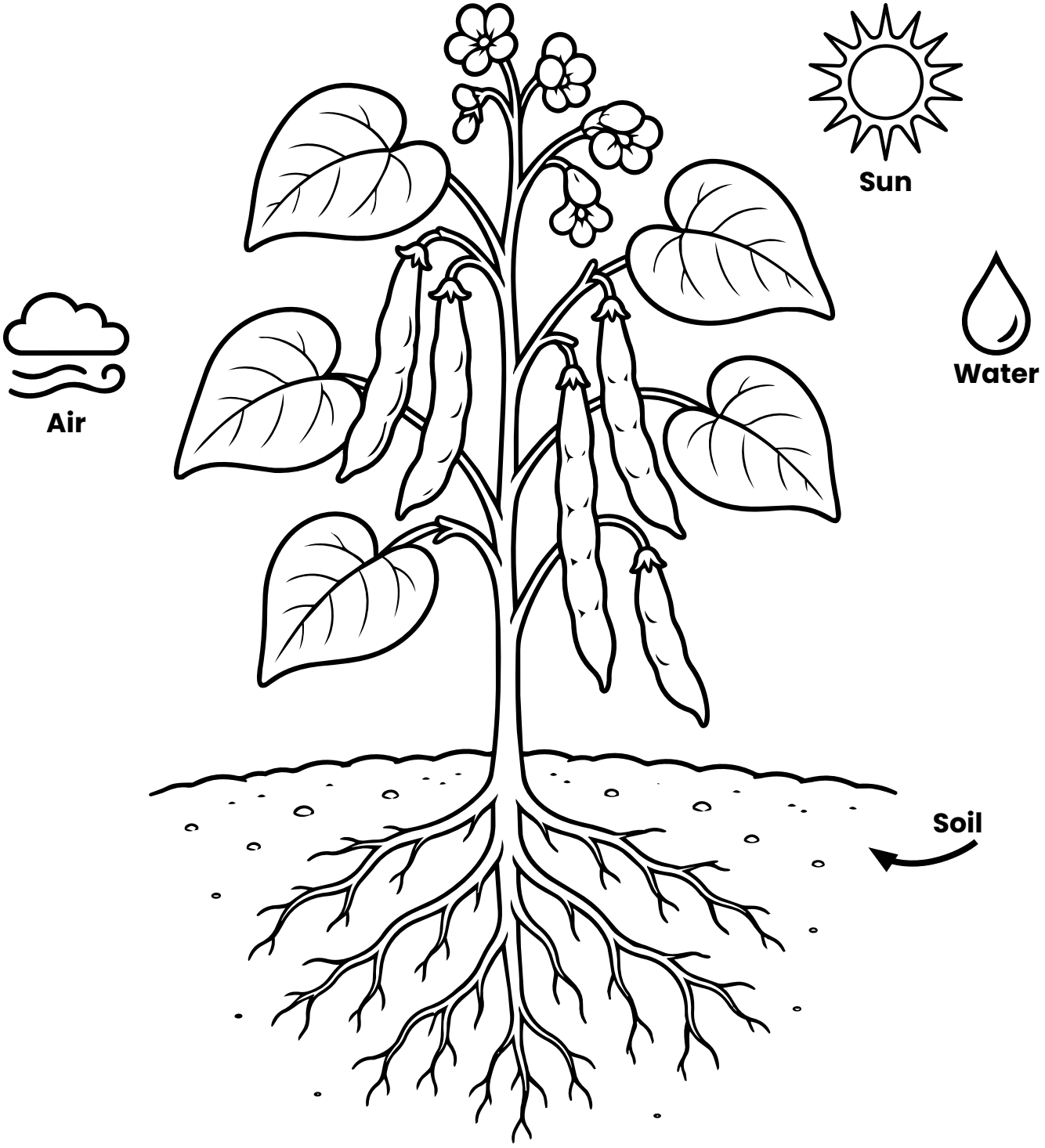
TEACHER TIPS:

- Plant 2–3 seeds in each bag so every student is likely to get at least one sprout to watch.
- Start the activity early in the week so there is visible change by the end of the week.
- No soil means the root and shoot are easy to see — a great, mess-free way to watch a seed come to life.
- Keep the paper towel damp but not soaked; a bag that is too wet can cause the seeds to rot instead of sprout.

Name _____ **Date** _____

Green Bean Plant Needs

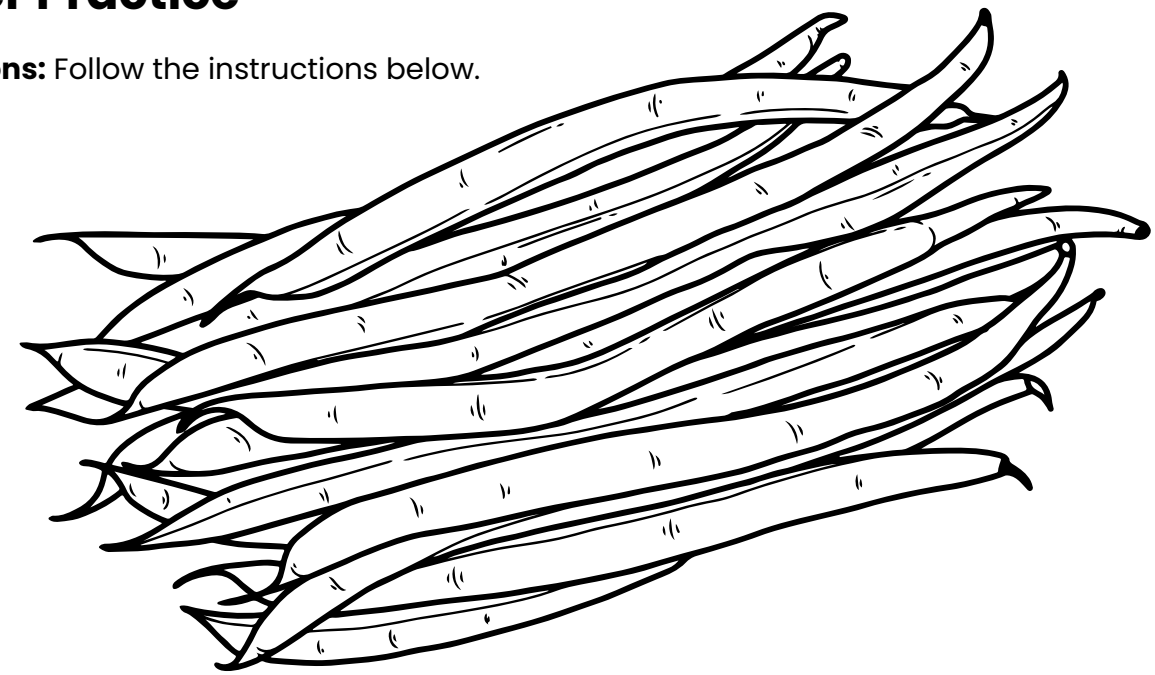
Directions: Color the pictures of what green beans need to grow.



Name _____ **Date** _____

Letter Practice

Directions: Follow the instructions below.



Gg is for

Trace it:

Green Beans

Write it:

_____

_____

_____

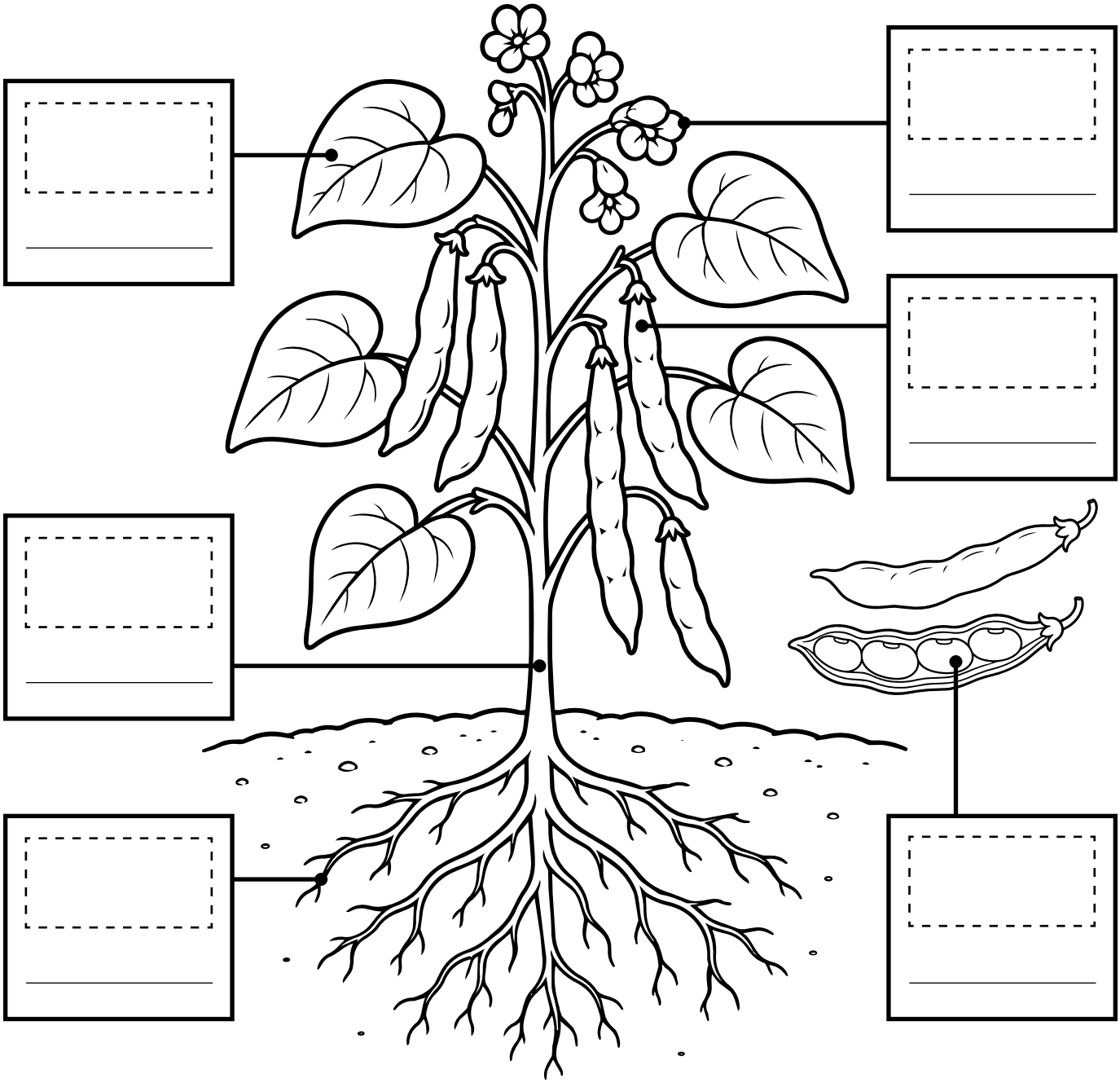
Cut out the letters and glue them in the correct order in the boxes above.

s n e e G n a B r e

Name _____ **Date** _____

Parts of a Green Bean Plant

Directions: Color the green bean plant. Then cut the words for parts of the plant and glue them where they belong. Next, write the word on the blank line in each box.



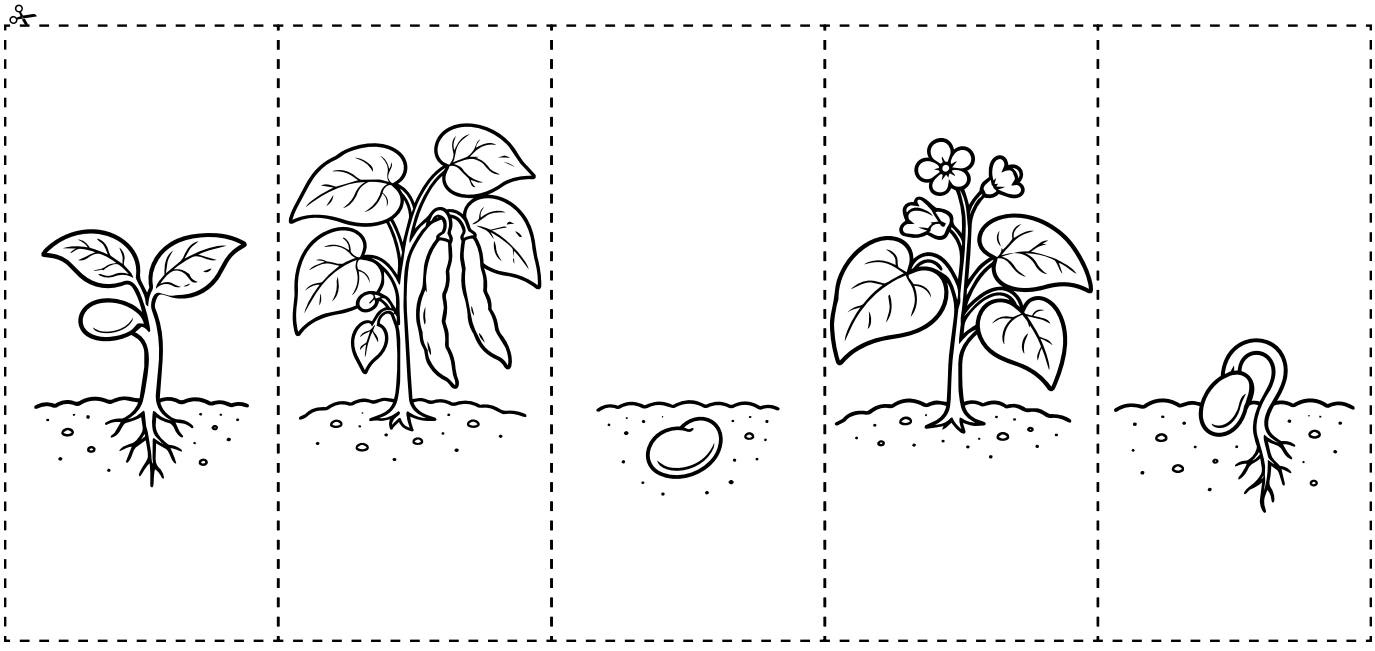
Root	Stem	Leaf	Flower	Pod	Bean

Name _____ **Date** _____

How Green Beans Grow

Directions: Color, cut and glue the pictures in the correct order to show the life cycle of a green bean plant.

1	2	3	4	5

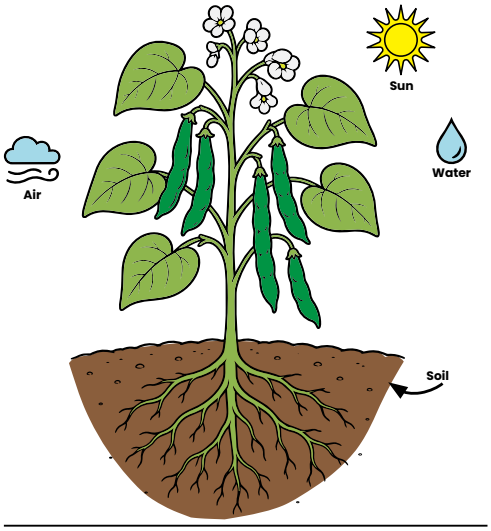


ANSWER KEY

Name _____ Date _____

Green Bean Plant Needs

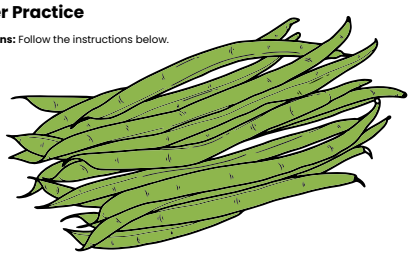
Directions: Color the pictures of what green beans need to grow.



Name _____ Date _____

Letter Practice

Directions: Follow the instructions below.



Gg is for

G r e e n B e a n s

Trace it: **Write it:** _____

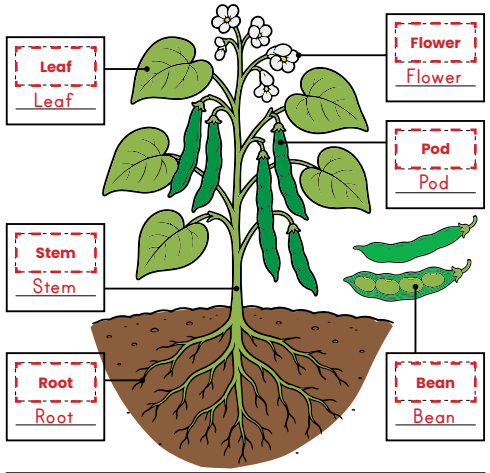
Green Beans Green Beans

Cut out the letters and glue them in the correct order in the boxes above.

Name _____ Date _____

Parts of a Green Bean Plant

Directions: Color the green bean plant. Then cut the words for parts of the plant and glue them where they belong. Next, write the word on the blank line in each box.

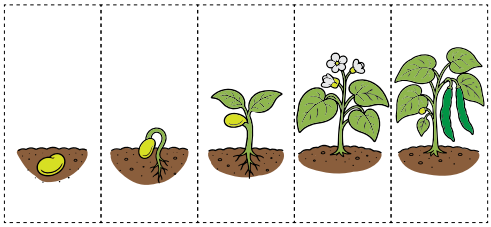


_____

Name _____ Date _____

How Green Beans Grow

Directions: Color, cut and glue the pictures in the correct order to show the life cycle of a green bean plant.



Standard(s) Supported: SC.2.L.16.1, SC.3.L.14.1, SC.3.L.17.2, HE.2.PHC.1.5, HE.3.PHC.3.2, HE.2.CH.3.1, HE.3.PHC.1.1

LET'S LEARN ABOUT FLORIDA CUCUMBERS!

This Virtual Farm Field Trip unit is all about cucumbers. It begins with an informative 4-minute video, transporting students to Long and Scott Farms in Mount Dora, Florida. Your students will meet farmers Haley and Kirsten to learn how Florida cucumbers are planted, grown, harvested and distributed.

We encourage you to expand the learning experience using this section's worksheets and guided activities, including a taste test. You may choose to use all these resources or pick the ones best suited to your classroom.

ACCESS VIRTUAL FARM FIELD TRIP

Scan code or visit:
FarmToSchoolFL.com/FieldTrips

FLORIDA CUCUMBER FUN FACTS

- There are two main kinds of cucumbers – they are called slicers and picklers. We eat slicers fresh and turn picklers into… pickles!
- Florida grows more slicer cucumbers than anywhere else in the United States.
- Cucumbers are more than 95% water. They are the perfect snack to keep you hydrated on a hot day.
- Have you ever heard someone say, "cool as a cucumber"? That's because the inside of a cucumber is 20 degrees cooler than the temperature around it.
- Cucumbers are high in nutrients like iron, calcium and vitamin B. Iron helps make blood, which carries the air we breathe to our muscles so we can move and grow. Calcium helps us grow strong bones and vitamin B turns the food we eat into energy.

BEFORE YOU WATCH: DISCUSSION STARTERS

Get students thinking about agriculture, science and nutrition by asking questions such as:

- *Where do the fruits and vegetables you eat come from? How did they get there?*
- *What do plants need to grow?*
- *Let's name some vegetables. Can you think of any others that are green?*
- *Now, let's name some fruits. Which ones are green?*
- *Close your eyes and imagine you are at a farm. What do you see? Hear? Smell?*
- *Today, we'll be taking a virtual field trip to visit a Florida cucumber farm. What do you know about cucumbers?*
- *Does anyone know what the word agritourism means? What do you think it might mean? Listen for its use in the video.*

AFTER YOU WATCH

Explore the activities and worksheets on the following pages – including a video trivia sheet! You might pass the trivia sheet out before starting the video so students can complete it as they watch or wait until after to test understanding.

TRIVIA TOSS

Want to liven up your video trivia sheet exercise? Have students complete their worksheets separately, then come together in teams to compare and finalize answers. Go around the room asking each team a question. If they answer it correctly, they get a chance to toss a ball into one of three buckets to get a prize for their team. Prizes might be a homework pass, free time, extra computer time or lunch in the classroom.

GEOGRAPHY MOMENT

Ask students to find Mount Dora on a map of Florida. (Hint: It's between The Villages and Orlando.)

USING THESE TEACHING TOOLS

Below is an overview and guide for using the teaching tools included in this section, including guided activities, recipes and worksheets. We've included the education standards each tool complements, materials needed for each activity, a brief overview of each tool and tips for building your lessons.

You can find each of these tools on the following pages, along with additional information and pointers.

GUIDED ACTIVITIES

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Video, Discussion Questions and Trivia Toss (in Classroom Guide) *On page 87*	Standard(s) Supported: SC.2.L.16.1, SC.3.L.14.1, SC.3.L.17.2, HE.2.PHC.1.5, HE.3.PHC.3.2, HE.2.CH.3.1, HE.3.PHC.1.1	- 3 buckets, boxes or similar containers - 2 palm-sized balls (enough for each team to have one)	This activity gets students out of their seats as they respond to questions about the Virtual Farm Field Trip video.	Use this activity to complement or reinforce the Cucumber Video Trivia sheet.
Cucumber Three Ways *On page 92*	Standard(s) Supported: SC.2.P.9.1, SC.2.P.8.1, SC.3.P.8.3, SC.3.N.1.6, HE.2.PHC.1.5, HE.3.PHC.3.2, HE.2.CH.3.1, HE.3.PHC.1.1	- Sliced cucumbers - Jar of pickles - Cucumber punch (see recipe)	In this activity, you'll guide students through tasting cucumbers in three different forms – as fresh cucumbers, as pickles and in a cucumber punch.	Start by asking your school nutrition team if they can support you by acquiring and/or preparing the food items. Use this activity to introduce students to new, nutritious foods. Educate them on the nutritional differences between whole foods – like fresh cucumbers – and processed foods – like pickles.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Recipe: Cucumber Punch *On page 94*	Standard(s) Supported: SC.2.P.9.1, SC.2.P.8.1, SC.3.N.1.6	- Cutting board - Knife - Clear pitcher - Wooden spoon (optional) *Adjust quantities based on class size:* - 6-7 cucumbers (sliced thin) - 6-8 limes and/or lemons (quartered) - 15-20 mint leaves (optional) - 8-9 cups (64-72 oz) drinking water - Ice (optional) - Small cups - Spoons	Use this recipe to prepare your own cucumber punch for the Cucumber Three Ways exercise.	You might demonstrate making a large batch of punch to share with your class or give each student a cup and ingredients to prepare their own.
Food Science: DIY Pickles *On page 95*	Standard(s) Supported: SC.2.P.9.1, SC.2.P.8.1, SC.3.N.1.6	- Cutting board - Knife - 2 or more Mason jars - Mixing bowl - Spoon - Measuring cup - Measuring spoons - Refrigerator - Forks, plates and napkins for serving (optional) - 2 medium to large cucumbers - 1 cup water - 1 cup rice vinegar - 3 tablespoons maple syrup or sugar - 3 teaspoons salt - Freshly ground black pepper - 4 leafy sprigs of fresh dill - 4 cloves of fresh garlic - 1 bay leaf	Use this activity on its own or to prepare your own pickles for the Cucumber Three Ways activity. With this activity, you will demonstrate for students how to turn fresh cucumbers into pickles.	Start by asking your school nutrition team if they can support you by acquiring the food items. What's better than a science experiment you can eat? This activity connects young students with where their food comes from, showing them firsthand how cucumbers are processed to become pickles. It also introduces students to the idea that adding ingredients can change an item's properties.

WORKSHEETS

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Cucumber Video Trivia *On page 97*	Standard(s) Supported: SC.2.L.16.1, SC.3.L.14.1, SC.3.L.17.2	- Writing instrument	This worksheet tests students' comprehension of the Virtual Farm Field Trip by asking questions answered in the video.	You might hand the worksheet out before the video so students can answer as they go or wait until after the video. Consider enhancing this activity with the "Trivia Toss" activity, explained in this Classroom Guide, under "After You Watch."
On the Cucumber Farm *On page 98*	Standard(s) Supported: ELA.2.C.3.1, ELA.3.C.3.1, ELA.2.R.3.2	- Writing instrument - Crayons, colored pencils or markers	This worksheet asks students to draw a scene from the cucumber farm they visited in the Virtual Farm Field Trip and describe what is happening.	This tool reinforces comprehension, encourages observation skills and allows students to express their understanding creatively. You might ask students to each share with the class what they drew and wrote.
Parts of a Cucumber Plant *On page 99*	Standard(s) Supported: SC.3.L.14.1, SC.3.L.17.2	- Writing instrument - Crayons, colored pencils or markers (optional)	This worksheet has students (1) label parts of the cucumber plant using a word bank, then (2) match each part of the plant with a description of its function.	This worksheet complements life science lessons about parts of the plant. It also touches on the concept of photosynthesis. If students have already learned about photosynthesis, it's great reinforcement. If not, it provides the perfect introduction.
Life Cycle of a Cucumber *On page 100*	Standard(s) Supported: SC.2.L.16.1, SC.3.L.14.1, SC.3.L.17.2	- Scissors - Glue - Crayons, colored pencils or markers	This worksheet invites students to cut and paste words indicating stages of a cucumber's life cycle in the correct order.	This worksheet complements life science lessons about plant life cycles.
Answer Key *On page 101*			See here for answers to each worksheet.	

CUCUMBER THREE WAYS

This group activity brings the field trip to life as students get the opportunity to taste cucumbers three ways: as fresh slices, as pickles and as an easy-to-make punch.

MATERIALS

Sliced cucumbers

Jar of pickles

Cucumber punch
(see recipe on following pages)

SUGGESTED QUESTIONS

Lead a discussion as your students try cucumbers three different ways. Questions like the following can help kids better connect with their food, think about their preferences and encourage them to make nutritious choices in the future.

Before the tasting:

1. *Have you tried cucumber before? What did you think?*
2. *If not, what do you think it will taste like?*
3. *Did you know pickles are made from cucumbers? Do you know how cucumbers get turned into pickles?*

As they try the fresh cucumbers:

1. *What do you think of the texture of the fresh cucumber? Is it crunchy or soft?*
2. *Do you like the smell of the cucumber? How would you describe it?*
3. *How would you feel about eating fresh cucumbers as a snack? Why? What might you eat them with?*

MAKE YOUR OWN PICKLES

For a bonus activity, make pickles together as a class! See the Guided Activity section for an easy recipe.

COLLABORATE WITH YOUR CAFETERIA

You might also consider partnering with your school nutrition team to obtain these food items and/or prepare a cucumber-themed dish for your taste test. Be sure to contact them ahead of time, discuss the support you will need and show gratitude for their collaboration!

As they try the pickles:

1. *How does the taste of the pickle compare to the fresh cucumber? Is it more sour or salty?*
2. *What do you think about the texture of the pickle compared to the fresh cucumber? Is it softer or crunchier?*
3. *Do you like the smell of the pickle? How would you describe it?*
4. *Have you had pickles before? If so, what do you usually eat them with? If not, would you like to try them again?*

As they try the punch (cucumber water):

1. *Can you taste the cucumber in the water? How strong is the flavor?*
2. *How does the flavor of cucumber water compare to regular water? Is it more refreshing?*
3. *Would you enjoy drinking cucumber water on a hot day? Why or why not?*
4. *Before today, did you know you could change the flavor of water by adding fruit like cucumbers? What other fruit might you add to water, and how might it change the flavor?*

TEACHER TIP:

You can also use this activity as a nutrition lesson for students. Explain how whole foods made of just one ingredient – like a fresh cucumber – are more nutritious than packaged, processed foods with many ingredients.

You can explain that food with lots of ingredients – like pickles – are like a big puzzle with many pieces, and some of those pieces might not be as healthy (like added sugar). The simple food with one ingredient is usually better for your body and helps you feel your best!

You might even pass around a jar of pickles to show the students the list of ingredients on the nutrition label. Then ask them where the fresh cucumber's ingredient list is. (There is none – because there's just one ingredient!)

CUCUMBER PUNCH RECIPE

CUCUMBER PUNCH

Estimated Servings: 100 oz, or (20) 5 oz cups

EQUIPMENT REQUIRED

- Cutting board
- Knife
- Clear pitcher
- Wooden spoon (optional)

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- 6-7 cucumbers (sliced thin)
- 6-8 limes and/or lemons (quartered)
- 15-20 mint leaves (optional)
- 8-9 cups (64-72 oz) drinking water
- Ice (optional)
- Small cups
- Spoons

DIRECTIONS

1. Slice cucumbers, limes and lemon.
2. Place sliced cucumbers, limes, lemons and mint into drinking cup. (*Optional: Lightly mash pieces using a wooden spoon to enhance taste.)*
3. Add water and ice cubes.
4. Enjoy!

You might demonstrate making a large batch of punch to share with your class or give each student a cup and ingredients to prepare their own.

FOOD SCIENCE: DIY PICKLES

Complete this recipe with your students for a fun science experiment they can eat!

SUGGESTED QUESTIONS

Below are discussion questions to ask your class before, during and after this DIY pickle experiment.

Before:

1. *Did you know pickles are made from cucumbers?*
2. *How do you think cucumbers get turned into pickles?*
3. *Have you tasted pickles before? What did you think?*
4. *If not, what do you imagine they taste like?*

During:

1. *What does a fresh cucumber taste like?*
2. *How do you think adding these ingredients will change the flavor of the cucumber?*
3. *How might adding these ingredients change the texture?*
4. *How might adding these ingredients change the smell?*

After:

1. *Does the pickle taste how you expected? Explain.*
2. *How does the taste of the pickle compare to fresh cucumber? Is it more sour or salty?*
3. *What do you think about the texture of the pickle compared to a fresh cucumber? Is it softer or crunchier?*
4. *Do you like the smell of the pickle? How would you describe it?*
5. *Have you had pickles before? If so, what do you usually eat them with? If not, would you like to try them again?*

COLLABORATE WITH YOUR CAFETERIA

Be sure to ask your school nutrition team if they can support you by providing food items!

When we pickle cucumbers, we put them in a special juice called brine, which is often made of water, salt and vinegar. When cucumbers sit in this juice for a long time, they turn into pickles.

This process – called pickling – helps keep cucumbers fresh for a long time. It also changes the texture, making cucumbers crunchier. Best of all, the cucumbers absorb the flavors from the brine, making them tangy!

EASY DIY PICKLES

EQUIPMENT REQUIRED

- Cutting board
- Knife
- 2 or more Mason jars
- Mixing bowl
- Spoon
- Measuring cup
- Measuring spoons
- Refrigerator
- Forks, plates and napkins for serving (optional)

MATERIALS AND INGREDIENTS

- 2 medium to large cucumbers (about 24 ounces total)
- 1 cup water (room temperature or cooler)
- 1 cup rice vinegar
- 3 tablespoons maple syrup or sugar
- 3 teaspoons salt
- 40 twists of freshly ground black pepper
- 4 leafy sprigs of fresh dill, roughly chopped (about ½ cup)
- 4 cloves garlic, peeled and smashed
- 1 bay leaf

DIRECTIONS

1. Slice the cucumbers into thin rounds, about 1/8-inch thick. Set aside.
2. In a liquid measuring cup or bowl, combine the water, vinegar, maple syrup, salt and black pepper. Stir until most of the salt has dissolved into the liquid, about 30 seconds to 1 minute. Set aside.
3. Place the cucumbers into a wide-mouth jar about 3 to 4 inches in diameter, tall enough to offer at least 1 inch of extra space on top.
4. Top the cucumbers with the dill and garlic. Tuck the bay leaf into the side of the jar. Pour all of the liquid over the cucumbers so they're fully submerged.
5. Cover and refrigerate for at least 1 hour. The flavor will continue to develop over the next couple of days. These pickles will keep for up to 3 weeks in the refrigerator.

Name _____ **Date** _____

Cucumber Video Trivia

Directions: Answer these trivia questions based on the video you watched about the Florida cucumber farm.

1. Each cucumber plant produces two kinds of flowers. What are they? _____

_____

2. Which flower makes the cucumbers? _____

3. What insects are brought in to be pollinators? _____

4. What happens if a cucumber plant isn't pollinated enough times? _____

_____

Circle whether the statements below are true or false.

5. Each cucumber is picked by hand.	**TRUE** | **FALSE**
6. Cucumbers are cooler on the outside than on the inside.	**TRUE** | **FALSE**
7. Each cucumber plant is harvested one time.	**TRUE** | **FALSE**
8. Cucumbers do not grow in Florida.	**TRUE** | **FALSE**
9. In the spring, Florida farmers typically harvest cucumbers from April through the middle of June.	**TRUE** | **FALSE**

Name _____ **Date** _____

On the Cucumber Farm

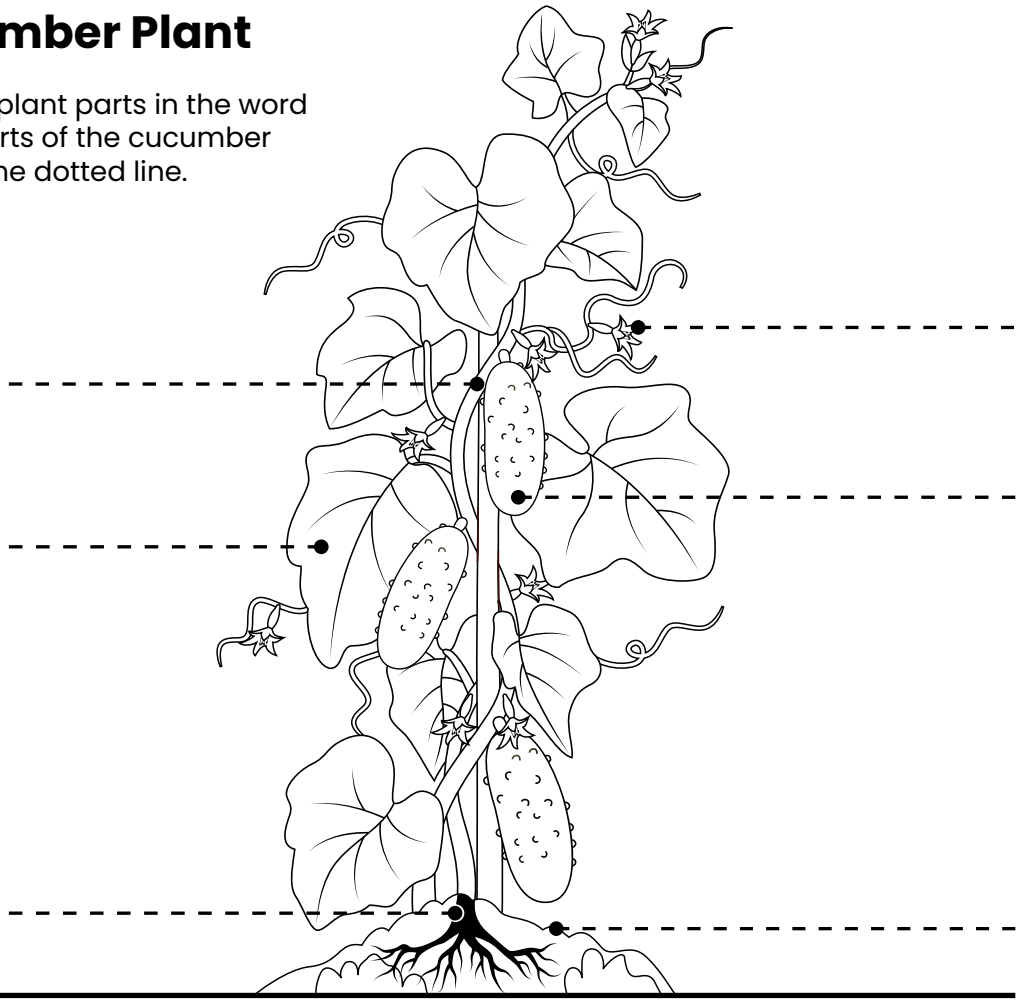
Directions: Draw a scene from the Florida cucumber farm you just learned about. Next, describe what is happening.

Name _____ **Date** _____

Parts of a Cucumber Plant

Directions: Use the list of plant parts in the word bank to correctly label parts of the cucumber plant. Write the word on the dotted line.

Word Bank
Leaf
Cucumber
Stem
Soil
Flower
Roots



Now, draw a line between each part of the plant (on the left) and its function (on the right).

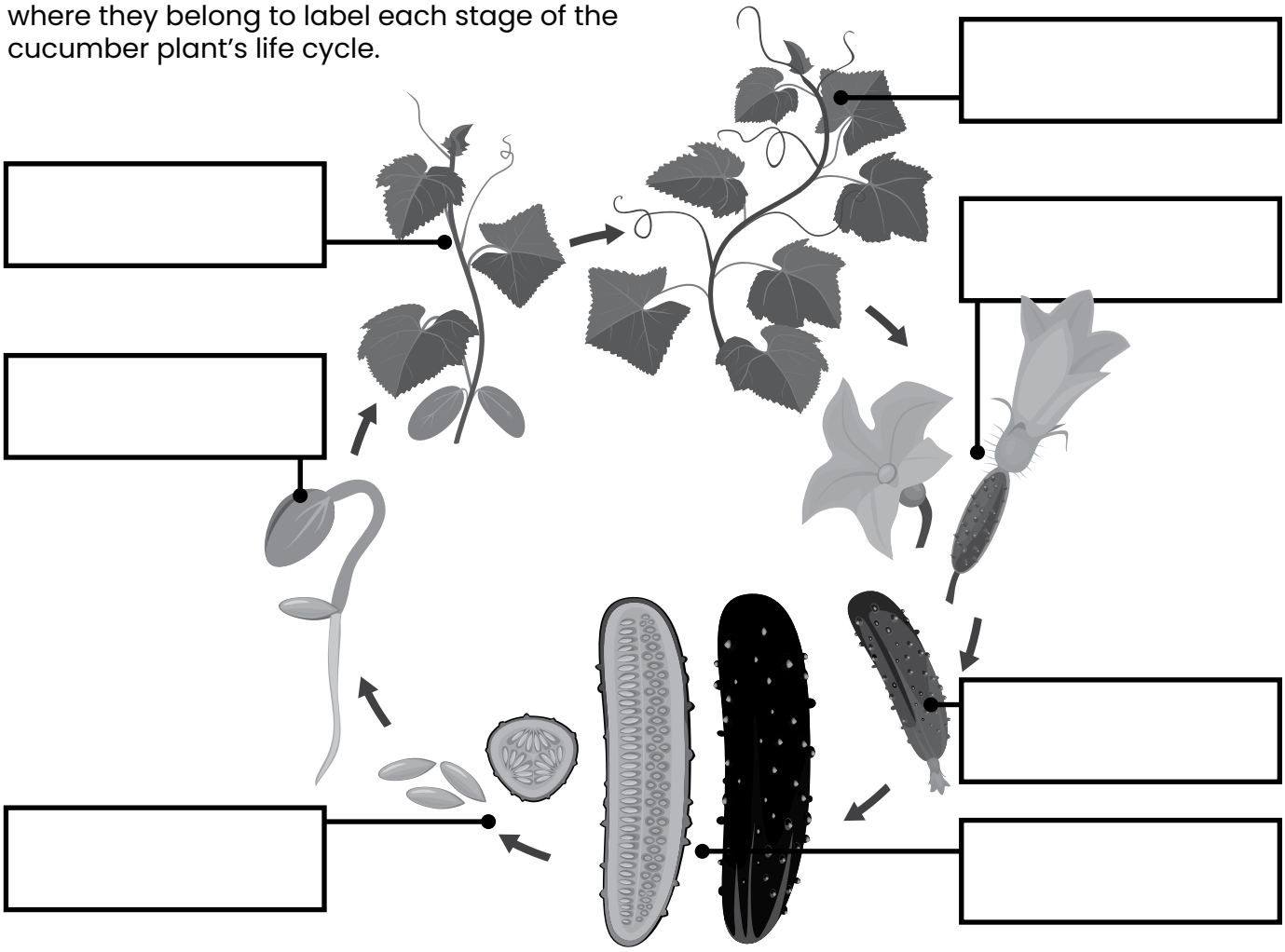
Flower
Cucumber
Soil
Roots
Leaf
Stem

Absorbs sunlight to produce energy for the plant through photosynthesis
Provides food to the plant and a space to grow
Absorbs food and water from the soil
Distributes food and water
The part of a plant that produces seeds
The plant's "fruit"

Name _____ **Date** _____

Cucumber Life Cycle

Directions: Cut out the words and glue them where they belong to label each stage of the cucumber plant's life cycle.



Seeds	**Germination**	**Seedling**	**Adult plant**

Flowers *(Reproduction)*	**Small fruit**	**Full-size fruit with seeds**

ANSWER KEY

Name _____ Date _____

Cucumber Video Trivia

Directions: Answer these trivia questions based on the video you watched about the Florida cucumber farm.

1. Each cucumber plant produces two kinds of flowers. What are they? male and female
2. Which flower makes the cucumbers? female
3. What insects are brought in to be pollinators? honeybees/ bumblebees
4. What happens if a cucumber plant isn't pollinated enough times? The cucumber grows in a crooked or curved shape instead of straight.

Circle whether the statements below are true or false.

5. Each cucumber is picked by hand. **TRUE** FALSE
6. Cucumbers are cooler on the outside than on the inside. TRUE **FALSE**
7. Each cucumber plant is harvested one time. TRUE **FALSE**
8. Cucumbers do not grow in Florida. TRUE **FALSE**
9. In the spring, Florida farmers typically harvest cucumbers from April through the middle of June. **TRUE** FALSE

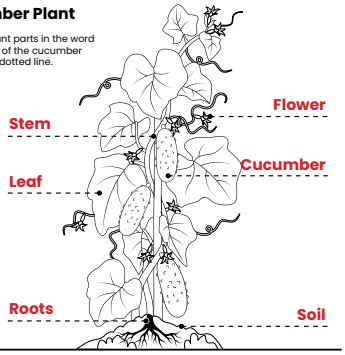
VIRTUAL FARM FIELD TRIPS
2-3 Worksheet
Cucumber

Name _____ Date _____

Parts of a Cucumber Plant

Directions: Use the list of plant parts in the word bank to correctly label parts of the cucumber plant. Write the word on the dotted line.

Word Bank
Leaf
Cucumber
Stem
Soil
Flower
Roots



Now, draw a line between each part of the plant (on the left) and its function (on the right).

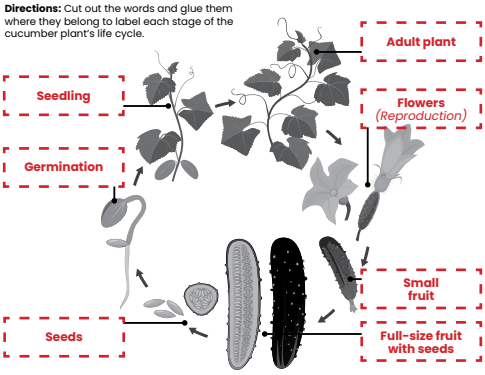
Flower	Absorbs sunlight to produce energy for the plant through photosynthesis
Cucumber	Provides food to the plant and a space to grow
Soil	Absorbs food and water from the soil
Roots	Distributes food and water
Leaf	The part of a plant that produces seeds
Stem	The plant's "fruit"

VIRTUAL FARM FIELD TRIPS
2-3 Worksheet
Cucumber

Name _____ Date _____

Cucumber Life Cycle

Directions: Cut out the words and glue them where they belong to label each stage of the cucumber plant's life cycle.



LET'S LEARN ABOUT FLORIDA SWEET CORN!

This Virtual Farm Field Trip unit is all about sweet corn. It begins with an informative 4-minute video, transporting students to Sweet Magnolia Ridge in Havana, Florida. Your students will meet farmers Stephanie and Vincent to learn how Florida sweet corn is planted, grown, harvested and distributed.

We encourage you to expand the learning experience using this section's worksheets and guided activities, including a taste test. You may choose to use all these resources or pick the ones best suited to your classroom.

ACCESS VIRTUAL FARM FIELD TRIP

Scan code or visit:
FarmToSchoolFL.com/FieldTrips

FLORIDA SWEET CORN FUN FACTS

- **Florida grows more sweet corn than anywhere else in the United States.**
- **Sweet corn is a great source of nutrients like vitamin C, which helps boost the immune system and keep us healthy. It is also high in fiber, which helps your tummy feel good.**
- **Every single strand of silk on an ear of corn has the potential to become a kernel. The average ear of corn has between 500 and 1,000 kernels!**
- **Corn is usually yellow, but it can come in lots of colors, like green, red and white.**
- **You probably think of corn as a vegetable, but it's actually a grain and fruit!**
- **The two most common kinds of corn are sweet corn and field corn, also called dent corn. Sweet corn is harvested early for its soft, sugary kernels – perfect for eating fresh. Dent corn is left to mature fully. Its starchy kernels are used in processed foods, like tortillas and cereal.**

BEFORE YOU WATCH: DISCUSSION STARTERS

Get students thinking about agriculture, science and nutrition by asking questions such as:

- *How do you think fruits and vegetables grow?*
- *What kind of fruits or vegetables would you like to grow?*
- *Name some fruits and vegetables that you've tasted.*
- *Where do the fruits and vegetables you eat come from? How did they get there?*
- *How do fruits and vegetables help us stay healthy?*
- *Today, we'll be taking a virtual field trip to visit a Florida sweet corn farm. What do you know about sweet corn?*

AFTER YOU WATCH:

Explore the activities and worksheets on the following pages – including a video trivia sheet! You might pass the trivia sheet out before starting the video so students can complete it as they watch or wait until after to test understanding.

TRIVIA TOSS

Want to liven up your video trivia sheet exercise? Have students complete their worksheets separately, then come together in teams to compare and finalize answers. Go around the room asking each team a question. If they answer it correctly, they get a chance to toss a ball into one of three buckets to earn a prize for their team. Prizes might be a homework pass, free time, extra computer time or lunch in the classroom.

GEOGRAPHY MOMENT

Ask students to find Havana on a map of Florida. (Hint: It's just north/northwest of Tallahassee.)

USING THESE TEACHING TOOLS

Below is an overview and guide for using the teaching tools included in this section, including guided activities, a recipe and worksheets. We've included the education standards each tool complements, materials needed for each activity, a brief overview of each tool and tips for building your lessons.

You can find each of these tools on the following pages, along with additional information and pointers.

GUIDED ACTIVITIES

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Video, Discussion Questions and Trivia Toss (in Classroom Guide) *On page 102*	Standard(s) Supported: SC.2.L.16.1, SC.3.L.14.1, SC.3.L.17.2, HE.2.PHC.1.5, HE.3.PHC.3.2, HE.2.CH.3.1, HE.3.PHC.1.1	- 3 buckets, boxes or similar containers - 2 palm-sized balls (enough for each team to have one)	This activity gets students out of their seats as they respond to questions about the Virtual Farm Field Trip video.	Use this activity to complement or reinforce the Sweet Corn Video Trivia sheet.
Corn Three Ways *On page 107*	Standard(s) Supported: SC.2.P.9.1, SC.2.P.8.1, SC.3.P.8.3, SC.3.N.1.6, HE.2.PHC.1.5, HE.3.PHC.3.2, HE.2.CH.3.1, HE.3.PHC.1.1	- Ear of sweet corn (uncooked) - Cooked corn on the cob (see recipe page) - Popcorn *See Guided Activity overview for a full list of alternate corn food ideas.*	In this activity, you'll guide students through tasting corn in three different forms – as fresh, uncooked corn, as cooked corn and as popcorn.	Start by asking your school nutrition team if they can support you by acquiring and/or preparing the food items. Use this activity to introduce students to new, nutritious foods. Educate them on the nutritional differences between whole foods – like fresh corn – and processed foods – like corn puff cereal.
Recipe: Corn on the Cob *On page 109*		- Microwave - Wet paper towel - Knife (optional) - Ears of sweet corn (with or without husk) - Plates/paper towels (for serving)	If you choose to prepare the cooked corn on the cob yourself, this recipe provides simple microwave instructions.	You might microwave the corn as part of your lesson rather than preparing it ahead of time. That way, you can show students how the corn's properties change in real time.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Dancing Corn *On page 110*	Standard(s) Supported: SC.2.P.9.1, SC.2.P.8.1, SC.5.P.8.2, SC.3.N.1.6	- Dried corn kernels (popcorn kernels) - Vinegar - Baking soda - Large clear jar or vase - Spoon or stick to stir - Measuring cups	In this simple STEM activity, combine popcorn kernels, baking soda and vinegar to create carbon dioxide bubbles that lift and drop the kernels, making them appear to dance.	This is a fun activity to introduce students to concepts like chemical reaction, density and acid-base reactions. You might also use this activity to help students learn to ask questions and seek answers through exploration, make predictions based on observations and past experiences, and draw conclusions.

WORKSHEETS

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Sweet Corn Video Trivia *On page 111*	Standard(s) Supported: SC.2.L.16.1, SC.3.L.14.1, SC.3.L.17.2	- Writing instrument	This worksheet tests students' comprehension of the Virtual Farm Field Trip by asking questions answered in the video.	You might hand the worksheet out before the video so students can answer as they go or wait until after the video. Consider enhancing this activity with the "Trivia Toss" activity, explained in this Classroom Guide, under "After You Watch."
On the Sweet Corn Farm *On page 112*	Standard(s) Supported: ELA.2.C.3.1, ELA.3.C.3.1, ELA.2.R.3.2	- Writing instrument - Crayons, colored pencils or markers	This worksheet asks students to draw a scene from the sweet corn farm they visited in the Virtual Farm Field Trip and describe what is happening.	This tool reinforces comprehension, encourages observation skills and allows students to express their understanding creatively. You might ask students to each share with the class what they drew and wrote.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Parts of a Sweet Corn Plant *On page 113*	Standard(s) Supported: SC.3.L.14.1, SC.3.L.17.2	- Writing instrument - Crayons, colored pencils or markers	This worksheet has students (1) label parts of the corn plant using a word bank, then (2) match each part of the plant with a description of its function.	This worksheet complements life science lessons about parts of the plant. It also touches on the concept of photosynthesis. If students have already learned about photosynthesis, it's great reinforcement. If not, it provides the perfect introduction.
Life Cycle of Sweet Corn *On page 114*	Standard(s) Supported: SC.2.L.16.1, SC.3.L.14.1, SC.3.L.17.2	- Scissors - Glue - Writing instrument - Crayons, colored pencils or markers (optional)	This worksheet invites students to cut and paste words indicating stages of corn's life cycle in the correct order.	This worksheet complements life science lessons about plant life cycles.
Answer Key *On page 115*			See here for answers to each worksheet.	

CORN THREE WAYS

This group activity brings the field trip to life as students get the opportunity to not only taste corn but also begin to recognize its many uses in popular food products, like popcorn and cereal.

MATERIALS

Ear of sweet corn
(uncooked)

Cooked corn on the cob
(see instructions on the following pages)

Popcorn
(be sure to reserve an unpopped kernel to show)

ALTERNATE IDEAS

With so many uses for corn, finding options that intrigue your students is easy. You could easily substitute a microwavable bag of frozen corn or canned corn for cooked corn on the cob.

Other creative options for taste testing or show and tell (with items likely already in your pantry) include:

- **Cornbread**
- **Grits**
- **Corn flakes cereal**
- **Puffed corn cereal**
- **Corn syrup**
- **Cornmeal**
- **Corn muffins**
- **Rice cakes**
- **Most brands of chips, including corn tortilla chips**

COLLABORATE WITH YOUR CAFETERIA

You might also consider partnering with your school nutrition team to obtain these food items and/or prepare a corn-themed dish for your taste test. Be sure to contact them ahead of time, discuss the support you will need and show gratitude for their collaboration!

SUGGESTED QUESTIONS

Lead a discussion as your students try corn three different ways. Questions like the following can help kids better connect with their food, think about their preferences and encourage them to make nutritious choices in the future.

Before the tasting:

1. *Have you tried corn before? What did you think?*
2. *If not, what do you think it will taste like?*
3. *Did you know popcorn and many chips are made from corn?*

As they try the fresh sweet corn:

1. *What do you think of the texture of the uncooked corn? Is it crunchy or soft?*
2. *Describe the flavor. Is it like corn you've tasted before? If yes, how so? If not, how is it different?*
3. *Before today, did you know you could eat sweet corn right off the cob, without cooking it? What other fruits or vegetables can you eat fresh and cooked? (Examples: Broccoli, carrots, sweet peppers, peaches.)*

As they try the cooked sweet corn:

1. *How is this corn similar to the uncooked corn you just tried? Prompt students to comment on taste, temperature, texture, etc.*
2. *How is it different?*
3. *Have you eaten corn like this before? What did you think?*
4. *How would you feel about eating fresh corn with a meal or as a snack? Why? What else might you eat with corn?*

As they try the popcorn:

Teacher Tip: Explain to students why the popcorn pops! The hard outer shell traps steam from the moisture inside the kernel as it heats up. When the internal temperature reaches around 356 °F, the pressure causes the kernel to burst open, turning the starchy interior into the fluffy, white popcorn we eat!

1. *Show the students an un-popped kernel. Here is a kernel of popcorn before it's heated up and it expands. How does this look like the fresh sweet corn? How is it different?*
2. *Describe the flavor of the popcorn. Does it taste like the fresh corn at all? If yes, how so? If not, how is it different?*
3. *How do you think corn turns into popcorn? (See explanation above.)*
4. *What do you think of the texture of the popcorn? Is it soft or crispy?*

TEACHER TIP:

You can also use this activity as a nutrition lesson for students! Explain how whole foods made of just one ingredient – like a fresh ear of corn – are more nutritious than packaged, processed foods with many ingredients.

You can explain that food with lots of ingredients – like chips or cereal – are like a big puzzle with many pieces, and some of those pieces might not be as healthy (like added sugar). The simple food with one ingredient is usually better for your body and helps you feel your best! You might even pass around a processed food item to show the students the list of ingredients on the nutrition label. Then ask them where the fresh corn's ingredient list is. (There is none – because there's just one ingredient!)

PREPARING CORN ON THE COB

CORN ON THE COB

EQUIPMENT REQUIRED

- Microwave
- Wet paper towel
- Knife (optional)

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- Ears of corn (with or without husk)
- Plates/paper towels (for serving to students)

DIRECTIONS

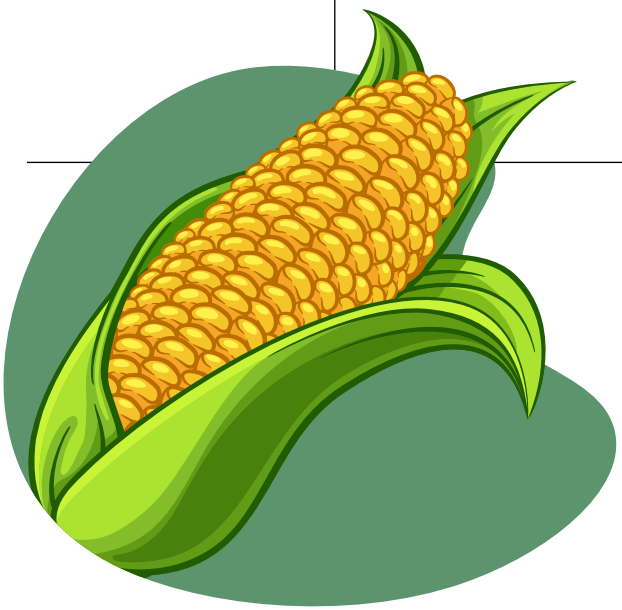
Microwaving corn on the cob is quick and easy. Here are the steps to microwave corn on the cob:

With the Husk:

1. Place the ear of corn with the husk on in the microwave.
2. Microwave on high for 3 minutes. If needed, add an additional 30 seconds.
3. Let the corn cool for a few minutes, then shuck the corn before eating.

Without the Husk:

1. Wet a paper towel and wring it out. Wrap the ear of corn in the damp paper towel.
2. Microwave on high for 3 minutes.
3. Carefully remove the paper towel and serve.



TIPS:

- **You could give every student an ear of corn or cut each ear into two or three pieces.**
- **For multiple ears of corn, adjust the cooking time:**
  - **1 ear: 2 minutes**
  - **2 ears: 4 minutes**
  - **3 ears: 5 minutes**
  - **4 ears: 6 minutes**

DANCING CORN

Did you know you can do a science experiment with things you likely already have in your classroom or kitchen? You can even make popcorn kernels dance!

MATERIALS

- Dried corn kernels (popcorn kernels)
- Vinegar
- Baking soda
- Large clear jar or vase
- Spoon or stick to stir
- Measuring cups

PROCEDURE

STEP 1: Pour one cup of dried corn kernels into the jar or vase.

STEP 2: Pour in two cups of vinegar.

STEP 3: Sprinkle in baking soda.

STEP 4: Watch your corn start to dance! Give it a big stir to watch it dance again.

TEACHER TIP:

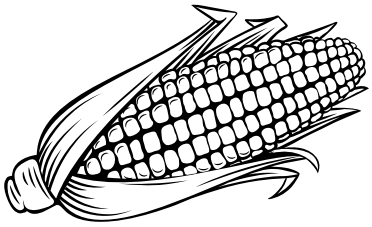
You can experiment with how much baking soda you add and how much your corn dances. Encourage students to guess if adjusting this variable will make the corn dance more or less. You may choose to fill multiple jars to compare.

WHY DO THE KERNELS "DANCE"?

When you add baking soda to vinegar, a chemical reaction occurs that produces carbon dioxide gas. This is the same type of gas found in carbonated drinks. These bubbles attach to the popcorn kernels, making them buoyant enough to rise to the surface. Then the bubbles pop, causing the kernels to lose buoyancy and sink back down. When you stir the mixture, it releases more carbon dioxide bubbles, starting the process all over again!

Name _____ **Date** _____

Sweet Corn Video Trivia



Directions: Answer these trivia questions based on the video about the Florida sweet corn farm.

1. What does "harrow" mean? (Hint: You do this before planting the corn seeds.) _____

_____

2. How many ears of corn does one corn plant produce? _____

3. What three creatures were named as pollinators? _____

_____

Circle whether the statements below are true or false.

4. The process for growing sweet corn takes 60 to 90 days.	**TRUE** | **FALSE**
5. Popcorn is harvested while the corn is soft and sweet corn is harvested when the corn gets hard.	**TRUE** | **FALSE**
6. Florida is the top producer of sweet corn in the United States.	**TRUE** | **FALSE**
7. Florida has good weather to grow corn.	**TRUE** | **FALSE**
8. Each ear of corn is picked by hand.	**TRUE** | **FALSE**

Name _____ **Date** _____

On the Sweet Corn Farm

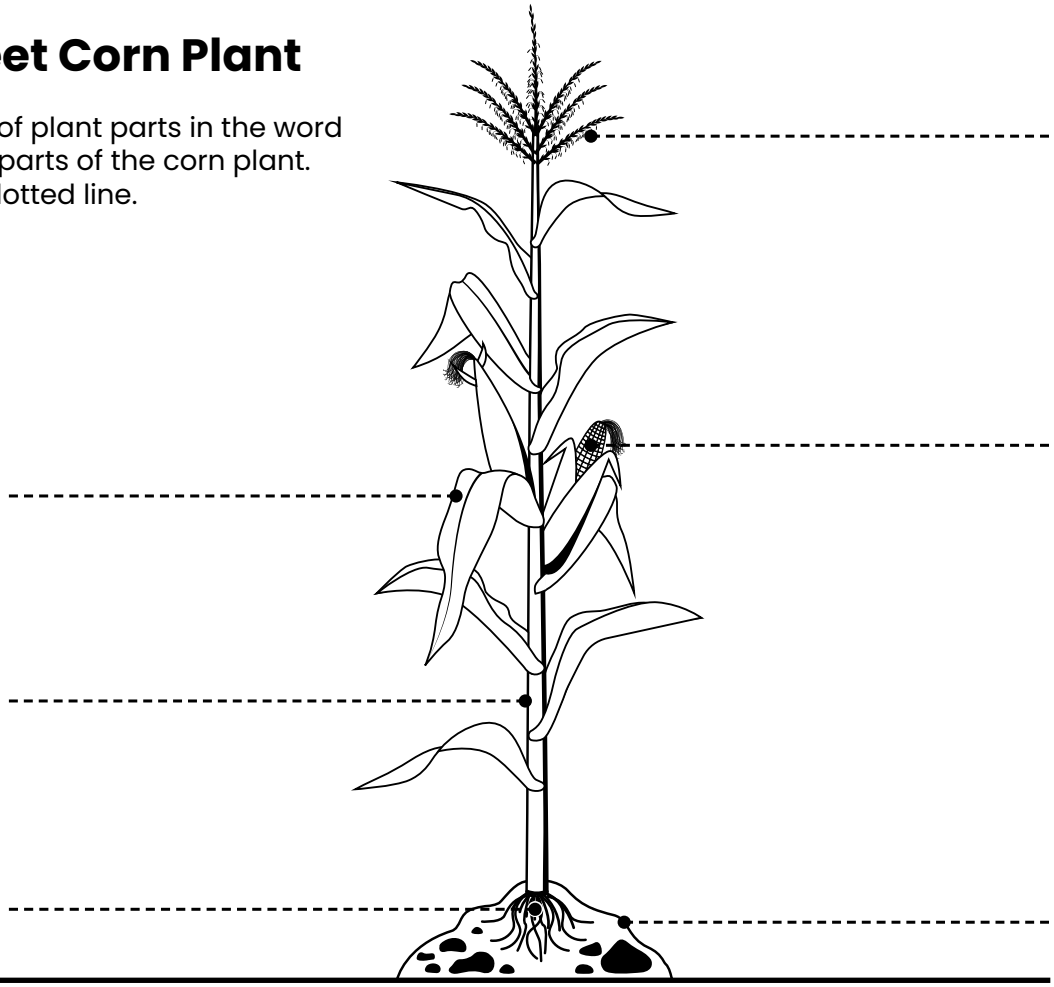
Directions: Draw a scene from the Florida sweet corn farm you just learned about. Next, describe what is happening.

Name _____ **Date** _____

Parts of a Sweet Corn Plant

Directions: Use the list of plant parts in the word bank to correctly label parts of the corn plant. Write the word on the dotted line.

Word Bank
Leaf
Ear of corn
Stem
Soil
Flower
Roots



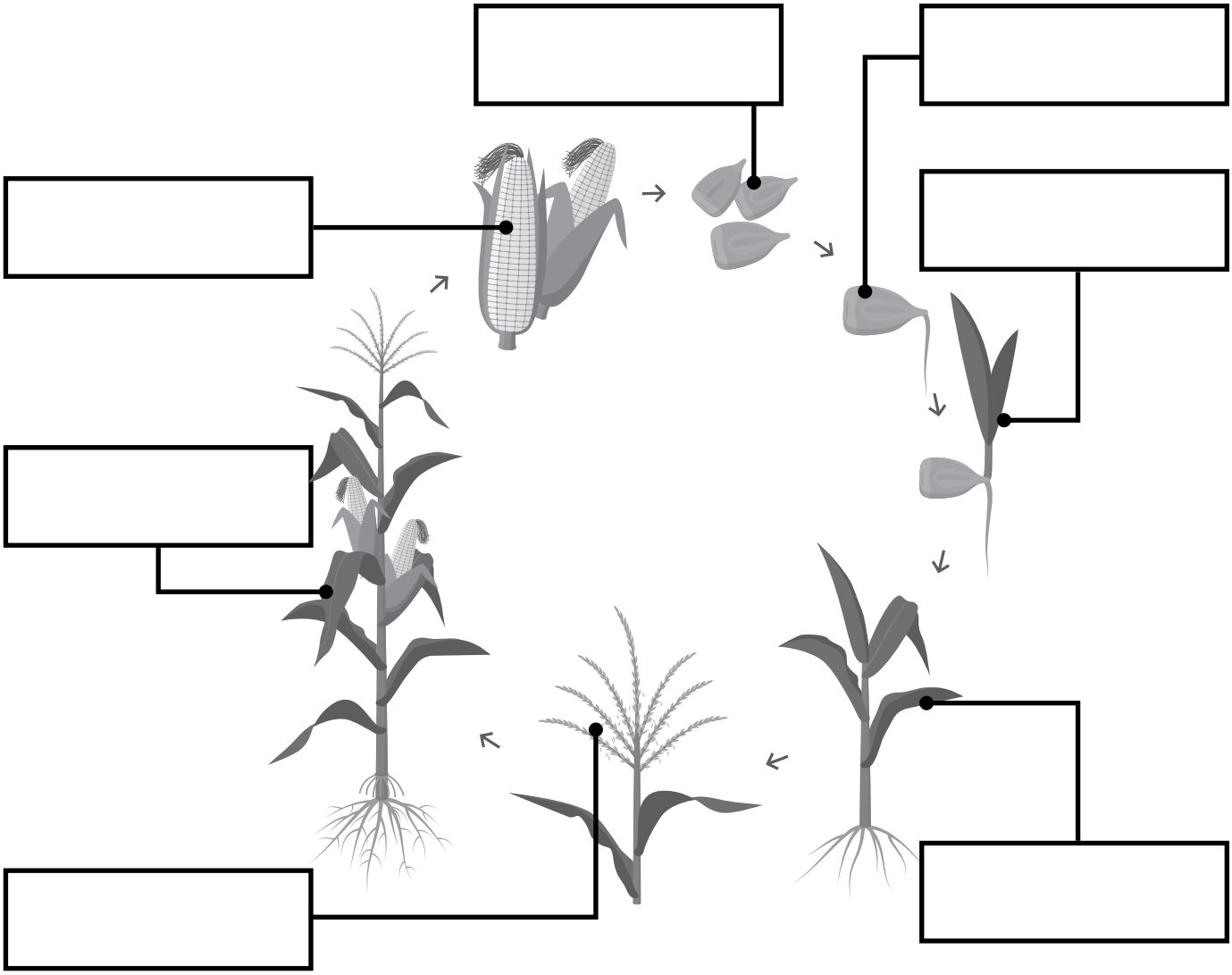
Now, draw a line between each part of the plant (on the left) and its function (on the right).

Flower	Absorbs sunlight to produce energy for the plant through photosynthesis
Ear of corn	Provides food to the plant and a space to grow
Soil	Absorbs food and water from the soil
Roots	Distributes food and water, also called a “stalk”
Leaf	The part of a plant that produces seeds, also called a “tassel”
Stem	The plant’s “fruit”

Name _____ **Date** _____

Life Cycle of Sweet Corn

Directions: Cut out the words and glue them where they belong to label each stage of the corn plant's life cycle.



Seed	**Germination**	**Sprout**	**Seedling**

Flower (tassel)	**Plant with fruit**	**Fruit with seeds**

ANSWER KEY

Name _____ Date _____

Sweet Corn Video Trivia

Directions: Answer these trivia questions based on the video about the Florida sweet corn farm.

1. What does "harrow" mean? (Hint: You do this before planting the corn seeds.) breaking up the soil to make it fluffy
2. How many ears of corn does one corn plant produce? 2-3 ears
3. What three creatures were named as pollinators? birds, bees and butterflies

Circle whether the statements below are true or false.

4. The process for growing sweet corn takes 60 to 90 days. **TRUE** FALSE
5. Popcorn is harvested while the corn is soft and sweet corn is harvested when the corn gets hard. TRUE **FALSE**
6. Florida is the top producer of sweet corn in the United States. **TRUE** FALSE
7. Florida has good weather to grow corn. **TRUE** FALSE
8. Each ear of corn is picked by hand. **TRUE** FALSE

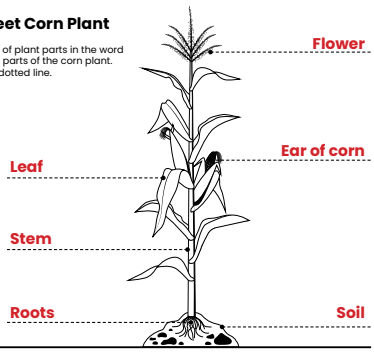
VIRTUAL FARM FIELD TRIPS
2-3 Worksheet
Sweet Corn

Name _____ Date _____

Parts of a Sweet Corn Plant

Directions: Use the list of plant parts in the word bank to correctly label parts of the corn plant. Write the word on the dotted line.

Word Bank
Leaf
Ear of corn
Stem
Soil
Flower
Roots



Now, draw a line between each part of the plant (on the left) and its function (on the right).

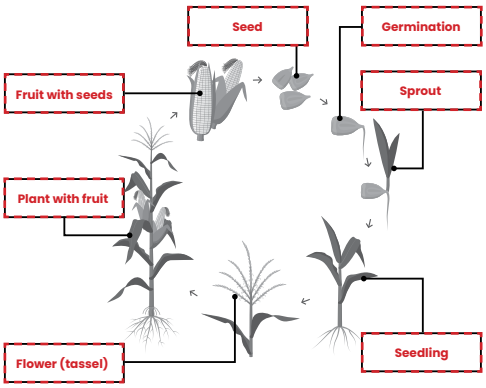
Flower	Absorbs sunlight to produce energy for the plant through photosynthesis
Ear of corn	Provides food to the plant and a space to grow
Soil	Absorbs food and water from the soil
Roots	Distributes food and water, also called a "stalk"
Leaf	The part of a plant that produces seeds, also called a "tassel"
Stem	The plant's "fruit"

VIRTUAL FARM FIELD TRIPS
2-3 Worksheet
Sweet Corn

Name _____ Date _____

Life Cycle of Sweet Corn

Directions: Cut out the words and glue them where they belong to label each stage of the corn plant's life cycle.

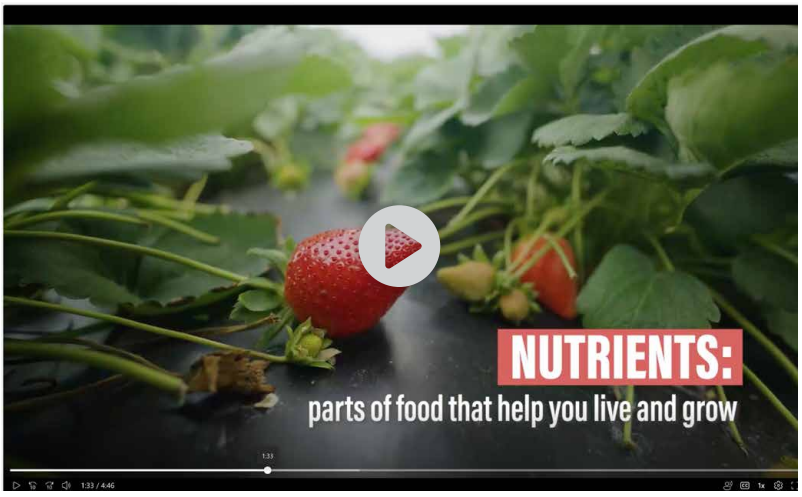


Standard(s) Supported: SC.2.L.16.1, SC.3.L.14.1, SC.3.L.17.2, HE.2.PHC.1.5, HE.3.PHC.3.2, HE.2.CH.3.1, HE.3.PHC.1.1

LET'S LEARN ABOUT FLORIDA STRAWBERRIES!

This Virtual Farm Field Trip Unit is all about strawberries. It begins with an informative 5-minute video, transporting students to Astin Farms in Plant City, Florida – the winter strawberry capital of the world! Your students will meet farmers and sisters Madison and Payton to learn how Florida strawberries are planted, grown, harvested and distributed.

We encourage you to expand the learning experience using this section's worksheets and guided activities, including a taste test. You may choose to use all these resources or pick the ones best suited to your classroom.



ACCESS VIRTUAL FARM FIELD TRIP

Scan code or visit:
FarmToSchoolFL.com/FieldTrips

FLORIDA STRAWBERRY FUN FACTS

- **Strawberries have nutrients like fiber, potassium and vitamin C. Eating foods with fiber makes you feel full, potassium helps your muscles move properly and vitamin C helps your body heal cuts and scrapes.**
- **Strawberries are the only fruit with seeds on the outside – and each strawberry has about 200 of them.**
- **Strawberries are technically part of the rose family.**
- **People love strawberries! In the United States, 94% of households eat strawberries.**
- **Unlike other fruits, like bananas or avocados, strawberries stop ripening as soon as they are harvested. That's why you want to eat them as soon as you can.**
- **While we put strawberries in the refrigerator to make them last longer, they actually taste best at room temperature. That's why they are so delicious right off the plant!**

BEFORE YOU WATCH: DISCUSSION STARTERS

Get students thinking about agriculture, science and nutrition by asking questions such as:

- *What are some examples of fruit?*
- *What fruits have you tasted? Which is your favorite?*
- *Have you ever picked your own fruit at a farm or in a garden? What did you pick?*
- *How do you think the food we eat gets from the farm to our table – at home and in school?*
- *Today we're going to talk about strawberries. How do you think they are grown and harvested?*

AFTER YOU WATCH: CHECK FOR UNDERSTANDING

Explore the activities and worksheets on the following pages – including a video trivia sheet! You might pass the trivia sheet out before starting the video so students can complete it as they watch or wait until after to test understanding.

TRIVIA TOSS

Want to liven up your video trivia sheet exercise? Have students complete their worksheets separately, then come together in teams to compare and finalize answers. Go around the room asking each team a question. If they answer it correctly, they get a chance to toss a ball into one of three buckets to earn a prize for their team. Prizes might be a homework pass, free time, extra computer time or lunch in the classroom.

GEOGRAPHY MOMENT

Ask students to find Plant City on a map of Florida. (Hint: It's just east of Tampa.)

USING THESE TEACHING TOOLS

Below is an overview and guide for using the teaching tools included in this section, including guided activities, recipes and worksheets. We've included the education standards each tool complements, materials needed for each activity, a brief overview of each tool and tips for building your lessons.

You can find each of these tools on the following pages, along with additional information and pointers.

GUIDED ACTIVITIES

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Video, Discussion Questions and Trivia Toss (in Classroom Guide) *On page 116*	Standard(s) Supported: SC.2.L.16.1, SC.3.L.14.1, SC.3.L.17.2, HE.2.PHC.1.5, HE.3.PHC.3.2, HE.2.CH.3.1, HE.3.PHC.1.1	- 3 buckets, boxes or similar containers - 2 palm-sized balls (enough for each team to have one)	This activity gets students out of their seats as they respond to questions about the Virtual Farm Field Trip video.	Use this activity to complement or reinforce the Strawberry Video Trivia sheet.
Strawberry Three Ways *On page 121*	Standard(s) Supported: SC.2.P.9.1, SC.2.P.8.1, SC.3.P.8.3, SC.3.N.1.6, HE.2.PHC.1.5, HE.3.PHC.3.2, HE.2.CH.3.1, HE.3.PHC.1.1	- Fresh strawberries - Strawberry jam/jelly - Strawberry smoothie (see recipe)	In this activity, you'll guide students through tasting strawberries in three different forms – as fresh strawberries, as strawberry jam and in a smoothie.	Start by asking your school nutrition team if they can support you by acquiring and/or preparing the food items. Use this activity to introduce students to new, nutritious foods. Educate them on the nutritional differences between whole foods – like fresh strawberries – and processed foods – like strawberry jam.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Recipe: Strawberry Smoothie *On page 123*	Standard(s) Supported: SC.2.P.9.1, SC.2.P.8.1, SC.3.N.1.6	- Blender - Cutting board - Knife - Measuring cup - Tablespoon *Adjust quantities based on class size:* - 1 cup fresh strawberries - 1 banana - ½ cup yogurt - ½ cup milk (or water) - 1 tablespoon honey - Small cups (ideally clear) - Spoons	Use this recipe to prepare your own strawberry smoothie for the Strawberry Three Ways exercise.	You might prepare your smoothie before the lesson or demonstrate for the class for an added learning opportunity.
Strawberries on Stage *On page 124*	Standard(s) Supported: SC.2.N.1.2, SC.2.L.16.1	- Ball of yarn - Scissors - Strawberry plant (optional) and/or strawberry diagram	In this activity, you will educate students about the parts of a strawberry plant, then ask them to demonstrate each part using their bodies.	This is a fun activity to get students out of their seats while reinforcing their understanding of strawberry plant parts by making connections to their own body parts. This is also a great way to reinforce that strawberries rarely come from seeds – instead, they grow from “starter”/“daughter” plants, produced by “mother” plants.

WORKSHEETS

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Strawberry Video Trivia *On page 126*	Standard(s) Supported: SC.2.L.16.1, SC.3.L.14.1, SC.3.L.17.2	- Writing instrument	This worksheet tests students' comprehension of the Virtual Farm Field Trip by asking questions answered in the video.	You might hand the worksheet out before the video so students can answer as they go or wait until after the video. Consider enhancing this activity with the "Trivia Toss" activity, explained in this Classroom Guide, under "After You Watch."
On the Strawberry Farm *On page 127*	Standard(s) Supported: ELA.2.C.3.1, ELA.3.C.3.1, ELA.2.R.3.2	- Writing instrument - Crayons, colored pencils or markers	This worksheet asks students to draw a scene from the strawberry farm they visited in the Virtual Farm Field Trip and describe what is happening.	This tool reinforces comprehension, encourages observation skills and allows students to express their understanding creatively. You might ask students to each share with the class what they drew and wrote.
Parts of a Strawberry Plant *On page 128*	Standard(s) Supported: SC.3.L.14.1, SC.3.L.17.2	- Writing instrument - Crayons, colored pencils or markers (optional)	This worksheet has students (1) label parts of the strawberry plant using a word bank, then (2) match each part of the plant with a description of its function.	This worksheet complements life science lessons about parts of the plant. It also touches on the concept of photosynthesis. If students have already learned about photosynthesis, it's great reinforcement. If not, it provides the perfect introduction.
Life Cycle of a Strawberry *On page 129*	Standard(s) Supported: SC.2.L.16.1, SC.3.L.14.1, SC.3.L.17.2	- Scissors - Glue - Writing instrument - Crayons, colored pencils or markers (optional)	This worksheet invites students to cut and paste words indicating stages of a strawberry's life cycle in the correct order.	This worksheet complements life science lessons about plant life cycles.
Answer Key *On page 130*			See here for answers to each worksheet.	

Standard(s) Supported: SC.2.P.9.1, SC.2.P.8.1, SC.3.P.8.3, SC.3.N.1.6, HE.2.PHC.1.5, HE.3.PHC.3.2, HE.2.CH.3.1, HE.3.PHC.1.1

STRAWBERRY THREE WAYS

This group activity brings the field trip to life as students get the opportunity to taste strawberries three ways: as fresh berries, as strawberry jam or jelly and in a strawberry smoothie.

MATERIALS

Fresh strawberries

Strawberry jam/jelly

Strawberry smoothie
(see recipe on following pages)

SUGGESTED QUESTIONS

Lead a discussion as your students try strawberries three different ways. Questions like the following can help kids better connect with their food, think about their preferences and encourage them to make nutritious choices in the future.

Before the tasting:

1. *Have you tried a strawberry before? What did you think?*
2. *If not, what do you think it will taste like?*
3. *Have you tried any foods with strawberries in them? What about foods that were strawberry flavored? What were they and what did you think?*

As they try the fresh strawberries:

1. *What do you think of the texture of the fresh strawberry? Is it crunchy or soft?*
2. *Do you like the smell of the strawberry? How would you describe it?*
3. *How would you feel about eating fresh strawberries as a snack? Why? What might you eat them with?*

Don't have time to prep or make a recipe? Swap the smoothie for a store-bought smoothie, strawberry yogurt or strawberry ice cream.

COLLABORATE WITH YOUR CAFETERIA

You might also consider partnering with your school nutrition team to obtain these food items and/or prepare a strawberry-themed dish for your taste test. Be sure to contact them ahead of time, discuss the support you will need and show gratitude for their collaboration!

As they try the strawberry jam/jelly:

1. *How do you think they turn the strawberries into jam?*
2. *How does the taste of the jam compare to the fresh strawberries? How is it different and how is it the same?*
3. *What do you think about the texture of the jam compared to the fresh strawberries?*
4. *Have you had strawberry jam before? If so, what do you usually eat it with? If not, would you like to try it again?*
5. *Before today, did you know strawberry jam is made from fresh strawberries? What other fruits are turned into jam?*

As they try the strawberry smoothie:

1. *Can you taste the strawberries in the smoothie? How strong is the flavor?*
2. *What other flavors can you taste? Can you guess which other fruit(s) is (are) in the smoothie?*
3. *How does the flavor of the smoothie compare to the fresh strawberries?*
4. *What is the same about the fresh strawberries and the smoothie? What is different?*
5. *If you were making a fruit smoothie, what fruits would you add?*

TEACHER TIP:

You can also use this activity as a nutrition lesson for students! Explain how whole foods made of just one ingredient – like a fresh strawberry – are more nutritious than packaged, processed foods with many ingredients.

You can explain that food with lots of ingredients – like the jam – are like a big puzzle with many pieces, and some of those pieces might not be as healthy (like added sugar). The simple food with one ingredient is usually better for your body and helps you feel your best!

You might even pass around a processed food item to show the students the list of ingredients on the nutrition label. Then ask them where the fresh strawberry's ingredient list is. (There is none – because there's just one ingredient!)

STRAWBERRY SMOOTHIE RECIPE

STRAWBERRY SMOOTHIE

Estimated Servings: 20 oz, or (6-7) 3 oz tasters

EQUIPMENT REQUIRED

- Blender
- Cutting board
- Knife
- Measuring cup
- Tablespoon
- Small cups (ideally clear)
- Spoons

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- 1 cup fresh strawberries
- 1 banana
- ½ cup yogurt
- ½ cup milk (or water)
- 1 tablespoon honey

DIRECTIONS

1. Wash berries and cut away strawberry stems.
2. Combine all ingredients in a blender. Blend until smooth.
3. Pour into individual cups for serving and enjoy!

You might prepare your smoothie before the lesson or demonstrate for the class for an added learning opportunity!

CUSTOMIZE YOUR SMOOTHIE

Mix up your smoothie by adding other fresh ingredients like blueberries, pineapple chunks, orange segments, kiwis or even spinach! If you're demonstrating for your students, they can help decide which ingredients get added. Children are more likely to be excited about eating food they choose and help prepare themselves!

If you prep the recipe ahead of time, ask them to guess what else you added.

STRAWBERRIES ON STAGE

This activity gets students up and moving as they learn about the life cycle of strawberry plants.

MATERIALS

Ball of yarn

Scissors

Strawberry plant *(optional)* **and/or strawberry diagram**

INTRODUCTION

Strawberries are the only fruit to produce their seeds on the outside. Growing strawberry plants from the seeds is very challenging. Fortunately, strawberry plants can reproduce by propagation.

With propagation, the parent (mother) plant produces runners (horizontal stems) that bud into a new daughter plant. The flowers develop into the fruit – the part we eat. For more helpful background information, scan the QR code to the right or visit bit.ly/StrawberryDiagram.

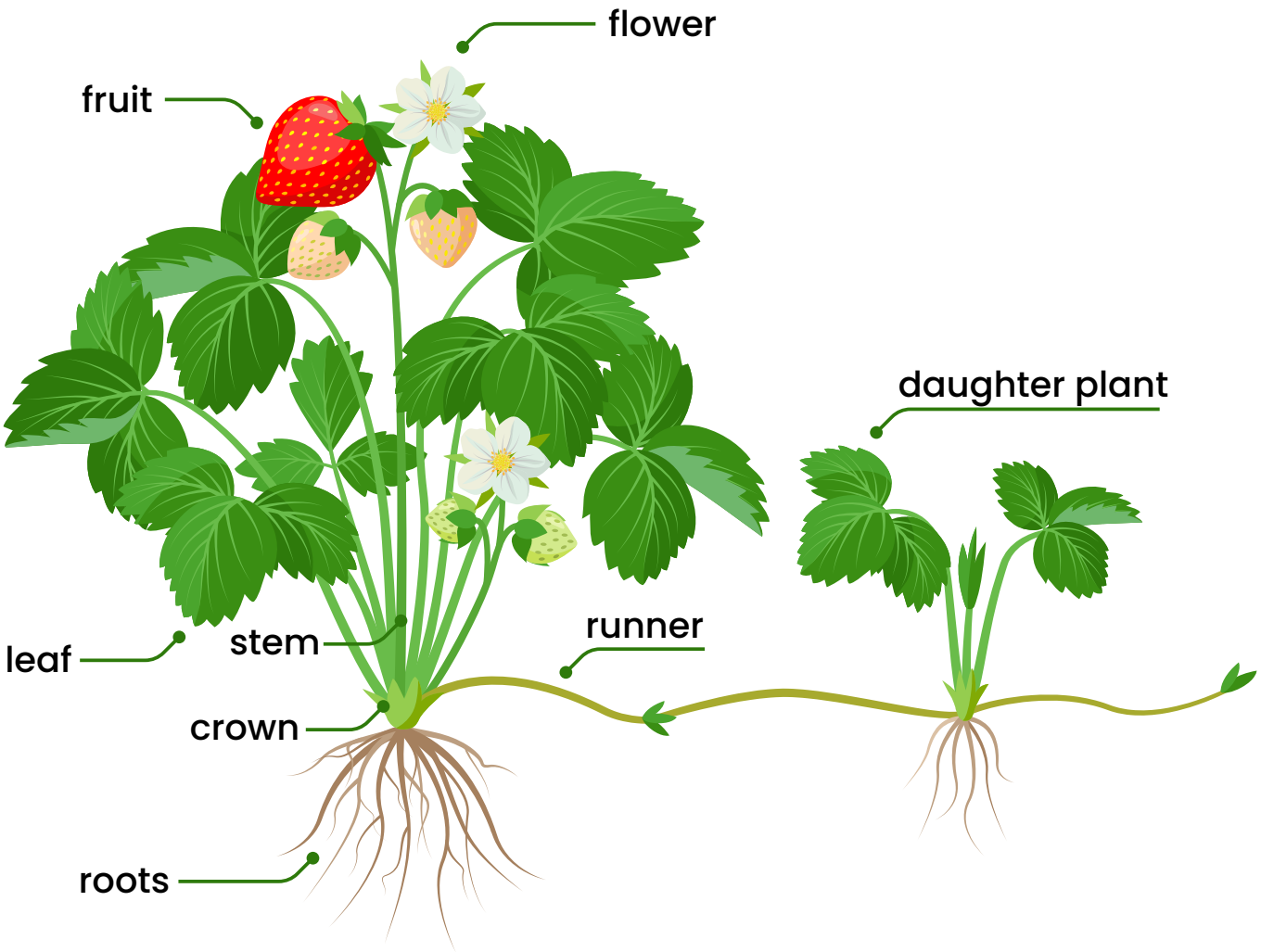
Discuss the life cycle of flowering plants with your students, including key topics such as pollination, fertilization, seed dispersal and germination. Engage your students in a discussion about the unique characteristics of strawberry plants and their reproduction.

ACTIVITY

If you have a real strawberry plant, use it to explain the various parts of a strawberry plant (mother plant, crown, runner, daughter, leaves, stems, roots, flowers). Otherwise, use the diagram on the following page.

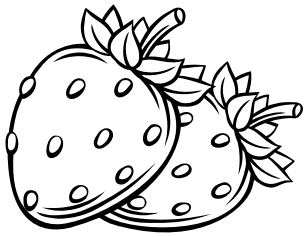
Split the class into four groups and hand each student three long pieces of yarn of various lengths. Tell the students to imagine they are a strawberry plant. Ask them which body part would be their roots (legs and feet), crown (body), stems (arms), leaves (hands) and flowers (head).

Students will act out the parts of the strawberry plant. One student in the group will be the “mother” plant and all other students will be the “daughter” plants. The mother plant will hold onto one end of all the strings and the daughters will hold on to the opposite end.


flower
fruit
daughter plant
leaf
stem
runner
crown
roots

Name _____ **Date** _____

Strawberry Video Trivia



Directions: Answer these trivia questions based on the video about the Florida strawberry farm.

1. How are strawberry seeds different than other fruit seeds? _____

_____

2. Each strawberry has about how many seeds? _____

3. What do you call the shape of a strawberry? _____

Circle whether the statements below are true or false.

4. There is only one type of strawberry.	**TRUE** | **FALSE**
5. Eight strawberries have more vitamin C than one orange.	**TRUE** | **FALSE**
6. Strawberries are picked by machines.	**TRUE** | **FALSE**
7. Strawberries ripen faster when it's warmer.	**TRUE** | **FALSE**
8. An acre is the size of a basketball court.	**TRUE** | **FALSE**
9. Strawberries are healthy for you.	**TRUE** | **FALSE**

Name _____ **Date** _____

On the Strawberry Farm

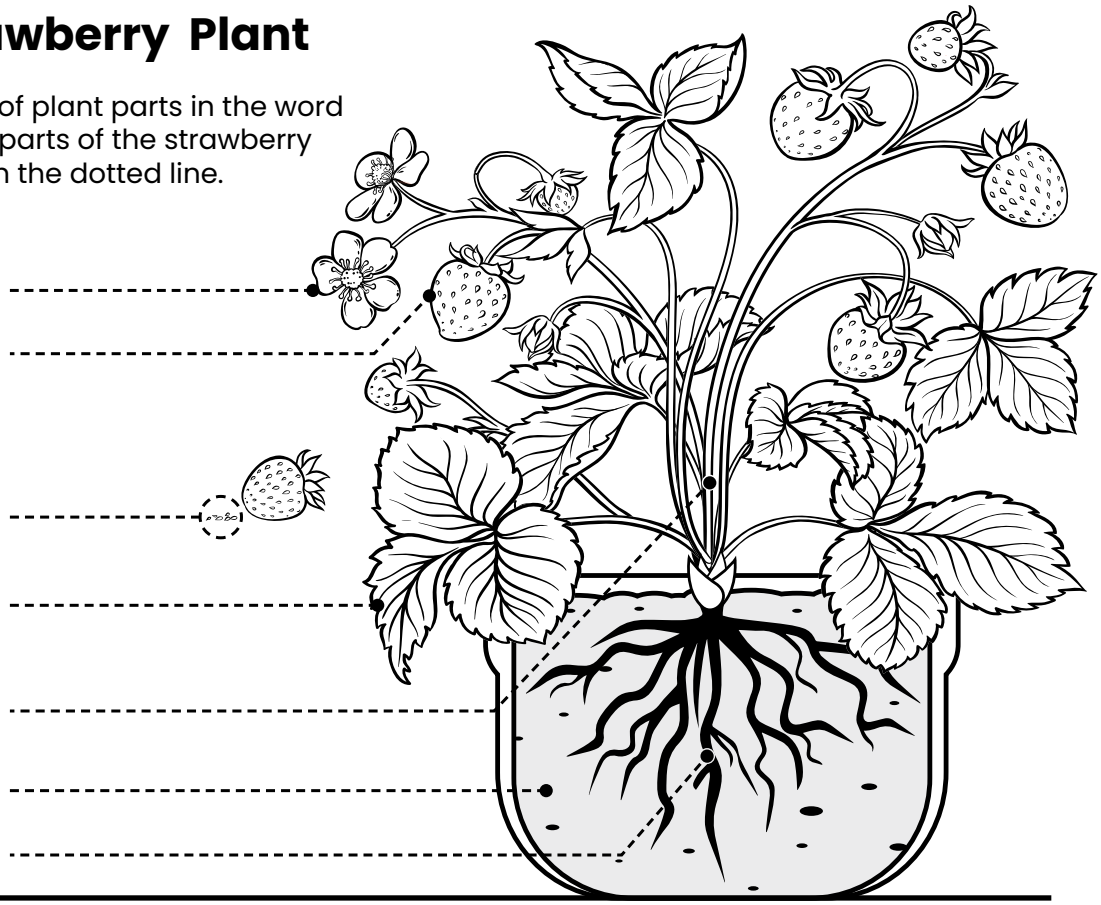
Directions: Draw a scene from the Florida strawberry farm you just learned about. Next, describe what is happening.

Name _____ **Date** _____

Parts of a Strawberry Plant

Directions: Use the list of plant parts in the word bank to correctly label parts of the strawberry plant. Write the word on the dotted line.

Word Bank
Leaf
Strawberry
Stem
Flower
Roots
Seeds
Soil



Now, draw a line between each part of the plant (on the left) and its function (on the right).

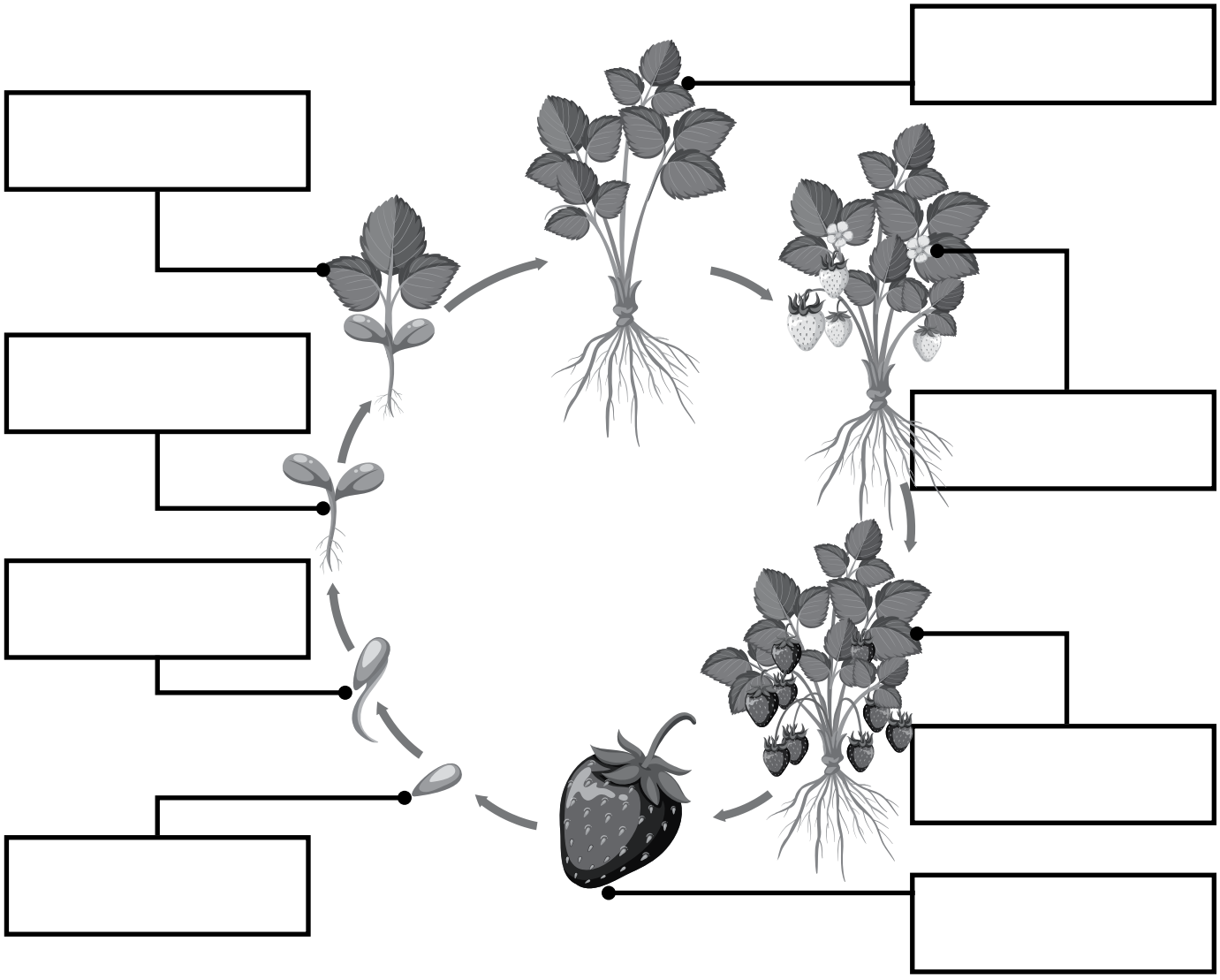
Roots
Stem
Leaf
Strawberry
Flower
Seeds
Soil

Absorbs sunlight to produce energy for the plant through photosynthesis
Located on the outside of the strawberry, these grow new plants
Absorbs food and water from the soil
Distributes food and water
Provides food to the plant and a space to grow
The plant's "fruit"
The part of a plant that produces seeds

Name _____ **Date** _____

Life Cycle of a Strawberry

Directions: Cut out the words and glue them where they belong to label each stage of the strawberry plant's life cycle.



Fruit with seeds	**Seed**	**Germination**	**Sprout**
Seedling	**Plant**	**Flowers** *(reproduction)*	**Plant with fruit** *(mature plant)*

ANSWER KEY

Name _____ Date _____

Strawberry Video Trivia

Directions: Answer these trivia questions based on the video about the Florida strawberry farm.

1. How are strawberry seeds different than other fruit seeds? **Their seeds are on the outside.**
2. Each strawberry has about how many seeds? **About 200**
3. What do you call the shape of a strawberry? **Conical, or like a cone**

Circle whether the statements below are true or false.

4. There is only one type of strawberry.	TRUE	**FALSE**
5. Eight strawberries have more vitamin C than one orange.	**TRUE**	FALSE
6. Strawberries are picked by machines.	TRUE	**FALSE**
7. Strawberries ripen faster when it's warmer.	**TRUE**	FALSE
8. An acre is the size of a basketball court.	TRUE	**FALSE**
9. Strawberries are healthy for you.	**TRUE**	FALSE

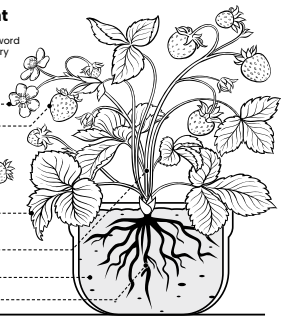
VIRTUAL FARM FIELD TRIPS
2-3 Worksheet
Strawberry

Name _____ Date _____

Parts of a Strawberry Plant

Directions: Use the list of plant parts in the word bank to correctly label parts of the strawberry plant. Write the word on the dotted line.

Word Bank
Leaf
Strawberry
Stem
Flower
Roots
Seeds
Soil



Flower
Strawberry
Seeds
Leaf
Stem
Soil
Roots

Now, draw a line between each part of the plant (on the left) and its function (on the right).

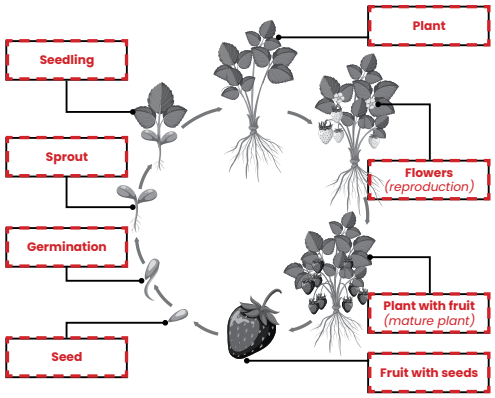
Roots	Absorbs sunlight to produce energy for the plant through photosynthesis
Stem	Located on the outside of the strawberry, these grow new plants
Leaf	Absorbs food and water from the soil
Strawberry	Distributes food and water
Flower	Provides food to the plant and a space to grow
Seeds	The plant's "fruit"
Soil	The part of a plant that produces seeds

VIRTUAL FARM FIELD TRIPS
2-3 Worksheet
Strawberry

Name _____ Date _____

Life Cycle of a Strawberry

Directions: Cut out the words and glue them where they belong to label each stage of the strawberry plant's life cycle.



Standard(s) Supported: SC.2.L.16.1, SC.3.L.14.1, SC.3.L.17.2, HE.2.PHC.1.5, HE.3.PHC.3.2, HE.2.CH.3.1, HE.3.PHC.1.1

LET'S LEARN ABOUT FLORIDA LETTUCE!

This Virtual Farm Field Trip unit is all about lettuce. It begins with an informative 5-minute video, transporting students to Traders Hill Farm in Hilliard, Florida. Your students will meet farmers Tracy and Kathy to learn how Florida lettuce is planted, grown, harvested and distributed.

We encourage you to expand the learning experience using this section's worksheets and guided activities, including a taste test. You may choose to use all these resources or pick the ones best suited to your classroom.

ACCESS VIRTUAL FARM FIELD TRIP

Scan code or visit:
FarmToSchoolFL.com/FieldTrips

FLORIDA LETTUCE FUN FACTS

- **Fresh lettuce is mostly water. Eating it helps you stay hydrated.**
- **Lettuce has vitamin K for strong bones.**
- **Lettuce comes in many colors: green, red and even purple.**
- **Romaine is the second most common type of lettuce grown in the U.S. behind iceberg, both of which are grown right here in Florida.**
- **Lettuce can grow in different ways! Field lettuce grows outside in the dirt, drinking rain and soaking up sunshine. Hydroponic lettuce grows with its roots right in water filled with plant food. Aquaponic lettuce grows in water too, but with fish. The nutrients from the fish feed the plants.**
- **In Florida, lettuce is largely grown outside in the rich soils south of Lake Okeechobee.**

BEFORE YOU WATCH: DISCUSSION STARTERS

Get students thinking about agriculture, science and nutrition by asking questions such as:

- *What do plants need to grow? What happens if they don't get what they need?*
- *Can a plant grow without dirt? What might it need instead?*
- *Let's name some vegetables. Can you think of any that are green?*
- *Close your eyes and imagine you are at a farm. What do you see? Hear? Smell?*
- *Today, we'll be taking a virtual field trip to visit a Florida lettuce farm. What do you know about lettuce?*
- *Have you eaten lettuce before? What did it taste like?*

TRIVIA TOSS

Want to liven up your video trivia sheet exercise? Have students answer questions or complete their worksheets separately, then come together in teams to compare and finalize answers. Go around the room asking each team a question. If they answer it correctly, they get a chance to toss a ball into one of three buckets to get a prize for their team. Prizes might be a homework pass, free time, extra computer time or lunch in the classroom.

AFTER YOU WATCH: SUGGESTED QUESTIONS

Find video comprehension questions, answers and video timestamps for finding those answers below. See the worksheet section of these resources for a trivia sheet covering the questions below for more independent student work.

- *What animals live in the water and help feed the lettuce?* ***(Fish, tilapia; 0:43)***
- *What is it called when plants are grown in water instead of soil?* ***(Hydroponics, and adding fish makes it aquaponics; 0:36)***
- *How long is the growing cycle of lettuce on this farm?* ***(About 35–40 days; 0:59)***
- *True or false: Romaine lettuce is about 95% water.* ***(True; 1:45)***
- *What is the ideal temperature for growing lettuce?* ***(About 70°F; 2:02)***

  Teacher Tip: 70°F is about the same temperature we keep inside our homes and classrooms. Ask why growing lettuce inside a greenhouse helps farmers hold that perfect temperature all year, even when it's really hot or really cold outside.
- *What does it mean when a lettuce plant "bolts"?* ***(It starts growing flowers and seeds and won't taste as good; 2:50)***
- *True or false: Lettuce is a good source of vitamin K, which helps keep your bones strong.* ***(True; 2:53)***

  Teacher Tip: Ask students what other foods keep bones strong. (Dairy!)
- *What happens to the fish waste in the filtration system?* ***(The system turns fish waste into food for the plants; 3:32)***
- *True or false: Lettuce is part of the legume (or pea) family.* ***(False, it's in the sunflower family; 3:51)***
- *What is a nursery on the farm?* ***(A place where plants are grown, where lettuce starts growing from the seed; 4:00)***
- *True or false: An outdoor farm can grow more lettuce in less space than a greenhouse using hydroponics or aquaponics.* ***(False, this greenhouse grows 5 times more lettuce in the same space; 1:50)***

GEOGRAPHY MOMENT

Ask students to find Hilliard on a map of Florida. (Hint: It's in the far northeast corner, near the Georgia border just above Jacksonville.)

USING THESE TEACHING TOOLS

Below is an overview and guide for using the teaching tools included in this section, including guided activities, recipes and worksheets. We've included the education standards each tool complements, materials needed for each activity, a brief overview of each tool and tips for building your lessons.

You can find each of these tools on the following pages, along with additional information and pointers.

GUIDED ACTIVITIES

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Video, Discussion Questions and Trivia Toss (in Classroom Guide) *On page 131*	Standard(s) Supported: SC.2.L.16.1, SC.3.L.14.1, SC.3.L.17.2, HE.2.PHC.1.5, HE.3.PHC.3.2, HE.2.CH.3.1, HE.3.PHC.1.1	- 3 buckets, boxes or similar containers - 2 palm-sized balls (enough for each team to have one)	This activity gets students out of their seats as they respond to questions about the Virtual Farm Field Trip video.	Use this activity to complement or reinforce the Video Trivia sheet.
Lettuce Three Ways *On page 137*	Standard(s) Supported: SC.2.P.9.1, SC.3.P.8.3, SC.2.N.1.5, HE.2.PHC.1.1, HE.3.PHC.3.2	- Head of romaine lettuce - Lemon and/or salt, or a homemade vinaigrette (see recipe on following pages) - Store-bought creamy salad dressing	In this activity, you'll guide students through tasting lettuce in three different forms – plain, with a simple seasoning and with a creamy dressing.	Start by asking your school nutrition team if they can support you by acquiring and/or preparing the food items. Use this activity to introduce students to new, nutritious foods. Educate them on the nutritional differences between whole foods – like fresh lettuce – and packaged foods with long ingredient lists – like store-bought dressing.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Lemon and Olive Oil Vinaigrette *On page 139*	Standard(s) Supported: SC.2.P.9.1, SC.2.P.8.1, SC.3.N.1.6	Equipment required: - Small jar with a tight-fitting lid - Measuring cup - Measuring spoons - Paper or cloth towels for spills - Bowls or cups to serve Ingredients (adjust quantities based on class size): - ⅓ cup extra virgin olive oil - 1 tablespoon white wine vinegar or apple cider vinegar - 1 tablespoon lemon juice - 2 teaspoons honey or sugar - ¼ teaspoon garlic powder - ¼ teaspoon salt - Pinch black pepper	Use this recipe to prepare your own vinaigrette for the Lettuce Three Ways exercise.	You might demonstrate making one batch to share with your class, or divide students into groups of four so each group can shake their own jar and watch the oil and vinegar temporarily combine.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Thirsty Lettuce (Teacher Guide and Student Sheets) *On page 140*	Standard(s) Supported: SC.3.L.14.1, SC.3.L.17.2, SC.2.P.8.1	- Pale inner romaine leaves: 1 per group, plus a few extras (some won't take the dye well) - Clear cups: 1 per leaf - Water - Paper towels: for drips and dye spills (dye stains!) - Dark food coloring: red or blue works best; you'll need plenty for a deep color - Scissors or a knife (teacher use only): for the fresh cut and slicing the rib open - Ruler (optional): for measuring how high the color climbs - Aprons or old shirts (optional): food coloring stains hands and clothes	This activity invites students to explore capillary action and transpiration by conducting a simple science experiment over time.	You handle all of the cutting, and the dyed lettuce is for science rather than for eating. Start the experiment in the morning so students can see progress before the day ends, though the boldest results appear the next day. Hand out rulers and have students track how high the color climbs to turn the observation into a measurement lesson.
Regrow a Romaine Heart (Teacher Guide and Growth Log) *On page 144*	Standard(s) Supported: SC.2.L.16.1, SC.3.L.14.1, SC.3.L.14.2, MA.2.M.1.1 / MA.2.M.1.2 / MA.2.M.1.3 / MA.3.M.1.2	- The base of a romaine heart (about 1–2 inches tall), cut by the teacher - A shallow dish or cup - Water - A sunny windowsill - Rulers, for students to measure new growth in centimeters - A growth log or chart, for daily measurements and sketches (see next page)	Instead of throwing away the bottom of a romaine heart, your class regrows it in a shallow dish of water. Students measure the tallest new leaf each day and log what they see over one to two weeks.	This activity complements life science lessons on life cycles and math lessons on measurement. It can run as a single class demonstration or in small groups so every student can measure their own plant.

WORKSHEETS

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Romaine Lettuce Video Trivia and Farm Math *On page 148*	Standard(s) Supported: MA.2.AR.1.1 / MA.3.AR.1.2	- Writing instrument	This worksheet tests students' comprehension of the Virtual Farm Field Trip by asking questions answered in the video, then applies farm facts to word problems.	You might hand the worksheet out before the video so students can answer as they go, or wait until after. Consider enhancing this activity with the "Trivia Toss" activity, explained in this Classroom Guide under "After You Watch."
On the Lettuce Farm *On page 150*	Standard(s) Supported: ELA.2.C.3.1, ELA.2.C.1.2, ELA.2.R.3.2, ELA.3.C.1.4, ELA.3.C.3.1, ELA.3.R.3.2	- Writing instrument - Crayons, colored pencils or markers	This worksheet asks students to draw how lettuce grows at the farm they visited in the Virtual Farm Field Trip — from the fish, to the water, to the lettuce — and then explain the picture in writing.	This tool reinforces comprehension, encourages observation skills and allows students to express their understanding creatively. You might ask students to each share with the class what they drew and wrote.
Parts of a Lettuce Plant *On page 151*	Standard(s) Supported: SC.3.L.14.1, SC.3.L.17.2	- Writing instrument - Crayons, colored pencils or markers (optional)	This worksheet has students (1) label parts of the lettuce plant using a word bank, then (2) match each part of the plant with a description of its function.	This worksheet complements life science lessons about parts of the plant.
Life Cycle of Lettuce *On page 152*	Standard(s) Supported: SC.2.L.16.1	- Scissors - Glue - Crayons, colored pencils or markers	This worksheet invites students to cut and glue words indicating stages of a lettuce plant's life cycle in the correct order, including flowering and bolting.	This worksheet complements life science lessons about plant life cycles. It also pairs well with the bolting question in the Classroom Guide.
Reading Comprehension: Two Ways to Grow Lettuce, with Close Reading *On page 153*	Standard(s) Supported: ELA.2.R.3.2 / ELA.3.R.3.2, ELA.2.V.1.3, ELA.3.V.1.3	- Writing instrument	This worksheet pairs a short passage about field-grown and greenhouse-grown lettuce with close reading questions. Students circle the best answer, then explain their thinking in writing.	This worksheet complements reading comprehension and vocabulary lessons. It gives students a second route into the content of the Virtual Farm Field Trip, which helps those who take more from reading than from watching. You might read the passage aloud together first, then have students answer independently.
Answer Key *On page 155*			See here for answers to each worksheet.	

LETTUCE THREE WAYS

This group activity brings the field trip to life as students get the opportunity to taste lettuce three ways: plain, with simple seasoning or with a creamy dressing.

MATERIALS

Head of romaine lettuce

Lemon and/or salt, or a homemade vinaigrette *(see recipe on following pages)*

Store-bought creamy salad dressing

COLLABORATE WITH YOUR CAFETERIA

Consider partnering with your school nutrition team to obtain these food items and/or prepare a lettuce-wrap-style dish for your taste test. Be sure to contact them ahead of time, discuss the support you will need and show gratitude for their collaboration!

SUGGESTED QUESTIONS

Lead a discussion as your students try lettuce three different ways. Questions like the following can help kids better connect with their food, think about their preferences and encourage them to make nutritious choices in the future.

Before the tasting:

1. *Have you tried romaine lettuce before? How did you eat it? What did you think?*
2. *If not, what do you think it will taste like?*
3. *Did you know that there are hundreds of lettuce types? How do you think the different kinds look, feel and taste different from each other?*

As they try the plain lettuce:

1. *What do you think of the texture of the plain lettuce? Is it crunchy or soft?*
2. *Describe the flavor. Is it like lettuce you've tasted before? If yes, how so? If not, how is it different?*
3. *How would you feel about eating fresh lettuce as a snack? Why? What might you eat it with?*

As they try the lettuce with a squeeze of lemon, sprinkle of salt or homemade vinaigrette:

1. *How is this lettuce similar to the plain lettuce you just tried?*
2. *How is it different?*
3. *Have you eaten lettuce like this before? How else have you had it? Which way do you prefer?*

As they try the lettuce with the creamy dressing:

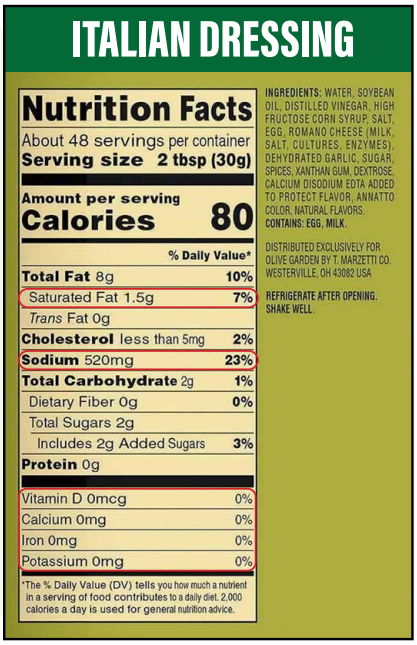
1. *How does the texture of this lettuce compare to the other lettuce you tried?*
2. *Describe how the creamy dressing looks and tastes. How is it the same or different from the lemon, salt or vinaigrette you tried?*
3. *Before today, did you know that adding different dressings can change the texture of the lettuce? What other dips, dressings or sauces might you try eating with lettuce?*
4. *What's one new way you'd like to try eating lettuce after today?*

TEACHER TIP:

Use this as a quick nutrition lesson. Explain that whole foods with just one ingredient — like fresh lettuce — are usually more nutritious than packaged foods with a long list of ingredients.

A food with lots of ingredients — like store-bought dressing — is like a puzzle with many pieces, and some pieces might not be so nutritious (like added sugar). Simple foods you recognize are better for your body and help you feel your best.

Pass around the dressing bottle and read the ingredient list together. Ask: "Any long words we can't say?" Then you may point out the amount of sodium and saturated fat, and lack of vitamins in one serving. Encourage students to compare this to fresh lettuce. There isn't an ingredient list — because it's just lettuce!



ALTERNATE IDEAS

If you have extra time to prepare, or if your school's nutrition team agrees to prepare a dish for your taste test, here are some great options to use in place of either of the dressing options:

- **Lettuce varieties side by side**
- **Chilled vs. room-temperature lettuce**
- **Lettuce as a dipper (with hummus or ranch)**
- **"Massaged" romaine (massage vinaigrette into lettuce for a change in taste and texture)**
- **Lettuce wrap burger sliders**
- **Lettuce boats with Southwestern style fillings**
- **Lettuce cups with Asian-inspired chicken filling**

LEMON AND OLIVE OIL VINAIGRETTE RECIPE

Estimated Yield: About ½ cup dressing (4 two-tablespoon servings)

EQUIPMENT REQUIRED

- Small jar with a tight-fitting lid
- Measuring cup
- Measuring spoons
- Paper or cloth towels for spills
- Bowls or cups to serve

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- ⅓ cup extra virgin olive oil
- 1 tablespoon white wine vinegar or apple cider vinegar
- 1 tablespoon lemon juice
- 2 teaspoons honey or sugar
- ¼ teaspoon garlic powder
- ¼ teaspoon salt
- Pinch black pepper

DIRECTIONS

1. Combine all ingredients in the small jar.
2. Seal jar tightly and shake vigorously until dressing appears combined and slightly cloudy.
3. Serve over chopped romaine.

TIP: You might choose to demonstrate how to make the dressing for the class, or have students work in small groups to shake and mix their own jars as a hands-on activity. Observe how the oil and vinegar combine/emulsify, then discuss why they eventually separate into distinct layers.

CUSTOMIZE YOUR DRESSING

Switch up your dressing by experimenting with other flavors. Stir in a tablespoon of grated Parmesan cheese for a richer, cheesy flavor. Add a teaspoon of Dijon mustard to add a little kick and help the dressing emulsify. Or have fun playing with different seasonings and herbs like basil, Italian seasoning or chives.

THIRSTY LETTUCE

TEACHER GUIDE

In this hands-on experiment, students stand a romaine leaf in dyed water and watch the color travel up through the leaf's veins. It's a simple, visible way to see how plants pull water from their roots up to their leaves. It ties directly to Traders Hill Farm, where lettuce grows with its roots in water.

The Science:

Plants move water through tiny tubes called xylem that run from the roots up into every leaf. Water is pulled upward by capillary action, the same way a paper towel soaks up a spill. As the leaf loses water into the air (transpiration), more water is pulled up to replace it, carrying nutrients along the way. The red or blue dye simply "rides along" with the water, making this invisible journey visible.

(No need to use "xylem" or "capillary action" with younger students. "Tiny tubes" and "little straws" work great!)

Time: ~15-20 min setup

Check after a few hours, but the boldest results appear the next day. If you can, start in the morning so students see progress before the day ends. Check back again the next day.

MATERIALS

- **Pale inner romaine leaves: 1 per group, plus a few extras (some won't take the dye well)**
- **Clear cups: 1 per leaf**
- **Water**
- **Paper towels: for drips and dye spills (Dye will stain hands and fabric.)**
- **Dark food coloring: red or blue works best; you'll need plenty for a deep color**
- **Scissors or a knife (teacher use only): for the fresh cut and slicing the rib open**
- **Ruler (optional): for measuring how high the color climbs**
- **Aprons or old shirts (optional): food coloring stains hands and clothes**

SETUP TIP: Re-cut each stem, right at the base of the leaf, right before the students stand it in the water. A fresh cut reopens the tubes and is the #1 thing that makes color show.

Your Role During the Activity

- You handle the cutting, both the fresh cut across the stem, right at the base of the leaf at the start, and slicing the rib open lengthwise at the end.
- Have students make and record a prediction before starting. This builds the "predict, then observe" habit and makes the reveal more exciting.
- Encourage students to check back at intervals and notice the color climbing higher over time. This is a great time to practice using a ruler to measure!

What to Expect/Troubleshooting

- **Faint color?** The dye may be too weak, the cut wasn't fresh or not enough time has passed — add more dye, re-cut and wait longer (overnight is best).
- **No color at all?** The leaf may be too thick/dark, or the stem end dried out and sealed. Try a paler inner leaf with a fresh cut.
- Colored streaks will appear along the veins/ribs. That's exactly what you want students to spot!

Facilitating the Discussion

Use the "Reflect" questions on the student worksheet to guide students. Start by asking what they saw, then why it matters and if their observations are seen at the farm. Let them point to the colored lines as evidence. Find answers to the right.

Student Worksheet "Reflect" Answer Key:

1. The color traveled **up** into the veins/ lines of the leaf, visible as colored streaks where water was pulled through.
2. **Up!** Water moves up from the cut end into the leaf.
3. The plant pulls water up from its **roots** through **tiny tubes** (like the colored lines) all the way to the leaves.
4. Both take up water **from the bottom**, just like the roots-in-water system at the aquaponic farm.

EXTEND LEARNING

- **Measurement:** Have students use a ruler to track how high the color climbed and re-measure the next day.
- **Compare:** Try a thick outer leaf vs. a pale inner leaf, or two dye colors, and compare results.
- **Farm connection:** This is a tiny version of how water travels through the lettuce at Traders Hill Farm, up from the roots, through the plant, carrying food along the way.

SAFETY

- You do all the cutting.
- The dyed lettuce is for science, not for eating!

Name _____ **Date** _____

Thirsty Lettuce

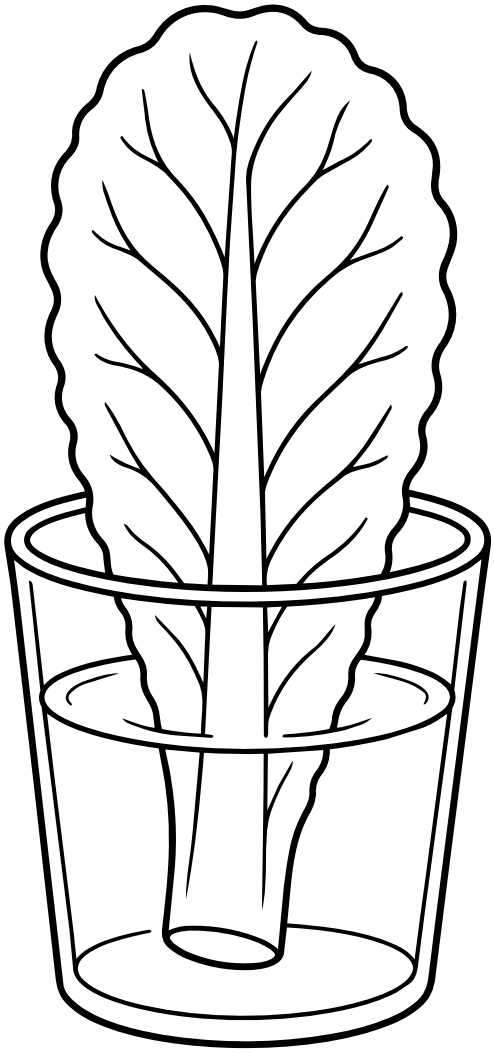
A leaf is almost all water — about 95 percent! At Traders Hill Farm, water is always moving through the lettuce, carrying food the plant needs. But how does water travel inside a leaf? In this activity, you'll use colored water to see it happen!

Our Question

What happens when a lettuce leaf sits in colored water?

What You'll Need

- 1 pale inner romaine lettuce leaf
- A clear cup
- Water
- Dark food coloring (red or blue works best)
- A ruler (optional)



What To Do

1. Fill the cup partway with water. Stir in lots of dark red or blue food coloring until the water is deep red or blue.
2. Ask your teacher to snip a fresh cut across the bottom of your leaf. Stand the leaf in the cup with the cut end down in the water.
3. Put the cup where it won't be bumped. Now wait and watch! Check after a few hours and again the next day.

Look Closer

When you're done, ask your teacher to slice one leaf open the long way. Can you see the thin colored lines inside? Those are tiny tubes that carry water up through the whole plant, like little straws!

REMEMBER

This lettuce is for science, not for eating!

Continued →

My Prediction

What do you think will happen to the leaf? Draw or write your guess here: _____

Reflect

Write your answer to each question below. Then we will discuss as a class.

1. Where did the colored water go? How can you tell? _____

2. Which way did the water move: up or down? _____

3. A lettuce leaf is mostly water. How do you think water gets all the way up into a real lettuce plant's leaves?

4. At Traders Hill Farm, lettuce grows with its roots in water. How is that like what happened in your cup?

REGROW A ROMAINE HEART

TEACHER GUIDE

Instead of throwing away the bottom of a romaine heart, your class can regrow it. In this multi-day activity, students set a leftover romaine base in shallow water, watch new leaves sprout over 1–2 weeks and measure and log the growth as it happens. It's a memorable way to show that plants take up water to grow, and that living things move through life cycle stages.

Time: ~10 minutes to set up; 2–3 minutes daily for water changes and measuring over 1–2 weeks.

MATERIALS

- **The base of a romaine heart (about 1–2 inches tall), cut by the teacher**
- **A shallow dish or cup**
- **Water**
- **A sunny windowsill**
- **Rulers, for students to measure new growth in centimeters**
- **A growth log or chart, for daily measurements and sketches (see next page)**

These materials are for one class demonstration. To run it in small groups, multiply materials by the number of groups. Group setup lets every student measure their own plant and compare results across the room.

HOW TO RUN IT

Set-up: Cut the bottom 1–2 inches off a romaine heart — the pale base where the leaves join. Set it cut side up in the dish and add about half an inch of water, enough to cover the very bottom without submerging the whole base. Place the dish on a sunny windowsill where the class can check on it easily.

Daily check-in: Assign students to pour out the old water and refill with fresh water each day. This step keeps the base healthy and growing rather than rotting, and it gives students a small daily responsibility in the investigation.

What to expect: New leaves typically appear within 3–5 days; small roots may form at the base, too. After 1–2 weeks, you can expect to see a small cluster of tender new leaves, but not a whole new head. It will also turn bitter after a couple of weeks. That's a great discussion point: the plant is living on stored energy, not making a full new plant.

If it turns slimy or smells, the water wasn't changed often enough or the base sat too deep. Start fresh with a new base and less water.

LEADING THE MEASUREMENT AND LOGGING

Have students measure the tallest new leaf to the nearest centimeter and record it in their log. Toward the end of the activity, guide students to compare their first and last measurements and describe how much the lettuce grew. Students who finish early can note other changes: leaf color, the number of new leaves or roots forming.

DISCUSSION QUESTIONS TO LEAD

Before you begin, ask: "Do you think this leftover piece can grow again? What do you think will happen?"

HAVE STUDENTS RECORD THEIR PREDICTIONS

As the lettuce grows, and again at the end, lead a class discussion with prompts such as:

- What is happening to the romaine lettuce's base over time, and where are the new leaves growing from?
- This lettuce is growing in just water, with no soil. How is that like the farm we saw, where lettuce grows in water with help from fish?
- Why do we change the water every day? What might happen if we didn't?
- Plants need certain things to grow. Which of those did our lettuce have on the windowsill?

Look for students to recognize that new leaves grow from the center of the base, that the base takes up water to fuel that growth and that this mirrors the roots-in-water aquaponic system at Traders Hill Farm.

WRAP IT UP

Have students compare their first and last measurements and state how much the lettuce grew in total. Then circle back to the start and ask:

Was your prediction right? What surprised you?

Name _____ **Date** _____

My Lettuce Growth Log

We are regrowing a romaine heart in water. Check it once a day. Measure, write and draw what you see!

My Prediction:

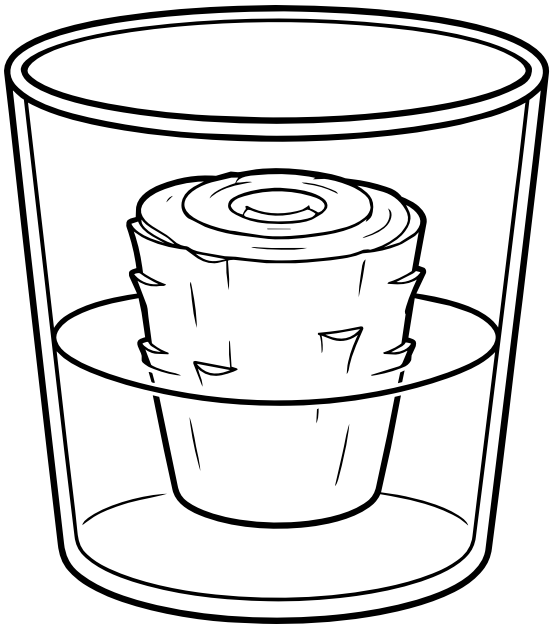
Do you think this leftover piece of lettuce can grow again? What do you think will happen?

_____

_____

How to Check Each Day

1. Change the water.
2. Measure the tallest new leaf in centimeters.
3. Write the number below and draw what you see.



Day	Date	Height (cm)
1		0 cm
2		
3		
4		
5		
6		
7		
8		
9		
10		

Tip: If nothing changed today, write it down anyway! "No change" is important science, too.

Continued →

Observations

My lettuce started at 0 cm.

On my last day it was _____ cm tall.

So, it grew _____ cm total!

Reflection

1. Where did the new leaves grow from? _____

2. Our lettuce grew in just water — no soil! Why do you think that worked? _____

3. Was your prediction right? What surprised you? _____

Name _____ **Date** _____

Romaine Lettuce Video Trivia & Farm Math

Directions: Answer these trivia questions based on the video you watched about the Florida Romaine Lettuce farm.

1. Lettuce has a vitamin that helps keep something in your body strong.
   a. What is the vitamin called? _____
   b. What does it keep strong? _____
2. What happens to the fish waste at the farm? _____
3. What temperature is best for growing lettuce? _____

Circle whether the statements below are true or false.

4. In aquaponics, fish help the plants grow.	**TRUE** | **FALSE**
5. A garden outside can grow more lettuce in a small space than a greenhouse can.	**TRUE** | **FALSE**
6. Romaine lettuce takes about 35-40 days to grow at Traders Hill Farm.	**TRUE** | **FALSE**
7. Lettuce is part of the pea family.	**TRUE** | **FALSE**

Choose the correct word to fill each blank.

Word Bank: **water · nursery · hydroponics**

8. _____ is growing plants in water, not soil.
9. Romaine lettuce is 95% _____.
10. A _____ is a place where baby plants start growing from seeds.

Continued →

Farm Math

Solve each problem and write your answer in the box.
(Tip: A flat is a tray that holds baby plants!)

1. Farmer Tracy packed 25 lettuce plants into one flat and 25 plants into another flat. How many lettuce plants are in the two flats total?

_____ plants

2. One row on the lettuce farm has 50 flats. If the workers have already planted 32 flats, how many flats are left to finish the row?

_____ flats

3. Lettuce takes 40 days to grow. It has been growing for 15 days. How many more days until it's ready to pick?

_____ days

4. If there are 5 fish tanks, and each tank has 200 fish, how many fish are there total?

_____ fish

Name _____ **Date** _____

On the Lettuce Farm

Directions: Draw a picture that shows how lettuce grows at Traders Hill Farm, from the fish, to the water, to the lettuce.

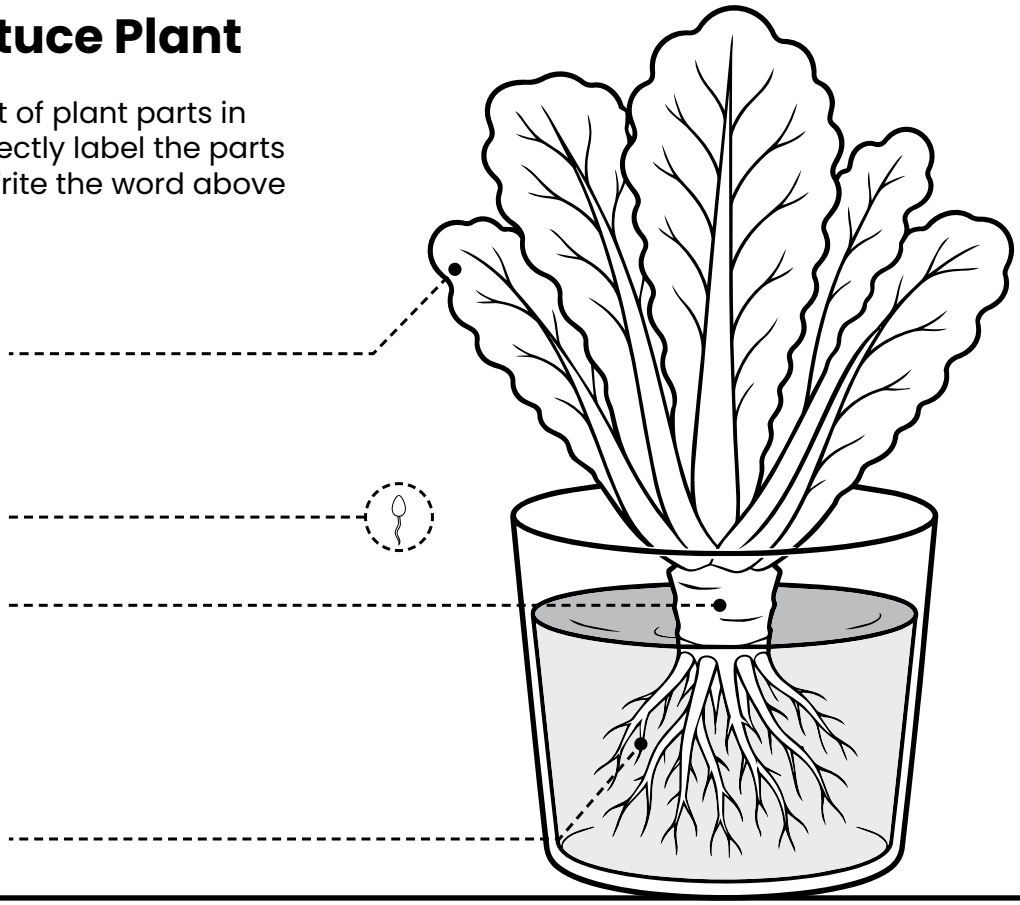
Explain your picture to someone who has never seen the farm. How do the fish help the lettuce grow? Write at least three sentences.

Name _____ **Date** _____

Parts of a Lettuce Plant

Directions: Use the list of plant parts in the word bank to correctly label the parts of the lettuce plant. Write the word above the dotted line.

Word Bank
Root
Stem
Leaf
Seed



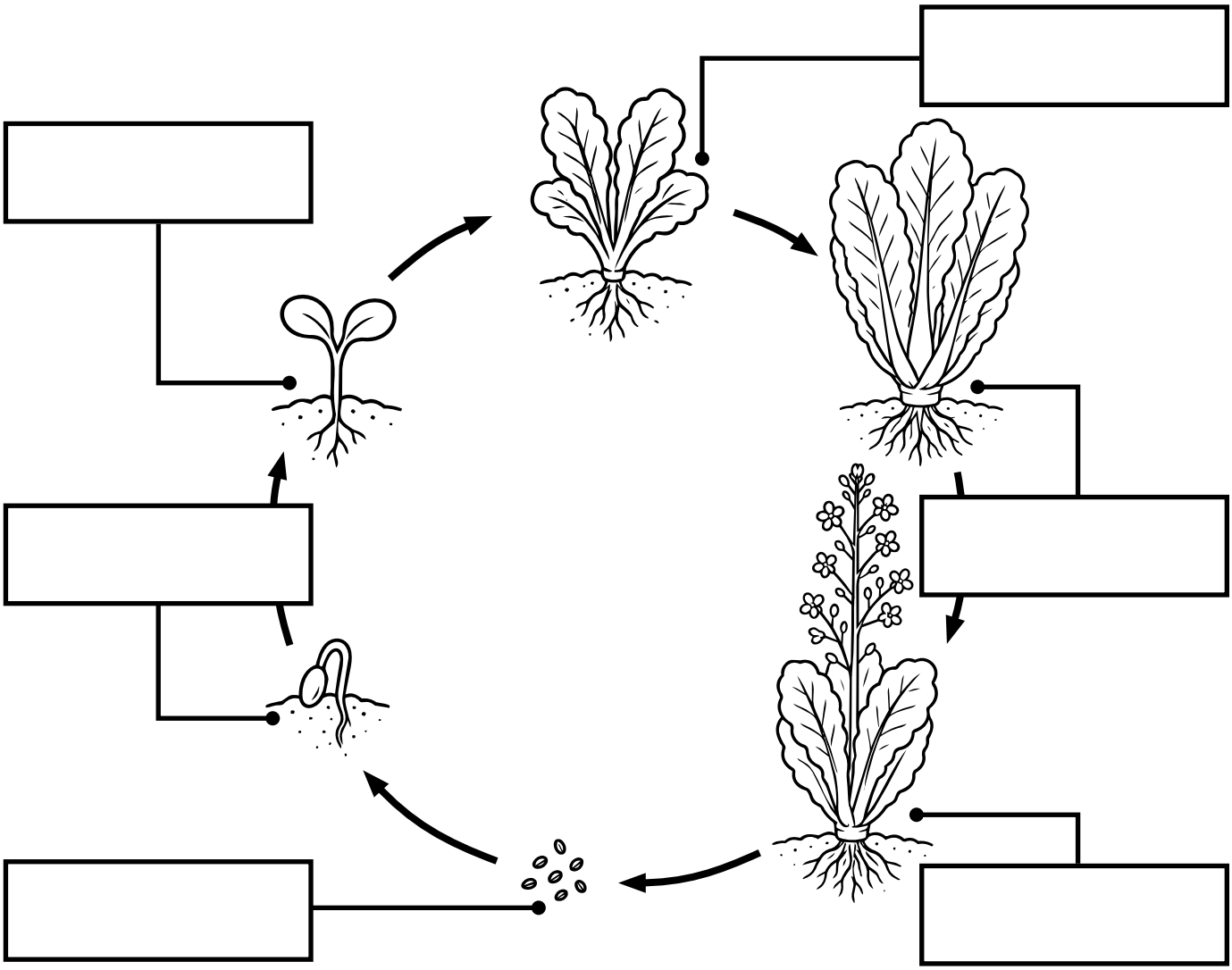
Now draw a line between each part of the plant (on the left) and its function (on the right).

Root	Soaks up sunlight and makes food for the plant
Stem	Grows into a brand new plant
Leaf	Drinks up water and holds the plant in place
Seed	Holds the plant up and carries water to the leaves

Name _____ **Date** _____

Life Cycle of Lettuce

Directions: This lettuce grows in soil! Cut out the words and glue them where they belong to label each stage of the lettuce plant's life cycle.



Seedling	**Flowers** (Bolting)	**Young Plant**
Seeds	**Germination**	**Mature Plant**

Name _____ **Date** _____

Two Ways to Grow Lettuce

Directions: Read the passage about how lettuce is grown. Then, answer the questions.

Did you know there is more than one way to grow lettuce? Some farmers grow lettuce outside in a field. Other farmers grow lettuce inside in water. Lettuce grown in water instead of soil is called **hydroponic** lettuce.

Farmers have grown lettuce in fields for a long time. In a field, plants get sunshine and rain from nature. This works well when the weather is warm and sunny. But bad weather can be a problem. If it gets too cold, too hot or too rainy, some lettuce can be hurt before it is ready to pick. Lettuce also grows best only in certain seasons. Farmers cannot grow it outdoors all year.

At Traders Hill Farm in Florida, farmers grow lettuce a different way. They grow the lettuce inside big buildings called **greenhouses**. A greenhouse keeps the plants warm and safe. Inside, the lettuce does not grow in soil. It grows in pools of water! Nearby, fish swim in their own pools. The fish water flows over to the lettuce and gives the plants **nutrients**. Nutrients are the tiny bits of food a plant needs to grow. This way of growing is called **aquaponics**.

Growing lettuce in greenhouses has good parts and hard parts. A good thing is weather cannot hurt the plants. Because of this, the farm can grow fresh lettuce all year, even in winter. Greenhouses also keep most bugs out, so farmers use less bug spray. And growing this way uses less water than growing in a field. But here is the hard part: Greenhouses cost a lot of money. The buildings and the pumps are expensive to build and to run.

Each way to grow lettuce has its own strengths. Both kinds of farmers work hard to grow good food. Some of that lettuce might even end up on your lunch tray!

Close Reading

Circle the best answer.

1. What is this passage mostly about?

a. How to make bug spray
b. Two ways that farmers grow lettuce
c. How to cook lettuce for dinner
d. Why fish live in water

2. What kind of building does Traders Hill Farm grow lettuce in?

a. A barn
b. A pool house
c. No building, in a field
d. A greenhouse

3. In the passage, the word *nutrients* means:

a. the tiny bits of food a plant needs to grow
b. buildings that keep plants warm
c. bugs that hurt the plants
d. seasons of the year

4. Why can Traders Hill Farm grow lettuce all year long, even in winter?

a. The lettuce grows outside in a field.
b. The greenhouse keeps the plants warm and safe from bad weather.
c. The farmers use a lot of bug spray.
d. Lettuce only grows when it is cold.

5. Write one way that growing lettuce in a *field* is different from growing it in a *greenhouse*.

_____

_____

_____

6. Write one *good thing* and one *hard thing* about growing lettuce in a greenhouse.

Good thing: _____

Hard thing: _____

ANSWER KEY

Name _____ Date _____

Romaine Lettuce Video Trivia & Farm Math

Directions: Answer these trivia questions based on the video you watched about the Florida Romaine Lettuce farm.

1. Lettuce has a vitamin that helps keep something in your body strong.
   a. What is the vitamin called? Vitamin K (2:53)
   b. What does it keep strong? Bones (2:53)
2. What happens to the fish waste at the farm? "It becomes plant food" or "It feeds the lettuce" (3:22–3:33)
3. What temperature is best for growing lettuce? About 70°F (2:01)

Circle whether the statements below are true or false.

4. In aquaponics, fish help the plants grow.	**TRUE** FALSE
5. A garden outside can grow more lettuce in a small space than a greenhouse can.	TRUE **FALSE**
6. Romaine lettuce takes about 35-40 days to grow at Traders Hill Farm.	**TRUE** FALSE
7. Lettuce is part of the pea family	TRUE **FALSE**

Choose the correct word to fill each blank.

Word Bank: **water** · **nursery** · **hydroponics**

8. hydroponics is growing plants in water, not soil.
9. Romaine lettuce is 95% water
10. A nursery is a place where baby plants start growing from seeds.

Continued →

Farm Math

A flat is a tray that holds 25 baby lettuce plants.

Solve each problem and write your answer in the box.

1. Farmer Tracy packed 25 lettuce plants into one flat and 25 plants into another flat. How many lettuce plants are in the two flats total?

   25 + 25 = 50 plants

2. One row on the lettuce farm has 50 flats. If the workers have already planted 32 flats, how many flats are left to finish the row?

   50 - 32 = 18 flats

3. Lettuce takes 40 days to grow. It has been growing for 15 days. How many more days until it's ready to pick?

   40 - 15 = 25 days

4. If there are 5 fish tanks, and each tank has 200 fish, how many fish are there total?

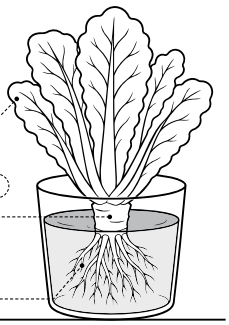
   5 x 200 = 1,000 fish fish

Name _____ Date _____

Parts of a Lettuce Plant

Directions: Use the list of plant parts in the word bank to correctly label the parts of the lettuce plant. Write the word above the dotted line.

Word Bank
Root
Stem
Leaf
Seed



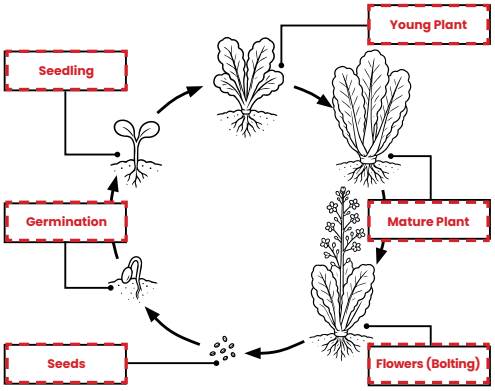
Now draw a line between each part of the plant (on the left) and its function (on the right).

Root	Soaks up sunlight and makes food for the plant
Stem	Grows into a brand new plant
Leaf	Drinks up water and holds the plant in place
Seed	Holds the plant up and carries water to the leaves

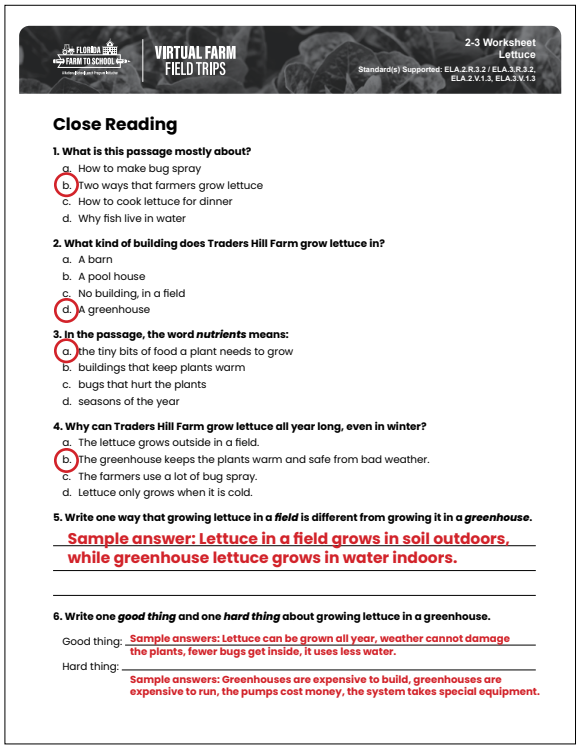
Name _____ Date _____

Life Cycle of Lettuce

Directions: This lettuce grows in soil! Cut out the words and glue them where they belong to label each stage of the lettuce plant's life cycle.



ANSWER KEY



VIRTUAL FARM FIELD TRIPS

2-3 Worksheet
Lettuce
Standard(s) Supported: ELA.2.R.3.2 / ELA.3.R.3.2, ELA.2.V.1.3, ELA.3.V.1.3

Close Reading

1. What is this passage mostly about?

a. How to make bug spray
b. Two ways that farmers grow lettuce
c. How to cook lettuce for dinner
d. Why fish live in water

2. What kind of building does Traders Hill Farm grow lettuce in?

a. A barn
b. A pool house
c. No building, in a field
d. A greenhouse

3. In the passage, the word *nutrients* means:

a. the tiny bits of food a plant needs to grow
b. buildings that keep plants warm
c. bugs that hurt the plants
d. seasons of the year

4. Why can Traders Hill Farm grow lettuce all year long, even in winter?

a. The lettuce grows outside in a field.
b. The greenhouse keeps the plants warm and safe from bad weather.
c. The farmers use a lot of bug spray.
d. Lettuce only grows when it is cold.

5. Write one way that growing lettuce in a *field* is different from growing it in a *greenhouse*.

Sample answer: Lettuce in a field grows in soil outdoors, while greenhouse lettuce grows in water indoors.

6. Write one *good thing* and one *hard thing* about growing lettuce in a greenhouse.

Good thing: Sample answers: Lettuce can be grown all year, weather cannot damage the plants, fewer bugs get inside, it uses less water.

Hard thing: Sample answers: Greenhouses are expensive to build, greenhouses are expensive to run, the pumps cost money, the system takes special equipment.

LET'S LEARN ABOUT FLORIDA GREEN BEANS!

This Virtual Farm Field Trip unit is all about green beans. It begins with an informative 4.5-minute video, transporting students to R.C. Hatton Farms near Hobe Sound, Florida. Your students will meet farmers Charlie and Jonathan to learn how Florida green beans are planted, grown, harvested and distributed.

We encourage you to expand the learning experience using this section's worksheets and guided activities, including a taste test. You may choose to use all these resources or pick the ones best suited to your classroom.

ACCESS VIRTUAL FARM FIELD TRIP

Scan code or visit:
FarmToSchoolFL.com/FieldTrips

FLORIDA GREEN BEAN FUN FACTS

- **Green beans are part of the legume family, like black beans, lima beans and chickpeas.**
- **Green beans have vitamin C, which helps keep your body fueled, and fiber, which helps your body digest food.**
- **Green beans make a snap when you break them in half. That's why they're often called snap beans.**
- **Green beans used to be called "string beans" because some varieties had a tough string along the pod you had to pull off before eating. Farmers later created stringless beans, but the nickname stuck around.**
- **Some green beans climb up tall like a vine, and some grow on short, bushy plants.**
- **We eat green beans as a vegetable, but scientists consider them a fruit because they are the seed-holding pod of the plant. Open one up and you'll find tiny bean seeds tucked inside!**

BEFORE YOU WATCH: DISCUSSION STARTERS

Get students thinking about agriculture, science and nutrition by asking questions such as:

- *Where do the vegetables you eat come from and how do they reach your school?*
- *What do plants need to grow? What happens if they don't get what they need?*
- *Have you eaten green beans before — raw or cooked? What did you think?*
- *A green bean holds seeds inside. What other foods have seeds inside?*
- *As you watch this video, listen for how the farm uses water to help the beans grow.*

TRIVIA TOSS

Want to liven up your video trivia sheet exercise? Have students answer questions or complete their worksheets separately, then come together in teams to compare and finalize answers. Go around the room asking each team a question. If they answer it correctly, they get a chance to toss a ball into one of three buckets to get a prize for their team. Prizes might be a homework pass, free time, extra computer time or lunch in the classroom.

AFTER YOU WATCH: SUGGESTED QUESTIONS

Find video comprehension questions, answers and video timestamps for finding those answers below. See the worksheet section of these resources for a trivia sheet covering the questions below for more independent student work.

- *What are commodities?* ***(Crops grown and harvested on a farm; 0:26)***
- *Why do farmers build raised beds before planting green beans?* ***(To help keep seeds from getting drowned by too much water when it rains; 0:34)***
- *About how many green bean pods does a farmer hope to grow on each plant?* ***(About 20 pods per plant; 0:58)***
- *True or false: The little white flowers on a green bean plant can turn into bean pods.* ***(True; 1:05)***
- *Green beans are part of which plant family?* ***(Legume; 2:33)***

Teacher Tip: Ask students to name other foods in the legume family. Answers might include black beans, kidney beans, chickpeas and lentils.

- *How long does it take a tiny bean pod to grow into a full-sized pod?* ***(About 3 weeks; 1:18)***
- *What kind of effect helps water move through the soil to plant roots?* ***(Capillary effect; 2:08-2:26)***

Teacher Tip: Have students think of other resources that plants need to make their own food besides water.

- *True or false: Green beans are a good source of vitamin C and fiber.* ***(True; 3:37)***

GEOGRAPHY MOMENT

Ask students to find Hobe Sound on a map of Florida. (Hint: It's on the southeastern coast, east of Lake Okeechobee and about 35 miles north of West Palm Beach.)

USING THESE TEACHING TOOLS

Below is an overview and guide for using the teaching tools included in this section, including guided activities, recipes and worksheets. We've included the education standards each tool complements, materials needed for each activity, a brief overview of each tool and tips for building your lessons.

You can find each of these tools on the following pages, along with additional information and pointers.

GUIDED ACTIVITIES

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Video, Discussion Questions and Trivia Toss (in Classroom Guide) *On page 157*	Standard(s) Supported: SC.2.L.16.1, SC.3.L.14.1, SC.3.L.17.2, HE.2.PHC.1.1, HE.3.PHC.3.2	- 3 buckets, boxes or similar containers - Palm-sized balls (enough for each team to have one)	This activity gets students out of their seats as they respond to questions about the Virtual Farm Field Trip video.	Use this activity to complement or reinforce the Green Bean Video Trivia sheet.
Green Beans Three Ways *On page 163*	Standard(s) Supported: SC.2.P.9.1, SC.3.P.8.3, SC.2.N.1.5, HE.2.PHC.1.1, HE.3.PHC.3.2	- Raw green beans in the pod - Freshly steamed green beans (see Quick Steam Green Beans Recipe) - Quick-pickled "dilly" beans (see Dilly Beans Recipe)	In this activity, you'll guide students through tasting green beans three ways – fresh in the pod, steamed and quickly pickled.	Start by asking your school nutrition team if they can support you by acquiring and/or preparing the food items. Use this activity to introduce students to new, nutritious foods. Educate them on the nutritional differences between whole foods – like fresh green beans – and packaged foods with long ingredient lists – like frozen, breaded green beans.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Recipe: Quick Steam Green Beans *On page 165*	Standard(s) Supported: SC.2.P.9.1, SC.3.P.8.3	- Large microwave-safe bowl - Microwave-safe plate or lid - Tongs - Measuring spoons - Bowls or cups to serve · Small microwave-safe bowl (optional, for customizing). - Adjust quantities based on class size: 1 pound fresh green beans, washed with ends trimmed - 2 tablespoons water	Use this recipe to prepare the steamed green beans for the Green Beans Three Ways exercise.	You handle the microwave and the hot bowl. Students can trim the ends and time the cooking, then compare the color and texture of the steamed beans with the raw ones as a short observation exercise.
Recipe: Dilly Beans *On page 166*	Standard(s) Supported: SC.2.P.9.1, SC.3.P.8.3	Equipment needed: - 1 quart-sized mason jar with lid - Measuring cup - Spoon to stir - Kid-safe scissors - Small saucepan - Heat source, such as a stovetop, hot plate or classroom-approved cooking appliance (for teacher use only). Materials and ingredients (adjust quantities based on class size): - 1 pound green beans, washed and trimmed to fit the jar standing upright - 1 cup white vinegar - 1 cup water - 1 tablespoon kosher salt - 3 cloves garlic, cut in half - 2 tablespoons fresh dill - 2 tablespoons sugar (optional)	Use this recipe to prepare the quick-pickled “dilly” beans for the Green Beans Three Ways exercise.	Students can wash and pack the beans and measure the vinegar, water, salt and sugar while you heat the brine and pour the hot liquid. Have students predict how the flavor, smell and texture will change during pickling, then compare fresh and pickled beans after tasting.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Germinate a Bean in a Bag (Teacher Guide and Observation Log) *On page 167*	Standard(s) Supported: MA.2.M.1.1, MA.2.M.1.2, MA.2.M.1.3, MA.3.M.1.2, SC.2.L.16.1, SC.2.N.1.5, SC.3.L.14.2, SC.3.L.14.1	- 1 resealable sandwich-size plastic bag per student - 1 paper towel per student - 2–3 dried green bean seeds per student - Water - Water dropper, or another small instrument for adding water as needed - Tape - A ruler (centimeters) for measuring - A sunny window with space for the whole class's bags - Magnifying glasses (optional)	Each student germinates bean seeds against a damp paper towel in a plastic bag taped to a sunny window, then records the date, a drawing and the root and shoot lengths in centimeters in the Observation Log.	This activity complements life science lessons on life cycles and math lessons on measurement. Start early in the week so there is visible change by Friday, and remind students to write "0" in the log for any part that has not started growing yet.
Bean Pod Dissection (Teacher Guide) *On page 170*	Standard(s) Supported: SC.3.L.14.1, SC.2.P.8.1, SC.2.L.16.1	- 1–2 fresh green bean pods per student or pair - A paper plate or napkin to work on - A ruler (centimeters) - A pencil and crayons for sketching - A magnifying glass (optional)	Students open a fresh green bean pod, predict and count the seeds inside, measure and sketch what they find, and discover that the pod is the plant's seed holder — which is why scientists classify a green bean as a fruit.	Fresh, plump pods open most easily and have the most developed seeds inside. Have students wash their hands and rinse the pods first, and keep this batch for science while using separate, clean beans for tasting. Make a class tally of how many seeds each pod held to turn everyone's observations into shared data.

WORKSHEETS

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Green Bean Video Trivia and Farm Math *On page 172*	Standard(s) Supported: MA.2.AR.1.1 / MA.3.AR.1.2	- Writing instrument	This worksheet tests students' comprehension of the Virtual Farm Field Trip by asking questions answered in the video, then applies farm facts to word problems.	You might hand the worksheet out before the video so students can answer as they go, or wait until after. Consider enhancing this activity with the "Trivia Toss" activity, explained in this Classroom Guide under "After You Watch."

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
On the Green Bean Farm *On page 174*	Standard(s) Supported: ELA.2.C.3.1, ELA.2.C.1.2, ELA.2.R.3.2, ELA.3.C.3.1, ELA.3.R.3.2	- Writing instrument - Crayons, colored pencils or markers	This worksheet asks students to draw a scene from the R.C. Hatton Farms field trip, then write two to three sentences describing the drawing and including at least one fact from the video.	This tool reinforces comprehension, encourages observation skills and allows students to express their understanding creatively. You might ask students to each share with the class what they drew and wrote.
Parts of a Green Bean Plant *On page 175*	Standard(s) Supported: SC.3.L.14.1, SC.3.L.17.2	- Writing instrument - Crayons, colored pencils or markers (optional)	This worksheet has students (1) label parts of the green bean plant using a word bank, then (2) match each part of the plant with a description of its function.	This worksheet complements life science lessons about parts of the plant. It also touches on photosynthesis, so it works either as reinforcement or as an introduction.
Life Cycle of a Green Bean *On page 176*	Standard(s) Supported: SC.2.L.16.1	- Writing instrument	This worksheet invites students to use a word bank to label each stage of the green bean plant's life cycle in the box next to each picture.	This worksheet complements life science lessons about plant life cycles. It also pairs well with Germinate a Bean in a Bag, where students watch the first two stages happen in real time.
Reading Comprehension: The Story of R.C. Hatton, with Write About It *On page 177*	Standard(s) Supported: ELA.2.R.3.2 / ELA.3.R.3.2, SC.3.L.14.1, HE.3.CH.4.1	- Writing instrument	This worksheet pairs a short passage about the history of R.C. Hatton Farms and how green beans are grown with comprehension questions, a word match and a sequencing exercise numbering six events from 1 to 6.	This worksheet complements reading comprehension and vocabulary lessons. It gives students a second route into the content of the Virtual Farm Field Trip, which helps those who take more from reading than from watching. You might read the passage aloud together first, then have students answer independently.
Answer Key *On page 179*			See here for answers to each worksheet.	

GREEN BEANS THREE WAYS

This group activity brings the field trip to life as students get the opportunity to taste green beans three ways: fresh in the pod, steamed and quickly pickled.

MATERIALS

Raw green beans in the pod

Freshly steamed green beans *(see recipe on following pages)*

Quick-pickled "dilly" beans *(see recipe on following pages)*

COLLABORATE WITH YOUR CAFETERIA

Consider partnering with your school nutrition team to obtain these food items and/or prepare a green-bean-themed dish for your taste test. Be sure to contact them ahead of time, discuss the support you will need and show gratitude for their collaboration!

SUGGESTED QUESTIONS

Lead a discussion as your students try green beans three different ways. Questions like the following can help kids better connect with their food, think about their preferences and encourage them to make nutritious choices in the future.

Before the tasting:

- *Have you tried green beans before? What did you think?*
- *If not, what do you think they will taste like?*
- *Did you know that you can pickle green beans? Do you know what that means? How do you think pickling might change the green beans' texture or flavor?*

  Teacher Note: Pickling is a way of preserving food by soaking it in a salty or vinegar-based liquid, which can change its flavor and texture.

As they try the fresh green beans:

- *As you bit into the raw green bean, what did you hear? What did it feel like?*
- *Do you like the smell of the fresh green beans? How would you describe it?*
- *Describe the flavor. Is it like green beans you've tasted before? If yes, how so? If not, how is it different?*
- *How would you feel about eating fresh green beans as a snack? Why? What might you eat them with?*

As they try the steamed green beans:

- *How is the warm steamed green bean different from the cold, raw one? Does cooking change the way it tastes?*
- *What do you notice about the texture? Is the steamed bean softer or crunchier than the raw one?*
- *What do you notice about the color of the steamed green beans compared to the fresh ones? Is it brighter or darker?*
- *How do you feel after eating the steamed green beans? Would you like to try them again?*

As they try the pickled "dilly" beans:

- *Have you had regular pickles before? If so, how are the pickled green beans different from or similar to pickled cucumbers?*
- *How does the flavor of the dilly beans compare to the flavor of the fresh green beans? Is it saltier or more sour?*
- *Would you enjoy having dilly beans as a snack? Why or why not?*
- *Before today, did you know that you could change the taste and texture of vegetables by pickling them yourself? What other vegetables would you like to try pickling?*

TEACHER TIP:

Use this as a quick nutrition lesson. Explain that whole foods with just one ingredient — like fresh green beans — are usually more nutritious than packaged foods with a long list of ingredients.

A food with lots of ingredients — like a frozen package of crispy breaded green beans — is like a puzzle with many pieces, and some pieces might not be so nutritious (like lots of sodium). Simple foods you recognize are better for your body and help you feel your best.

Encourage students to count how many ingredients there are in these frozen breaded green beans. Then you may point out the amount of sodium and saturated fat in one serving. Encourage students to compare this to fresh green beans. There isn't an ingredient list — because it's just green beans!

FROZEN CRISPY BREADED GREEN BEANS

Nutrition Facts

About 4 Servings Per Container

Serving size 3 oz (84g/about 24 pieces)

Amount per serving

Calories 210

	% Daily Value*
Total Fat 11g	14%
Saturated Fat 2g	10%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 410mg	18%
Total Carbohydrate 23g	8%
Dietary Fiber 4g	14%
Total Sugars 1g	
Includes 0g Added Sugars	0%
Protein 3g	
Vitamin D 0mcg	0%
Calcium 30mg	2%
Iron 0.7mg	4%
Potassium 170mg	4%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

INGREDIENTS: GREEN BEANS, WHEAT FLOUR, SOYBEAN OIL, WATER, CONTAINS LESS THAN 2% OF: RICE FLOUR, SALT, MODIFIED CORN STARCH, FLAXSEED, SUGAR, LEAVENING (SODIUM ACID PYROPHOSPHATE, SODIUM BICARBONATE, MONOCALCIUM PHOSPHATE), YEAST EXTRACT, DEXTROSE, GARLIC POWDER, ONION POWDER, PAPRIKA EXTRACT (COLOR), SPICE, YEAST.

CONTAINS: WHEAT.

QUICK STEAM GREEN BEANS RECIPE

Estimated Yield: 1 pound green beans (~6 small servings)

EQUIPMENT REQUIRED

- Large microwave-safe bowl
- Microwave-safe plate or lid
- Tongs
- Measuring spoons
- Bowls or cups to serve
- Small microwave-safe bowl (optional, for customizing)

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- 1 pound fresh green beans, washed with ends trimmed
- 2 tablespoons water

DIRECTIONS

1. Add the green beans and water to the large microwave-safe bowl and cover with the microwave-safe plate or lid.
2. Microwave on high, checking at the halfway point, for 4–6 minutes, or until the beans are bright green and just tender when pierced with a fork. Time may vary.
3. Carefully uncover the beans (watch for steam) and drain any excess water.
4. Serve warm in cups or bowls.

CUSTOMIZE YOUR BEANS

For a more exciting flavor, melt 1 tablespoon butter or olive oil with 1 minced garlic clove (or ¼ teaspoon garlic powder) in the small microwave-safe bowl, microwaving in short bursts until just melted and fragrant. Pour over the drained beans, season with a pinch of black pepper and toss to coat.

You can also finish the beans with a squeeze of lemon juice or a sprinkle of grated Parmesan cheese.

DILLY BEANS RECIPE

Estimated Yield: 1 quart dilly beans

This activity can be completed as a teacher demonstration or in small groups with teacher assistance.

Students can help wash and pack the green beans, measure ingredients and observe the pickling process, while the teacher handles heating the brine — the mixture of water, vinegar and salt used to pickle and preserve foods — and pouring the hot liquid into the jars.

TEACHER NOTE:

Pickled green beans are often called "dilly beans" because they're pickled with dill, a leafy herb that gives them a tangy, savory flavor.

EQUIPMENT REQUIRED

- 1 quart-sized mason jar with lid
- Measuring cup
- Spoon to stir
- Kid-safe scissors
- Small saucepan
- Heat source, such as a stovetop, hot plate or classroom-approved cooking appliance (for teacher use only)

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- 1 pound green beans, washed and trimmed to fit the jar standing upright
- 1 cup white vinegar
- 1 cup water
- 1 tablespoon kosher salt
- 3 cloves garlic, cut in half
- 2 tablespoons fresh dill
- 2 tablespoons sugar (optional)

DIRECTIONS

1. **Students:** Wash the green beans and trim them so they fit inside the jar. Pack the beans upright in the jar with the garlic and dill.
   a. **Tip:** Any beans that don't fit in the jar make a great raw snack — enjoy them fresh!
2. **Students:** Measure the vinegar, water, salt and sugar (if using) into a saucepan.
3. **Teacher:** Heat the mixture on a stovetop until it comes to a gentle boil, stirring until the salt and sugar dissolve.
4. **Teacher:** Carefully remove the brine from the heat and allow it to cool for 2–3 minutes.
5. **Teacher (or older students with close supervision):** Pour the warm brine into the jar until the green beans are completely covered.
6. **Students:** Secure the lid and gently shake the jar to combine the ingredients.
7. Place the jar in the refrigerator and let the beans pickle for at least 2 days before tasting.
8. Store refrigerated and enjoy within about 2 months.

CUSTOMIZE YOUR BEANS

For a spicy punch, add ¼ teaspoon red pepper flakes and ¼ teaspoon whole black peppercorns. Or try swapping half the white vinegar for red wine vinegar.

TEACHER TIP: Have students predict how the green beans' flavor, smell and texture might change during pickling. After tasting, compare the fresh and pickled beans and discuss the differences.

GERMINATE A BEAN IN A BAG

TEACHER GUIDE

In this activity, each student tucks a bean seed and a damp paper towel inside a plastic bag and tapes it to a sunny window. Over the next week or two, students observe something amazing happen: With no soil at all, a little root grows down, and a green shoot — the first stem and leaves of the new plant — grows up.

It's a hands-on way for students to observe germination, the process by which a seed sprouts and begins to grow into a new plant. They'll discover what seeds need to grow by practicing careful observation over time.

WHAT YOU'LL NEED (PER STUDENT):

- **1 resealable sandwich-size plastic bag**
- **1 paper towel**
- **2–3 dried green bean seeds**
- **Water**
- **Water dropper, or another small instrument for adding water as needed**
- **Tape**
- **A ruler (centimeters) for measuring**
- **A sunny window with space for the whole class's bags**
- **Magnifying glasses for a closer look (optional)**

HOW TO SET IT UP:

1. Dampen a paper towel with water so it is wet but not dripping, then fold it to fit inside the plastic bag.
2. Have each student place 2–3 bean seeds against the paper towel, near the top of the bag so the seeds are easy to see.
3. Seal each bag (leaving a little air inside) and tape it to a sunny window, with the seeds facing into the room.
4. Check the beans each day. Keep the paper towel damp, adding a few drops of water if it starts to dry out.
5. Over the next 1–2 weeks, watch as a root grows down and a shoot grows up. Record each observation in the Observation Log.

OBSERVE AND DISCUSS:

- Before we start: What do you predict will happen to the bean inside the bag?
- What changes did you notice first? What happened next? *(Possible observations: The seed swelled, the seed coat cracked, a root appeared, a shoot began growing upward.)*
- Which way does the root grow — up or down? Which way does the shoot grow? Why do you think each one grows that way? *(Roots help the plant take in water and nutrients. The shoot will grow into the stem and leaves. The leaves will use sunlight, air and water to make the plant's food.)*
- Notice how we never poured water directly on the seed. How does the water get from the paper towel to the bean? *(The paper towel holds water against the seed, allowing the seed to absorb the moisture it needs to begin growing.)*
- Our bean is growing without soil. Do you think it could keep growing in the bag forever? Why or why not? *(As the bean grows, it uses food stored inside the seed. Eventually, it will need more nutrients and space to continue growing, which plants often get from soil.)*

TEACHER TIP: CONNECT IT TO THE FARM

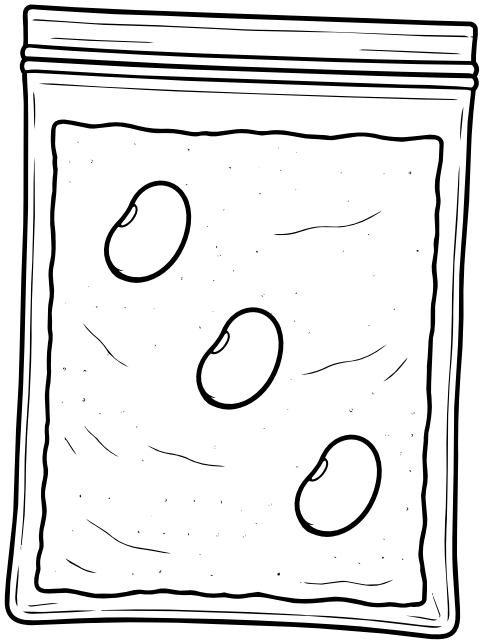
The damp paper towel delivers water to the seed through capillary action, the same effect the farmers describe in the video (2:08). They compare it to a napkin dipped in a cup of water. After a while, the water climbs up the napkin, even against gravity. At R.C. Hatton Farms, water moves through the soil in a similar way, traveling from canals to the bean roots. In this activity, the wet paper towel acts like a tiny version of the farm's irrigation system, providing the moisture the seed needs to begin growing.

TEACHER TIPS:

- Plant 2–3 seeds in each bag so every student is likely to get at least one sprout to watch.
- Start the activity early in the week so there is visible change by the end of the week.
- No soil means the root and shoot are easy to see — a great, mess-free way to watch a seed come to life.
- Keep the paper towel damp but not soaked; a bag that is too wet can cause the seeds to rot instead of sprout.

Name _____ **Date** _____

Germinate a Bean in a Bag: Observation Log



Directions: Check your bean every day. Each time, write the date and use your ruler to measure the root and the shoot in centimeters. If a part hasn't started growing yet, write "0."

My Prediction:

What do you think will happen to your bean?

_____

_____

_____

Date	Root length (cm)	Shoot length (cm)

Look back at your log:

- On your first day of measuring, how long was the root? _____ cm. The shoot? _____ cm.
- On your last day of measuring, how long was the root? _____ cm. The shoot? _____ cm.
- How much did the root grow from the first day to the last day? _____ cm. The shoot? _____ cm.
- Write one sentence describing how your bean changed from the first day to the last day.

_____

_____

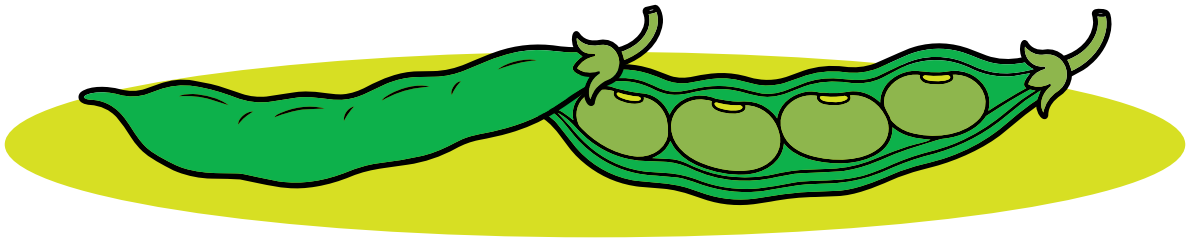
BEAN POD DISSECTION

TEACHER GUIDE

In this activity, students will explore the inside of a green bean pod and discover that it serves as the plant's seed holder. Because the pod contains seeds, scientists classify a green bean as a fruit.

Students will open a fresh green bean pod, find and count the seeds inside, observe and measure what they see, and explore how the pod protects seeds that can grow into new plants.

OUR QUESTION: ***What is inside a green bean pod, and why is it there?***



WHAT YOU'LL NEED (PER STUDENT OR PAIR):

- **1–2 fresh green bean pods**
- **A paper plate or napkin to work on**
- **A ruler (centimeters)**
- **A pencil and crayons for sketching**
- **A magnifying glass for a closer look (optional)**

WHAT TO DO:

1. Look at your whole pod. Notice its color, shape and texture. Measure how long it is in centimeters.
2. Predict how many seeds you think are hiding inside. Say or write your guess.
3. Snap off the stem end first, then gently open the pod along its seam — the little line running down the side — using your fingers.
4. Look inside and find the row of little seeds. Those are the beans!
5. Count how many seeds are in your pod. Was your prediction close?
6. Look closely at one seed. What color and shape is it? How big is it?
7. Optional: Use a magnifying glass for an even closer look. What do you notice now that you didn't before?
8. Sketch the open pod and the seeds inside, then label the pod and the seeds.

TALK ABOUT IT:

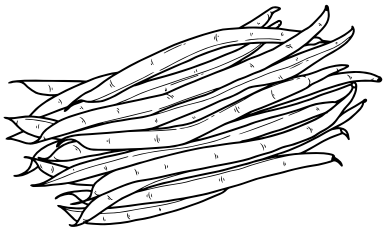
- Usually, the part of the green bean we eat is the whole pod. So, what are the little beans inside? *(The seeds.)*
- Why do you think the pod grows around the seeds? What might it do for them? *(The pod protects the seeds. It's the plant's seed holder.)*
- What could happen to one of these seeds if you planted it? *(It could grow into a whole new green bean plant. The seed is the start of the life cycle of a green bean.)*
- Did everyone's pod have the same number of seeds? Why might some pods have more than others? *(No. Each plant grows a little differently. The size of the pod, growing conditions and how well the flower was pollinated can all affect how many seeds develop inside.)*
- Where else have you seen seeds inside a food you eat? *(Examples may include cucumbers, blueberries, tomatoes, peppers, watermelons, pumpkins, apples, oranges or other fruits and vegetables with seeds. Remind students that many foods we eat contain seeds because they are part of a plant's life cycle.)*

TEACHER TIPS:

- Fresh, plump pods open most easily and have the most developed seeds inside.
- Have students wash their hands and rinse the pods first. Keep this batch for science, and use separate, clean beans for tasting!
- Make a class tally of how many seeds each pod held. Which number came up most often? This turns everyone's observations into shared data to compare.
- Extend the activity with other foods from the field trips, like strawberries and cucumbers, and compare how each plant stores its seeds differently.

Name _____ **Date** _____

Green Bean Video Trivia & Farm Math



Directions: Answer these trivia questions based on the video you watched about the Florida green bean farm.

1. How many days does it take for green beans to be ready to harvest? _____

2. What plant family are green beans part of? _____

   Bonus: Name two other foods in that family. _____

3. What happens to the green beans on the "bean line" before they are packaged? _____

   _____

Circle whether the statements below are true or false.

4. Green beans are also called string beans or snap beans.	**TRUE** | **FALSE**
5. Green beans grow underground like potatoes.	**TRUE** | **FALSE**
6. The capillary effect can pull water upward, against gravity.	**TRUE** | **FALSE**
7. Farmers rely only on rain straight from the sky to water green bean crops.	**TRUE** | **FALSE**

Choose the correct word from the word bank to fill each blank.

Word Bank: **irrigate · vitamin C · bed**

8. Farmers build a _____ of raised soil for each row, so the seeds don't get drowned by rain.

9. Culverts, canals and ditches are used to move water and _____ the farm.

10. Green beans are a good source of fiber and _____.

Continued →

Farm Math

Solve each problem and write your answer in the space provided.

1. A farmer harvested 45 bushels of green beans on Monday. On Tuesday, he picked 38 more bushels. How many bushels did he pick in all?

_____ bushels

2. One bushel of green beans weighs about 28 pounds. If a farmer had 50 pounds of beans in the truck but emptied out one bushel to be washed, how many pounds of beans would be in the truck now?

_____ pounds

3. One green bean plant grew 20 pods. Another plant grew only 14 pods. How many more pods does the first plant have than the second plant?

_____ pods

Bonus: Farmer Charlie picks 3 bushels of green beans. Remember that each bushel of beans weighs about 28 pounds. He delivers 75 pounds of the beans to school cafeterias. How many pounds of green beans does Farmer Charlie have left?

_____ pounds

Name _____ **Date** _____

On the Green Bean Farm

Directions: In the space below, draw a scene from the R.C. Hatton Farms field trip.

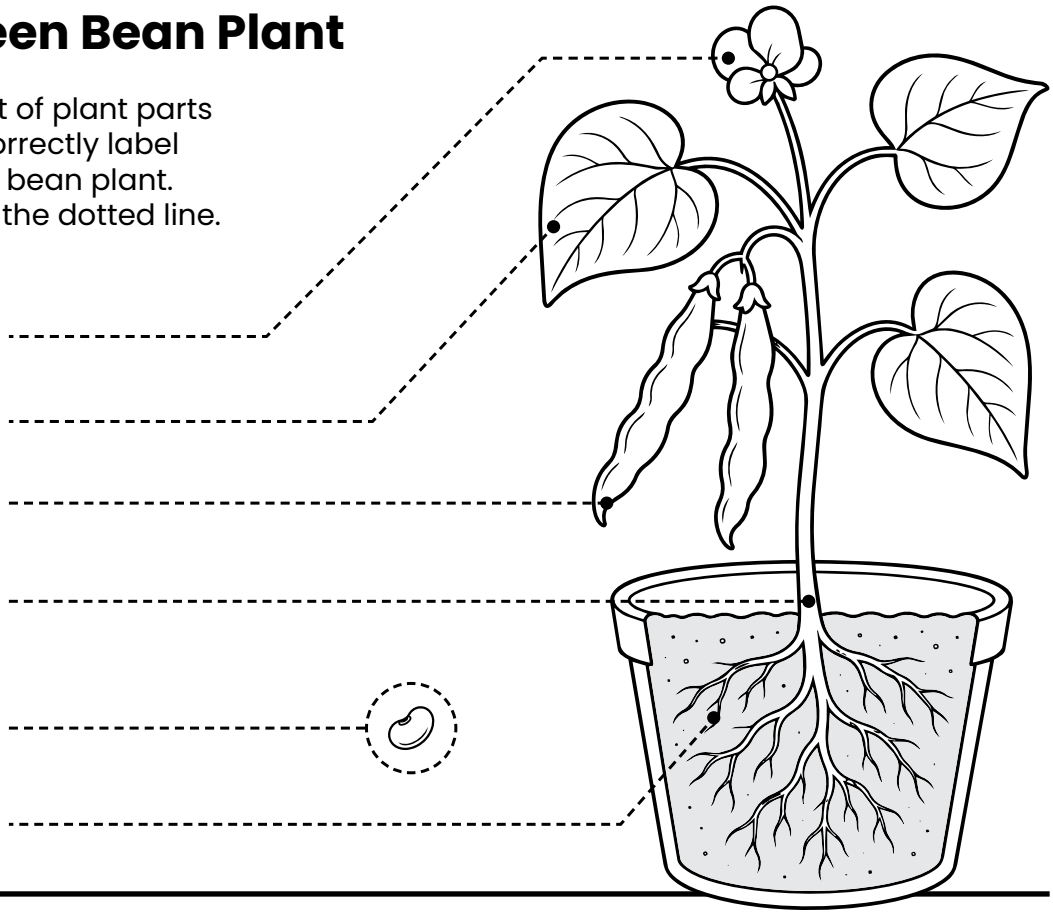
Write 2-3 sentences describing your drawing. Be sure to include at least one fact you learned from the video.

Name _____ **Date** _____

Parts of a Green Bean Plant

Directions: Use the list of plant parts in the word bank to correctly label the parts of the green bean plant. Write the word above the dotted line.

Word Bank
Root
Stem
Leaf
Flower
Pod
Seed



Now draw a line between each part of the plant and its function.

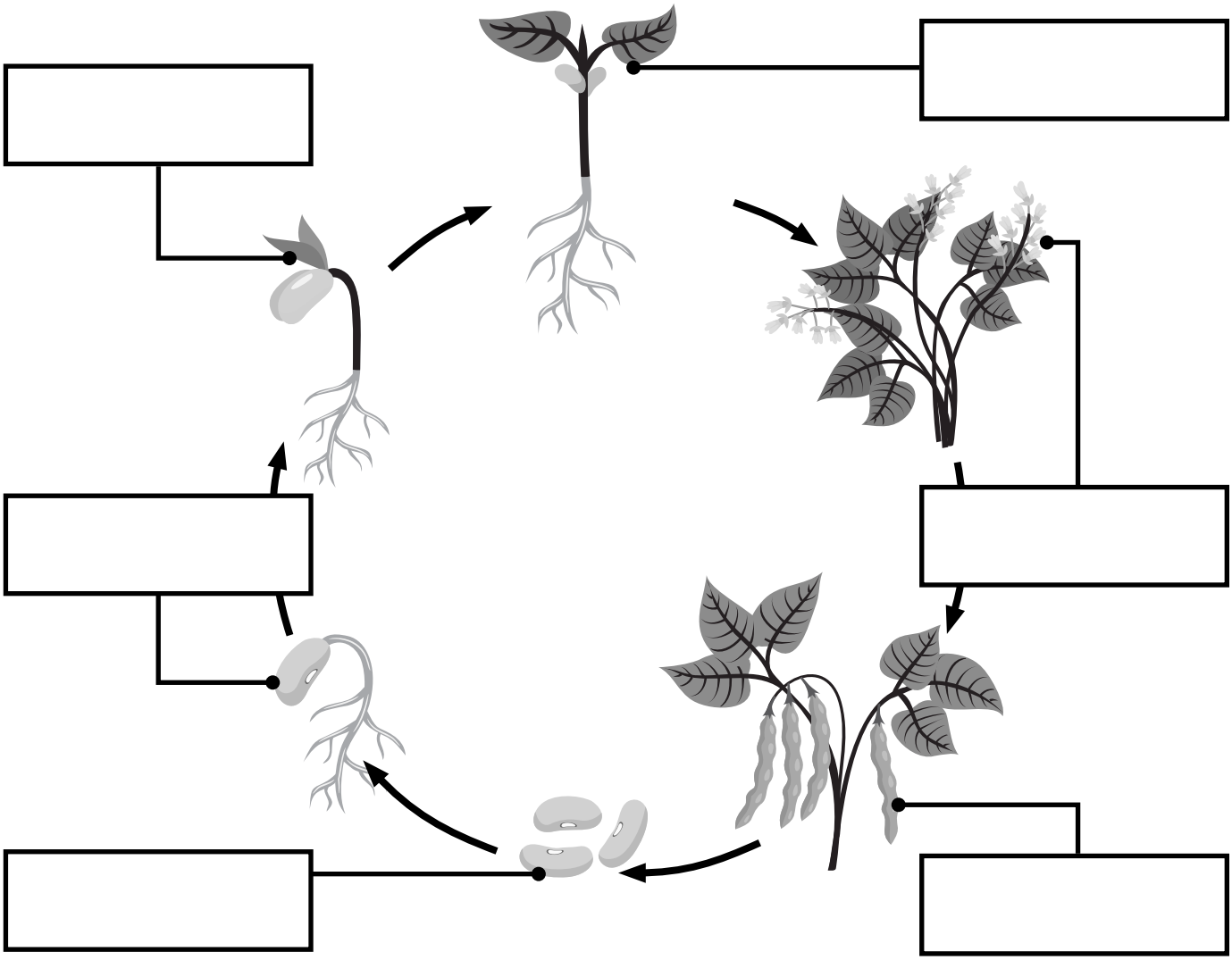
Root
Stem
Leaf
Flower
Pod
Seed

The plant's "fruit" that holds the seeds
Absorbs sunlight to produce energy for the plant through photosynthesis
Absorbs water and nutrients from the soil
Distributes food and water throughout the plant
The part of a plant that produces seeds
Contains a baby plant that can grow into a new plant

Name _____ **Date** _____

Life Cycle of a Green Bean

Directions: Cut out the words from the word bank and glue them where they belong to label each stage of the green bean plant's life cycle.



Flowering plant	**Seeds (beans)**	**Seedling**
Sprout	**Germination**	**Bean pod**

Name _____ **Date** _____

The Story of R.C. Hatton

Directions: Read the passage about R.C. Hatton Farms. Then, answer the questions.

In 1932, a man named Robert C. Hatton planted his first seeds in Florida. Those seeds grew into R.C. Hatton Farms. Over time, the farm got bigger and bigger, and today, it takes up 12,000 acres! The farm also grows food in South Georgia. The Hatton family has run the farm for many years, passing it down from parents to children. Robert C. Hatton is gone, but his farm lives on.

Today, the farm grows sugarcane and vegetables in Florida. One of its vegetables is the green bean. Green beans belong to the legume family, just like black beans and peas.

Growing green beans takes planning and patience. First, farmers build raised beds of soil where the seeds can grow. Next, the plants need water. Farmers use ditches and canals to irrigate the fields. To irrigate means to bring water to the plants. The water moves through the soil and soaks up through the roots in a process called the capillary effect.

Green beans take about 55 to 63 days to grow. First, they are tiny baby plants called seedlings. Then, the plants grow flowers. The flowers turn into bean pods. The pods hold the seeds and are the part of the plant we eat.

When the beans are ready, a harvesting machine removes the pods from the plants. It loads the beans onto a big truck. Then, the beans are washed and trimmed. Finally, they are shipped to stores and schools, where students can enjoy fresh Florida-grown green beans.

Close Reading

Circle the best answer.

1. What is this passage ***mostly*** about?
   a. How to cook green beans
   b. The story of R.C. Hatton Farms and how green beans get to schools
   c. Why the Hatton family moved to Georgia
   d. How to build a farm truck

2. What year did R.C. Hatton Farms start?
   a. 2004
   b. 2026
   c. 1932
   d. 1950

3. What is another crop that R.C. Hatton Farms grows?
   a. Sugarcane
   b. Squash
   c. Wheat
   d. Oranges

Word Match

Match the word to its definition.

Irrigation	Raised soil where crops grow
Capillary Effect	Collecting food that has finished growing
Beds	Outer shell that holds the beans
Pod	A system of providing water to crops
Harvesting	Water moving upward through the soil
Acre	A plant family that includes green beans, black beans and peas
Legume	Unit of land about the size of a football field *(Hint: The farm takes up 12,000 of them)*

Write About It

Answer the questions below in complete sentences.

1. How do the green bean plants get water on the farm? Use details from the passage.

2. In one or two sentences, tell how green beans get from the farm to your school.

First, Next, Last

Number the events in the order they happen, from 1 to 6.

_____	_____	_____	_____	_____	_____
Beans are shipped to schools.	Flowers turn into bean pods.	Seedlings grow.	The beans are washed and trimmed.	Flowers grow.	The beans are harvested.

ANSWER KEY

Name _____ Date _____

Green Bean Video Trivia & Farm Math

Directions: Answer these trivia questions based on the video you watched about the Florida green bean farm.

1. How many days does it take for green beans to be ready to harvest? 55–63 days in the ground. (2:40)
2. What plant family are green beans part of? The legume family. (2:33)
   Bonus: Name two other foods in that family. Chickpeas, lima beans, black beans, lentils
3. What happens to the green beans on the "bean line" before they are packaged? The beans are washed and their ends are snipped (cut off). (3:41)

Circle whether the statements below are true or false.

4. Green beans are also called string beans or snap beans. **TRUE** FALSE
5. Green beans grow underground like potatoes. TRUE **FALSE**
6. The capillary effect can pull water upward, against gravity. **TRUE** FALSE
7. Farmers rely only on rain straight from the sky to water green bean crops. TRUE **FALSE**

Choose the correct word from the word bank to fill each blank.

Word Bank: **irrigate · vitamin C · bed**

8. Farmers build a bed of raised soil for each row, so the seeds don't get drowned out by rain.
9. Culverts, canals and ditches are used to move water and irrigate the farm.
10. Green beans are a good source of fiber and vitamin C

Continued →

Farm Math

Solve each problem and write your answer in the space provided.

1. A farmer harvested 45 bushels of green beans on Monday. On Tuesday, he picked 38 more bushels. How many bushels did he pick in all?

   45 + 38 = 83 bushels _____ bushels

2. One bushel of green beans weighs about 28 pounds. If a farmer had 50 pounds of beans in the truck but emptied out one bushel to be washed, how many pounds of beans would be in the truck now?

   50 – 28 = 22 pounds _____ pounds

3. One green bean plant grew 20 pods. Another plant grew only 14 pods. How many more pods does the first plant have than the second plant?

   20 – 14 = 6 pods _____ pods

Bonus: Farmer Charlie picks 3 bushels of green beans. Remember that each bushel of beans weighs about 28 pounds. He delivers 75 pounds of the beans to school cafeterias. How many pounds of green beans does Farmer Charlie have left?

3x28=84 84-75=9 pounds _____ pounds

Name _____ Date _____

Parts of a Green Bean Plant

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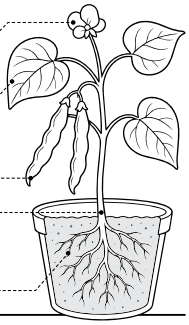
Leaf
Flower
Pod
Seed



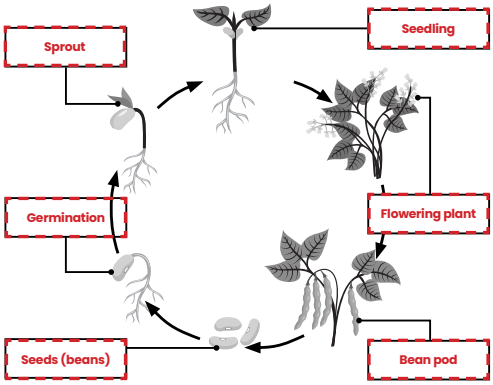
Now draw a line between each part of the plant and its function.

Roots	Absorbs water and nutrients from the soil
Stem	Absorbs sunlight to produce energy for the plant through photosynthesis
Leaf	Distributes food and water throughout the plant
Flower	The plant's "fruit" that holds the seeds
Pod	The part of a plant that produces seeds
Seed	Contains a baby plant that can grow into a new plant

Name _____ Date _____

Life Cycle of a Green Bean

Directions: Use the word bank to label each stage of the green bean plant's life cycle. Write the correct word in the box next to each picture.



ANSWER KEY

Name _____ **Date** _____

The Story of R.C. Hatton

Directions: Read the passage about R.C. Hatton Farms. Then, answer the questions.

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Today, the farm grows sugarcane and vegetables in Florida. One of its vegetables is the green bean. Green beans belong to the legume family, just like black beans and peas.

Growing green beans takes planning and patience. First, farmers build raised beds of soil where the seeds can grow. Next, the plants need water. Farmers use ditches and canals to irrigate the fields. To irrigate means to bring water to the plants. The water moves through the soil and soaks up through the roots in a process called the capillary effect.

Green beans take about 55 to 63 days to grow. First, they are tiny baby plants called seedlings. Then, the plants grow flowers. The flowers turn into bean pods. The pods hold the seeds and are the part of the plant we eat.

When the beans are ready, a harvesting machine removes the pods from the plants. It loads the beans onto a big truck. Then, the beans are washed and trimmed. Finally, they are shipped to stores and schools, where students can enjoy fresh Florida-grown green beans.

Close Reading

Circle the best answer.

1. What is this passage ***mostly*** about?
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   c. 1932
   d. 1950

3. What is another crop that R.C. Hatton Farms grows?
   a. Sugarcane
   b. Squash
   c. Wheat
   d. Oranges

VIRTUAL FARM FIELD TRIPS
2-3 Worksheet
Green Beans
Standard(s) Supported: ELA.2.R.3.2 / ELA.3.R.3.2, SC.3.L.14.1, HE.3.CH.4.1

Word Match

Match the word to its definition.

Irrigation	Raised soil where crops grow
Capillary Effect	Collecting food that has finished growing
Beds	Outer shell that holds the beans
Pod	A system of providing water to crops
Harvesting	Water moving upward through the soil
Acre	A plant family that includes green beans, black beans and peas
Legume	Unit of land about the size of a football field *(Hint: The farm takes up 12,000 of them)*

Write About It

Answer the questions below in complete sentences.

1. How do the green bean plants get water on the farm? Use details from the passage.

Sample answer: Farmers use ditches and canals to bring water to the fields. The water soaks up through the dirt into the roots. This is called the capillary effect. (Accept answers that name irrigation by ditches/canals and/or the water soaking up to the roots.)

2. In one or two sentences, tell how green beans get from the farm to your school.

Sample answer: Farmers grow the green beans in raised beds and water them. When the beans are ready, a machine picks them, and they are washed, snipped, put in bags, and sent to schools. (Accept any reasonable summary that moves from growing → harvest → ~~washing/snipping/bagging → shipping to schools.~~)

First, Next, Last

Number the events in the order they happen, from 1 to 6.

6	3	1	5	2	4
Beans are shipped to schools.	Flowers turn into bean pods.	Seedlings grow.	The beans are washed and trimmed.	Flowers grow.	The beans are harvested.

Standard(s) Supported: SC.4.L.16.1, SC.5.L.15.1, SC.4.P.8.1, SC.4.L.16.4, SC.4.L.17.1, SC.5.L.14.2, HE.4.PHC.1.4, HE.5.PHC.1.4

LET'S LEARN ABOUT FLORIDA CUCUMBERS!

This Virtual Farm Field Trip unit is all about cucumbers. It begins with an informative 4-minute video, transporting students to Long and Scott Farms in Mount Dora, Florida. Your students will meet farmers Haley and Kirsten to learn how Florida cucumbers are planted, grown, harvested and distributed.

We encourage you to expand the learning experience using this section's worksheets and guided activities, including a taste test. You may choose to use all these resources or pick the ones best suited to your classroom.

ACCESS VIRTUAL FARM FIELD TRIP

Scan code or visit:
FarmToSchoolFL.com/FieldTrips

FLORIDA CUCUMBER FUN FACTS

- **There are two main kinds of cucumbers – they are called slicers and picklers. We eat slicers fresh and turn picklers into… pickles!**
- **Florida grows more slicer cucumbers than anywhere else in the United States.**
- **Cucumbers are more than 95% water. They are the perfect snack to keep you hydrated on a hot day.**
- **Have you ever heard someone say, "cool as a cucumber"? That's because the inside of a cucumber is 20 degrees cooler than the temperature around it.**
- **Cucumbers are high in nutrients like iron, calcium and vitamin B. Iron helps make blood, which carries the air we breathe to our muscles so we can move and grow. Calcium helps us grow strong bones and vitamin B turns the food we eat into energy.**

BEFORE YOU WATCH: DISCUSSION STARTERS

Get students thinking about agriculture, science and nutrition by asking questions such as:

- *Where do the fruits and vegetables you eat come from? How did they get there?*
- *What do plants need to grow?*
- *Let's name some vegetables. Can you think of any others that are green?*
- *Now, let's name some fruits. Which ones are green?*
- *Close your eyes and imagine you are at a farm. What do you see? Hear? Smell?*
- *Today, we'll be taking a virtual field trip to visit a Florida cucumber farm. What do you know about cucumbers?*
- *Does anyone know what the word agritourism means? What do you think it might mean? Listen for its use in the video.*

AFTER YOU WATCH

Explore the activities and worksheets on the following pages – including a video trivia sheet! You might pass the trivia sheet out before starting the video so students can complete it as they watch or wait until after to test understanding.

TRIVIA TOSS

Want to liven up your video trivia sheet exercise? Have students complete their worksheets separately, then come together in teams to compare and finalize answers. Go around the room asking each team a question. If they answer it correctly, they get a chance to toss a ball into one of three buckets to get a prize for their team. Prizes might be a homework pass, free time, extra computer time or lunch in the classroom.

GEOGRAPHY MOMENT

Ask students to find Mount Dora on a map of Florida. (Hint: It's between The Villages and Orlando.)

Also, if your students participate in the "Letter to a Farmer" activity, you can mail their letters right to the farmers at Long and Scott Farms! Just be sure to review the letters before you send.

Their address:

Long and Scott Farms
PO Box 1228
Zellwood, FL 32798

USING THESE TEACHING TOOLS

Below is an overview and guide for using the teaching tools included in this section, including guided activities, recipes and worksheets. We've included the education standards each tool complements, materials needed for each activity, a brief overview of each tool and tips for building your lessons.

You can find each of these tools on the following pages, along with additional information and pointers.

GUIDED ACTIVITIES

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Video, Discussion Questions and Trivia Toss (in Classroom Guide) *On page 181*	Standard(s) Supported: SC.4.L.16.1, SC.5.L.15.1, SC.4.P.8.1, SC.4.L.16.4, SC.4.L.17.1, SC.5.L.14.2, HE.4.PHC.1.4, HE.5.PHC.1.4	- 3 buckets, boxes or similar containers - 2 palm-sized balls (enough for each team to have one)	This activity gets students out of their seats as they respond to questions about the Virtual Farm Field Trip video.	Use this activity to complement or reinforce the Cucumber Video Trivia sheet.
Cucumber Three Ways *On page 186*	Standard(s) Supported: SC.4.P.9.1, SC.5.P.8.1, HE.4.PHC.1.4, HE.5.PHC.3.2	- Sliced cucumbers - Jar of pickles - Cucumber punch (see recipe)	In this activity, you'll guide students through tasting cucumbers in three different forms – as fresh cucumbers, as pickles and in a cucumber punch.	Start by asking your school nutrition team if they can support you by acquiring and/or preparing the food items. Use this activity to introduce students to new, nutritious foods. Educate them on the nutritional differences between whole foods – like fresh cucumbers – and processed foods – like pickles.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Recipe: Cucumber Punch *On page 188*	Standard(s) Supported: SC.4.P.9.1, SC.4.P.8.1	- Cutting board - Knife - Clear pitcher - Wooden spoon (optional) *Adjust quantities based on class size:* - 6-7 cucumbers (sliced thin) - 6-8 limes and/or lemons (quartered) - 15-20 mint leaves (optional) - 8-9 cups (64-72 oz) drinking water - Ice (optional) - Small cups - Spoons	Use this recipe to prepare your own cucumber punch for the Cucumber Three Ways exercise.	You might demonstrate making a large batch of punch to share with your class or give each student a cup and ingredients to prepare their own.
Food Science: DIY Pickles *On page 189*	Standard(s) Supported: SC.4.P.9.1	- Cutting board - Knife - 2 or more Mason jars - Mixing bowl - Spoon - Measuring cup - Measuring spoons - Refrigerator - Forks, plates and napkins for serving (optional) - 2 medium to large cucumbers - 1 cup water - 1 cup rice vinegar - 3 tablespoons maple syrup or sugar - 3 teaspoons salt - Freshly ground black pepper - 4 leafy sprigs of fresh dill - 4 cloves of fresh garlic - 1 bay leaf	Use this activity on its own or to prepare your own pickles for the Cucumber Three Ways activity. With this activity, you will demonstrate for students how to turn fresh cucumbers into pickles.	Start by asking your school nutrition team if they can support you by acquiring the food items. What's better than a science experiment you can eat? This activity connects young students with where their food comes from, showing them firsthand how cucumbers are processed to become pickles. It also introduces students to the idea that adding ingredients can change an item's properties.

WORKSHEETS

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Cucumber Video Trivia *On page 191*	Standard(s) Supported: SC.4.L.16.1, SC.5.L.15.1, SC.4.P.8.1, SC.4.L.16.4, SC.4.L.17.1, SC.5.L.14.2	- Writing instrument	This worksheet tests students' comprehension of the Virtual Farm Field Trip by asking questions answered in the video.	You might hand the worksheet out before the video so students can answer as they go or wait until after the video. Consider enhancing this activity with the "Trivia Toss" activity, explained in this Classroom Guide, under "After You Watch."
Letter to a Farmer *On page 192*	Standard(s) Supported: ELA.4.C.3.1, ELA.5.C.3.1, ELA.K12.EE.6.1	- Writing instrument - Crayons, colored pencils or markers (optional)	This worksheet asks students to write a letter to the farmer(s) they met in the Virtual Farm Field Trip video, sharing something they learned.	In addition to reinforcing comprehension, this worksheet allows students to practice their writing skills and teaches students how to format a letter. Be sure to write the farm's address on the board for students to copy (see Classroom Guide, under "Geography Moment"). You might even send the letters to the farmers! (Just be sure to review content before sending.)
Life Cycle of a Cucumber *On page 193*	Standard(s) Supported: SC.4.L.16.4, SC.4.L.16.1	- Writing instrument - Crayons, colored pencils or markers (optional)	This worksheet invites students to (1) label the stages of a cucumber's life cycle, and (2) briefly describe what is happening in each stage.	This worksheet complements life science lessons about plant life cycles.
Cucumber Crossword Puzzle *On page 194*	Standard(s) Supported: SC.4.L.16.1, SC.5.L.15.1, SC.4.P.8.1, SC.4.L.16.4, SC.4.L.17.1, SC.5.L.14.2	- Writing instrument	This crossword puzzle asks students to fill in the blanks using facts they learned in the Virtual Farm Field Trip.	You might hand the worksheet out before the video so students can answer as they go or wait until after the video.
Answer Key *On page 195*			See here for answers to each worksheet.	

CUCUMBER THREE WAYS

This group activity brings the field trip to life as students get the opportunity to taste cucumbers three ways: as fresh slices, as pickles and as an easy-to-make punch.

MATERIALS

Sliced cucumbers

Jar of pickles

Cucumber punch
(see recipe on following pages)

SUGGESTED QUESTIONS

Lead a discussion as your students try cucumbers three different ways. Questions like the following can help kids better connect with their food, think about their preferences and encourage them to make nutritious choices in the future.

Before the tasting:

1. *Have you tried cucumber before? What did you think?*
2. *If not, what do you think it will taste like?*
3. *Did you know pickles are made from cucumbers? Do you know how cucumbers get turned into pickles?*

As they try the fresh cucumbers:

1. *What do you think of the texture of the fresh cucumber? Is it crunchy or soft?*
2. *Do you like the smell of the cucumber? How would you describe it?*
3. *How would you feel about eating fresh cucumbers as a snack? Why? What might you eat them with?*

MAKE YOUR OWN PICKLES

For a bonus activity, make pickles together as a class! See the Guided Activity section for an easy recipe.

COLLABORATE WITH YOUR CAFETERIA

You might also consider partnering with your school nutrition team to obtain these food items and/or prepare a cucumber-themed dish for your taste test. Be sure to contact them ahead of time, discuss the support you will need and show gratitude for their collaboration!

As they try the pickles:

1. *How does the taste of the pickle compare to the fresh cucumber? Is it more sour or salty?*
2. *What do you think about the texture of the pickle compared to the fresh cucumber? Is it softer or crunchier?*
3. *Do you like the smell of the pickle? How would you describe it?*
4. *Have you had pickles before? If so, what do you usually eat them with? If not, would you like to try them again?*

As they try the punch (cucumber water):

1. *Can you taste the cucumber in the water? How strong is the flavor?*
2. *How does the flavor of cucumber water compare to regular water? Is it more refreshing?*
3. *Would you enjoy drinking cucumber water on a hot day? Why or why not?*
4. *Before today, did you know you could change the flavor of water by adding fruit like cucumbers? What other fruit might you add to water, and how might it change the flavor?*

TEACHER TIP:

You can also use this activity as a nutrition lesson for students. Explain how whole foods made of just one ingredient – like a fresh cucumber – are more nutritious than packaged, processed foods with many ingredients.

You can explain that food with lots of ingredients – like pickles – are like a big puzzle with many pieces, and some of those pieces might not be as healthy (like added sugar). The simple food with one ingredient is usually better for your body and helps you feel your best!

You might even pass around a jar of pickles to show the students the list of ingredients on the nutrition label. Then ask them where the fresh cucumber's ingredient list is. (There is none – because there's just one ingredient!)

CUCUMBER PUNCH RECIPE

CUCUMBER PUNCH

Estimated Servings: 100 oz, or (20) 5 oz cups

EQUIPMENT REQUIRED

- Cutting board
- Knife
- Clear pitcher
- Wooden spoon (optional)

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- 6-7 cucumbers (sliced thin)
- 6-8 limes and/or lemons (quartered)
- 15-20 mint leaves (optional)
- 8-9 cups (64-72 oz) drinking water
- Ice (optional)
- Small cups
- Spoons

DIRECTIONS

1. Slice cucumbers, limes and lemon.
2. Place sliced cucumbers, limes, lemons and mint into drinking cup. (*Optional: Lightly mash pieces using a wooden spoon to enhance taste.)*
3. Add water and ice cubes.
4. Enjoy!

You might demonstrate making a large batch of punch to share with your class or give each student a cup and ingredients to prepare their own.

FOOD SCIENCE: DIY PICKLES

Complete this recipe with your students for a fun science experiment they can eat!

SUGGESTED QUESTIONS

Below are discussion questions to ask your class before, during and after this DIY pickle experiment.

Before:

1. *Did you know pickles are made from cucumbers?*
2. *How do you think cucumbers get turned into pickles?*
3. *Have you tasted pickles before? What did you think?*
4. *If not, what do you imagine they taste like?*

During:

1. *What does a fresh cucumber taste like?*
2. *How do you think adding these ingredients will change the flavor of the cucumber?*
3. *How might adding these ingredients change the texture?*
4. *How might adding these ingredients change the smell?*

After:

1. *Does the pickle taste how you expected? Explain.*
2. *How does the taste of the pickle compare to fresh cucumber? Is it more sour or salty?*
3. *What do you think about the texture of the pickle compared to a fresh cucumber? Is it softer or crunchier?*
4. *Do you like the smell of the pickle? How would you describe it?*
5. *Have you had pickles before? If so, what do you usually eat them with? If not, would you like to try them again?*

COLLABORATE WITH YOUR CAFETERIA

Be sure to ask your school nutrition team if they can support you by providing food items!

When we pickle cucumbers, we put them in a special juice called brine, which is often made of water, salt and vinegar. When cucumbers sit in this juice for a long time, they turn into pickles.

This process – called pickling – helps keep cucumbers fresh for a long time. It also changes the texture, making cucumbers crunchier. Best of all, the cucumbers absorb the flavors from the brine, making them tangy!

EASY DIY PICKLES

EQUIPMENT REQUIRED

- Cutting board
- Knife
- 2 or more Mason jars
- Mixing bowl
- Spoon
- Measuring cup
- Measuring spoons
- Refrigerator
- Forks, plates and napkins for serving (optional)

MATERIALS AND INGREDIENTS

- 2 medium to large cucumbers (about 24 ounces total)
- 1 cup water (room temperature or cooler)
- 1 cup rice vinegar
- 3 tablespoons maple syrup or sugar
- 3 teaspoons salt
- 40 twists of freshly ground black pepper
- 4 leafy sprigs of fresh dill, roughly chopped (about ½ cup)
- 4 cloves garlic, peeled and smashed
- 1 bay leaf

DIRECTIONS

1. Slice the cucumbers into thin rounds, about 1/8-inch thick. Set aside.
2. In a liquid measuring cup or bowl, combine the water, vinegar, maple syrup, salt and black pepper. Stir until most of the salt has dissolved into the liquid, about 30 seconds to 1 minute. Set aside.
3. Place the cucumbers into a wide-mouth jar about 3 to 4 inches in diameter, tall enough to offer at least 1 inch of extra space on top.
4. Top the cucumbers with the dill and garlic. Tuck the bay leaf into the side of the jar. Pour all of the liquid over the cucumbers so they're fully submerged.
5. Cover and refrigerate for at least 1 hour. The flavor will continue to develop over the next couple of days. These pickles will keep for up to 3 weeks in the refrigerator.

Name _____ **Date** _____

Cucumber Video Trivia

Directions: Answer these trivia questions based on the video you watched about the Florida cucumber farm.

1. Each cucumber plant produces two kinds of flowers. What are they? _____

_____

2. Which flower makes the cucumbers? _____

3. What insects are brought in to be pollinators? _____

4. What happens if a cucumber plant isn't pollinated enough times? _____

_____

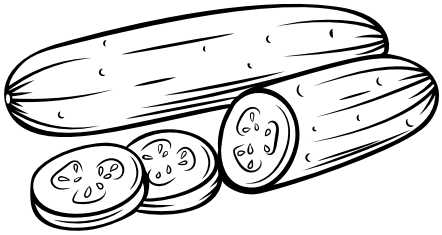
Circle whether the statements below are true or false.

5. Each cucumber is picked by hand.	**TRUE** | **FALSE**
6. Cucumbers are cooler on the outside than on the inside.	**TRUE** | **FALSE**
7. Each cucumber plant is harvested one time.	**TRUE** | **FALSE**
8. Cucumbers do not grow in Florida.	**TRUE** | **FALSE**
9. In the spring, Florida farmers typically harvest cucumbers from April through the middle of June.	**TRUE** | **FALSE**

Name _____ **Date** _____

Hello, Farmer!

Directions: Write a letter to Ms. Haley and/or Ms. Kirsten, the Florida cucumber farmers featured in the farm field trip video. Tell them what you learned. You must use an address, greeting, body, closing and signature.



_____

_____

_____

_____

Dear, _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Sincerely,

_____

Name _____ **Date** _____

Life Cycle of a Cucumber

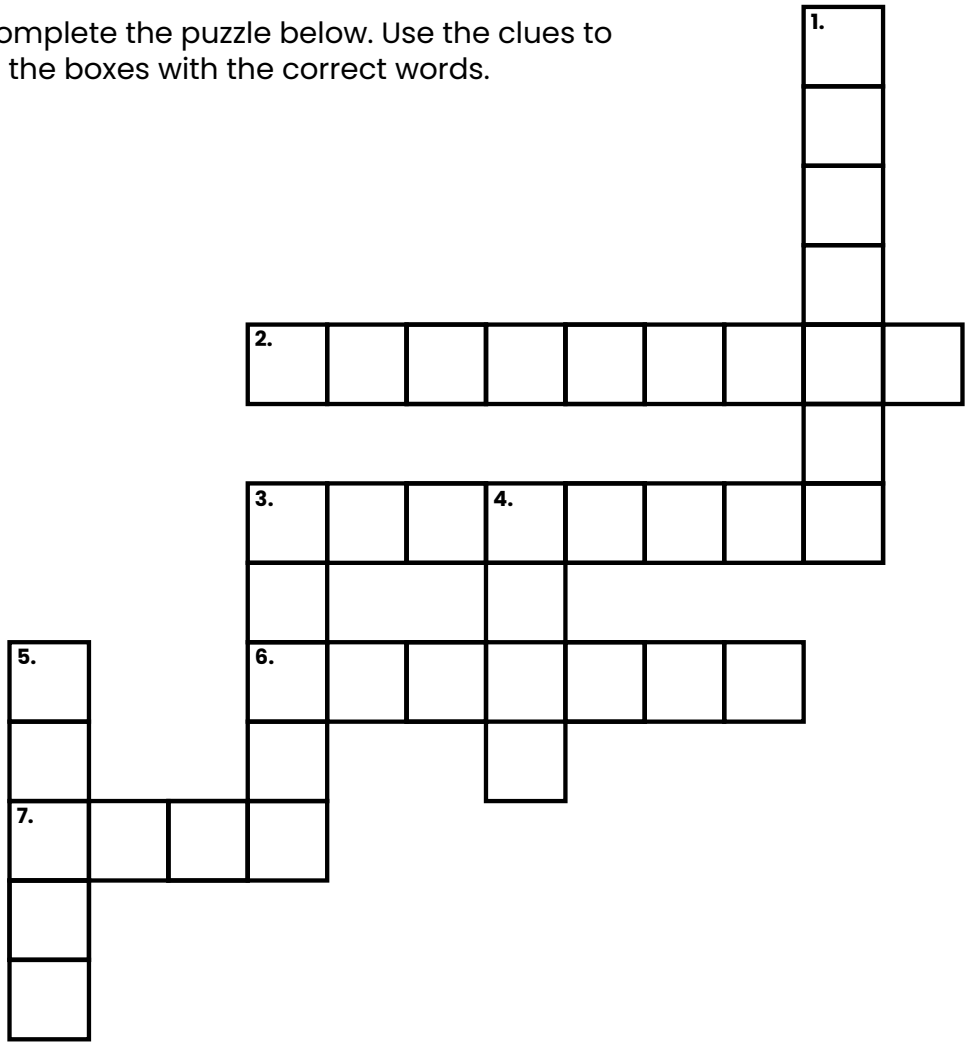
Directions: Label each part of the cucumber plant's life cycle using the terms in the word bank. Then, briefly describe what is happening in each phase.

Word Bank				
Seeds	Seedling	Flowers *(Reproduction)*	Small fruit	Full-size fruit with seeds
Germination	Adult plant			

Name _____ **Date** _____

Cucumber Crossword Puzzle

Directions: Complete the puzzle below. Use the clues to help you fill in the boxes with the correct words.



ACROSS

2. Cucumbers are picked by hand, which is also known as being _____.
3. These vehicles plant cucumber seeds 4 inches apart.
6. How many pounds of cucumbers do farmers Haley and Kirsten harvest every year? 20 _____.
7. These insects are used as pollinators for the cucumber plants.

DOWN

1. Cucumber plants have these, and the female ones create the cucumber.
3. Cucumber plants can be picked 4-5 _____.
4. A machine called a flume washes cucumbers with ____ water to keep them fresh longer.
5. The water _____ is the boundary between wet and dry soil.

ANSWER KEY

Name _____ Date _____

Cucumber Video Trivia

Directions: Answer these trivia questions based on the video you watched about the Florida cucumber farm.

1. Each cucumber plant produces two kinds of flowers. What are they? male and female
2. Which flower makes the cucumbers? female
3. What insects are brought in to be pollinators? honeybees/ bumblebees
4. What happens if a cucumber plant isn't pollinated enough times? The cucumber grows in a crooked or curved shape instead of straight.

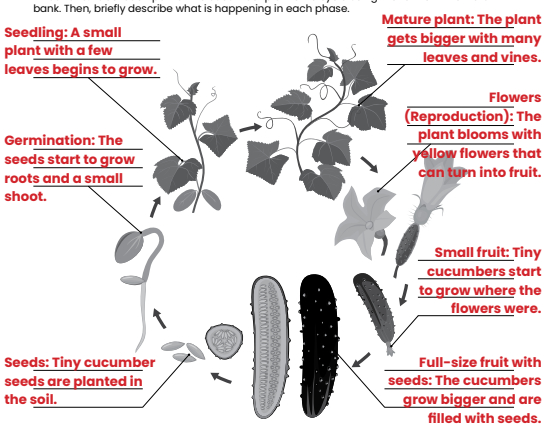
Circle whether the statements below are true or false.

5. Each cucumber is picked by hand. **TRUE** FALSE
6. Cucumbers are cooler on the outside than on the inside. TRUE **FALSE**
7. Each cucumber plant is harvested one time. TRUE **FALSE**
8. Cucumbers do not grow in Florida. TRUE **FALSE**
9. In the spring, Florida farmers typically harvest cucumbers from April through the middle of June. **TRUE** FALSE

Name _____ Date _____

Life Cycle of a Cucumber

Directions: Label each part of the cucumber plant's life cycle using the terms in the word bank. Then, briefly describe what is happening in each phase.

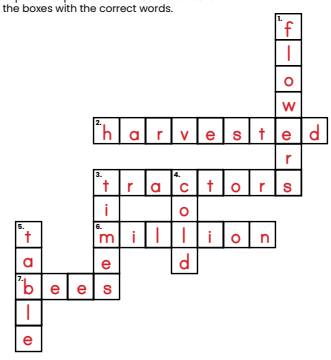


Word Bank				
Seeds	Seedling	Flowers *(Reproduction)*	Small fruit	Full-size fruit with seeds
Germination	Adult plant			

Name _____ Date _____

Cucumber Crossword Puzzle

Directions: Complete the puzzle below. Use the clues to help you fill in the boxes with the correct words.



ACROSS

2. Cucumbers are picked by hand, which is also known as being _____.
3. These vehicles plant cucumber seeds 4 inches apart.
6. How many pounds of cucumbers do farmers Haley and Kirsten harvest every year? 20 _____.
7. These insects are used as pollinators for the cucumber plants.

DOWN

1. Cucumber plants have these, and the female ones create the cucumber.
3. Cucumber plants can be picked 4-5 _____.
4. A machine called a flume washes cucumbers with ____ water to keep them fresh longer.
5. The water _____ is the boundary between wet and dry soil.

LET'S LEARN ABOUT FLORIDA SWEET CORN!

This Virtual Farm Field Trip unit is all about sweet corn. It begins with an informative 4-minute video, transporting students to Sweet Magnolia Ridge in Havana, Florida. Your students will meet farmers Stephanie and Vincent to learn how Florida sweet corn is planted, grown, harvested and distributed.

We encourage you to expand the learning experience using this section's worksheets and guided activities, including a taste test. You may choose to use all these resources or pick the ones best suited to your classroom.

ACCESS VIRTUAL FARM FIELD TRIP

Scan code or visit:
FarmToSchoolFL.com/FieldTrips

FLORIDA SWEET CORN FUN FACTS

- **Florida grows more sweet corn than anywhere else in the United States.**
- **Sweet corn is a great source of nutrients like vitamin C, which helps boost the immune system and keep us healthy. It is also high in fiber, which helps your tummy feel good.**
- **Every single strand of silk on an ear of corn has the potential to become a kernel. The average ear of corn has between 500 and 1,000 kernels!**
- **Corn is usually yellow, but it can come in lots of colors, like green, red and white.**
- **You probably think of corn as a vegetable, but it's actually a grain and fruit!**
- **The two most common kinds of corn are sweet corn and field corn, also called dent corn. Sweet corn is harvested early for its soft, sugary kernels – perfect for eating fresh. Dent corn is left to mature fully. Its starchy kernels are used in processed foods, like tortillas and cereal.**

BEFORE YOU WATCH: DISCUSSION STARTERS

Get students thinking about agriculture, science and nutrition by asking questions such as:

- *How do you think fruits and vegetables grow?*
- *What kind of fruits or vegetables would you like to grow?*
- *Name some fruits and vegetables that you've tasted.*
- *Where do the fruits and vegetables you eat come from? How did they get there?*
- *How do fruits and vegetables help us stay healthy?*
- *Today, we'll be taking a virtual field trip to visit a Florida sweet corn farm. What do you know about sweet corn?*

AFTER YOU WATCH:

Explore the activities and worksheets on the following pages – including a video trivia sheet! You might pass the trivia sheet out before starting the video so students can complete it as they watch or wait until after to test understanding.

TRIVIA TOSS

Want to liven up your video trivia sheet exercise? Have students complete their worksheets separately, then come together in teams to compare and finalize answers. Go around the room asking each team a question. If they answer it correctly, they get a chance to toss a ball into one of three buckets to earn a prize for their team. Prizes might be a homework pass, free time, extra computer time or lunch in the classroom.

GEOGRAPHY MOMENT

Ask students to find Havana on a map of Florida. (Hint: It's just north/northwest of Tallahassee.)

Also, if your students participate in the "Letter to a Farmer" activity, you can mail their letters right to the farmers at Sweet Magnolia Ridge! Just be sure to review the letters before you send.

Their address:

Sweet Magnolia Ridge
1361 Concord Bainbridge Road
Havana, FL 32333

USING THESE TEACHING TOOLS

Below is an overview and guide for using the teaching tools included in this section, including guided activities, recipes and worksheets. We've included the education standards each tool complements, materials needed for each activity, a brief overview of each tool and tips for building your lessons.

You can find each of these tools on the following pages, along with additional information and pointers.

GUIDED ACTIVITIES

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Video, Discussion Questions and Trivia Toss (in Classroom Guide) *On page 196*	Standard(s) Supported: SC.4.L.16.1, SC.5.L.15.1, SC.4.P.8.1, SC.4.L.16.4, SC.4.L.17.1, SC.5.L.14.2, HE.4.PHC.1.4, HE.5.PHC.1.4	- 3 buckets, boxes or similar containers - 2 palm-sized balls (enough for each team to have one)	This activity gets students out of their seats as they respond to questions about the Virtual Farm Field Trip video.	Use this activity to complement or reinforce the Sweet Corn Video Trivia sheet.
Corn Three Ways *On page 201*	Standard(s) Supported: SC.4.P.9.1, SC.4.P.8.1, HE.4.PHC.1.4, HE.5.PHC.3.2	- Ear of sweet corn (uncooked) - Cooked corn on the cob (see recipe page) - Popcorn *See Guided Activity overview for a full list of alternate corn food ideas.*	In this activity, you'll guide students through tasting corn in three different forms – as fresh, uncooked corn, as cooked corn and as popcorn.	Start by asking your school nutrition team if they can support you by acquiring and/or preparing the food items. Use this activity to introduce students to new, nutritious foods. Educate them on the nutritional differences between whole foods – like fresh corn – and processed foods – like corn puff cereal.
Recipe: Corn on the Cob *On page 203*		- Microwave - Wet paper towel - Knife (optional) - Ears of sweet corn (with or without husk) - Plates/paper towels (for serving)	If you choose to prepare the cooked corn on the cob yourself, this recipe provides simple microwave instructions.	You might microwave the corn as part of your lesson rather than preparing it ahead of time. That way, you can show students how the corn's properties change in real time.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Grow Your Own Sweet Corn Experiment *On page 204*	Standard(s) Supported: SC.4.L.16.1, SC.4.N.1.6	**Garden option:** - Hoe, shovel and/or trowel - Sweet corn seeds **Indoor option:** - Sweet corn seeds - Clear plastic cups or jars - Paper towels - Water - Labels and markers	In this STEM activity, students will grow corn from a seed – either in your school garden or in your classroom through germination.	This activity teaches students about plant biology and agriculture. Consider asking students to make a hypothesis at the beginning of the activity and track the seeds' progress over time.

WORKSHEETS

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Sweet Corn Video Trivia *On page 206*	Standard(s) Supported: SC.4.L.16.1, SC.5.L.15.1, SC.4.P.8.1, SC.4.L.16.4, SC.4.L.17.1, SC.5.L.14.2	- Writing instrument	This worksheet tests students' comprehension of the Virtual Farm Field Trip by asking questions answered in the video.	You might hand the worksheet out before the video so students can answer as they go or wait until after the video. Consider enhancing this activity with the "Trivia Toss" activity, explained in this Classroom Guide, under "After You Watch."
Letter to a Farmer *On page 207*	Standard(s) Supported: ELA.4.C.3.1, ELA.5.C.3.1, ELA.K12.EE.6.1	- Writing instrument - Crayons, colored pencils or markers (optional)	This worksheet asks students to write a letter to the farmer(s) they met in the Virtual Farm Field Trip video, sharing something they learned.	In addition to reinforcing comprehension, this worksheet allows students to practice their writing skills and teaches them how to format a letter. Be sure to write the farm's address on the board for students to copy (see Classroom Guide, under "Geography Moment"). You might even send the letters to the farmers! (Just be sure to review content before sending.)

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Life Cycle of Sweet Corn *On page 208*	Standard(s) Supported: SC.4.L.16.4, SC.4.L.16.1	- Writing instrument - Crayons, colored pencils or markers	This worksheet invites students to (1) label the stages of corn's life cycle, and (2) briefly describe what is happening in each stage.	This worksheet complements life science lessons about plant life cycles.
Sweet Corn Crossword Puzzle *On page 209*	Standard(s) Supported: SC.4.L.16.1, SC.5.L.15.1, SC.4.P.8.1, SC.4.L.16.4, SC.4.L.17.1, SC.5.L.14.2	- Writing instrument	This crossword puzzle asks students to fill in the blanks using facts they learned in the Virtual Farm Field Trip.	You might hand the worksheet out before the video so students can answer as they go or wait until after the video.
Answer Key *On page 210*			See here for answers to each worksheet.	

CORN THREE WAYS

This group activity brings the field trip to life as students get the opportunity to not only taste corn but also begin to recognize its many uses in popular food products, like popcorn and cereal.

MATERIALS

Ear of sweet corn
(uncooked)

Cooked corn on the cob
(see instructions on the following pages)

Popcorn
(be sure to reserve an unpopped kernel to show)

ALTERNATE IDEAS

With so many uses for corn, finding options that intrigue your students is easy. You could easily substitute a microwavable bag of frozen corn or canned corn for cooked corn on the cob.

Other creative options for taste testing or show and tell (with items likely already in your pantry) include:

- **Cornbread**
- **Grits**
- **Corn flakes cereal**
- **Puffed corn cereal**
- **Corn syrup**
- **Cornmeal**
- **Corn muffins**
- **Rice cakes**
- **Most brands of chips, including corn tortilla chips**

COLLABORATE WITH YOUR CAFETERIA

You might also consider partnering with your school nutrition team to obtain these food items and/or prepare a corn-themed dish for your taste test. Be sure to contact them ahead of time, discuss the support you will need and show gratitude for their collaboration!

SUGGESTED QUESTIONS

Lead a discussion as your students try corn three different ways. Questions like the following can help kids better connect with their food, think about their preferences and encourage them to make nutritious choices in the future.

Before the tasting:

1. *Have you tried corn before? What did you think?*
2. *If not, what do you think it will taste like?*
3. *Did you know popcorn and many chips are made from corn?*

As they try the fresh sweet corn:

1. *What do you think of the texture of the uncooked corn? Is it crunchy or soft?*
2. *Describe the flavor. Is it like corn you've tasted before? If yes, how so? If not, how is it different?*
3. *Before today, did you know you could eat sweet corn right off the cob, without cooking it? What other fruits or vegetables can you eat fresh and cooked? (Examples: Broccoli, carrots, sweet peppers, peaches.)*

As they try the cooked sweet corn:

1. *How is this corn similar to the uncooked corn you just tried? Prompt students to comment on taste, temperature, texture, etc.*
2. *How is it different?*
3. *Have you eaten corn like this before? What did you think?*
4. *How would you feel about eating fresh corn with a meal or as a snack? Why? What else might you eat with corn?*

As they try the popcorn:

Teacher Tip: Explain to students why the popcorn pops! The hard outer shell traps steam from the moisture inside the kernel as it heats up. When the internal temperature reaches around 356 °F, the pressure causes the kernel to burst open, turning the starchy interior into the fluffy, white popcorn we eat!

1. *Show the students an un-popped kernel. Here is a kernel of popcorn before it's heated up and it expands. How does this look like the fresh sweet corn? How is it different?*
2. *Describe the flavor of the popcorn. Does it taste like the fresh corn at all? If yes, how so? If not, how is it different?*
3. *How do you think corn turns into popcorn? (See explanation above.)*
4. *What do you think of the texture of the popcorn? Is it soft or crispy?*

TEACHER TIP:

You can also use this activity as a nutrition lesson for students! Explain how whole foods made of just one ingredient – like a fresh ear of corn – are more nutritious than packaged, processed foods with many ingredients.

You can explain that food with lots of ingredients – like chips or cereal – are like a big puzzle with many pieces, and some of those pieces might not be as healthy (like added sugar). The simple food with one ingredient is usually better for your body and helps you feel your best! You might even pass around a processed food item to show the students the list of ingredients on the nutrition label. Then ask them where the fresh corn's ingredient list is. (There is none – because there's just one ingredient!)

PREPARING CORN ON THE COB

CORN ON THE COB

EQUIPMENT REQUIRED

- Microwave
- Wet paper towel
- Knife (optional)

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- Ears of corn (with or without husk)
- Plates/paper towels (for serving to students)

DIRECTIONS

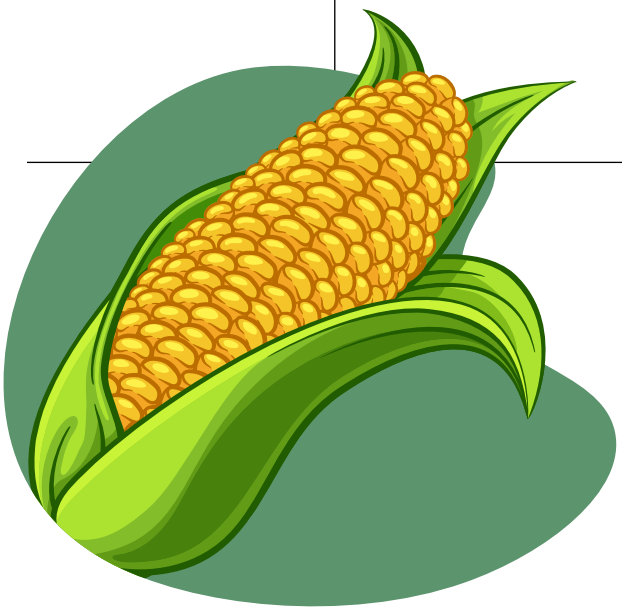
Microwaving corn on the cob is quick and easy. Here are the steps to microwave corn on the cob:

With the Husk:

1. Place the ear of corn with the husk on in the microwave.
2. Microwave on high for 3 minutes. If needed, add an additional 30 seconds.
3. Let the corn cool for a few minutes, then shuck the corn before eating.

Without the Husk:

1. Wet a paper towel and wring it out. Wrap the ear of corn in the damp paper towel.
2. Microwave on high for 3 minutes.
3. Carefully remove the paper towel and serve.



TIPS:

- **You could give every student an ear of corn or cut each ear into two or three pieces.**
- **For multiple ears of corn, adjust the cooking time:**
  - **1 ear: 2 minutes**
  - **2 ears: 4 minutes**
  - **3 ears: 5 minutes**
  - **4 ears: 6 minutes**

GROW YOUR OWN SWEET CORN

Growing corn is a fun and educational activity that helps students learn about plant biology. If your school has a garden, you can plant and grow corn there! If not, you can germinate seeds in the classroom.

SCHOOL GARDEN OPTION

MATERIALS

- Hoe, shovel and/or trowel
- Sweet corn seeds

DIRECTIONS

Be sure to follow the instructions on your seed packet. Generally, to plant sweet corn, you will:

1. Select a site that has direct sunlight for at least 8 hours a day. Sweet corn performs best in fertile, well-drained soils in full sun.
2. Build small mounds of soil about 12 inches high. Be sure to create two to three rows, to promote successful pollination.
3. Soak four to seven corn seeds overnight and then plant them about 6 inches apart in the center of each mound. (You'll eventually thin to three or four seedlings.)
4. As the plants grow, gently weed around them.
5. You'll notice that the corn is fruiting when you see the tassels.
6. Harvest any fruits that have been produced.

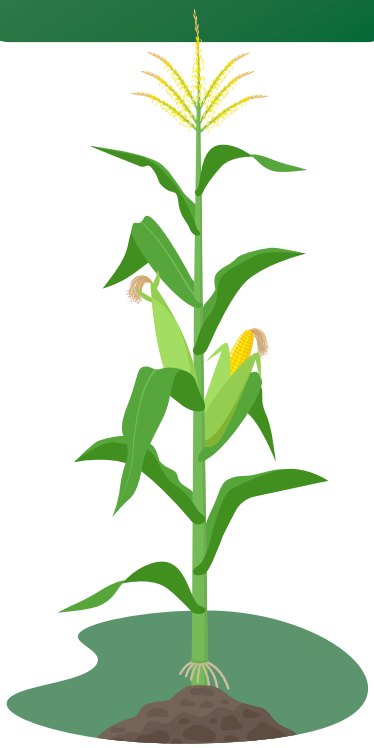
WHEN TO PLANT YOUR SWEET CORN

North Florida:
February - April

Central Florida:
January - April

South Florida:
October - March

Plant after the danger of frost.



INDOOR GERMINATION OPTION

MATERIALS

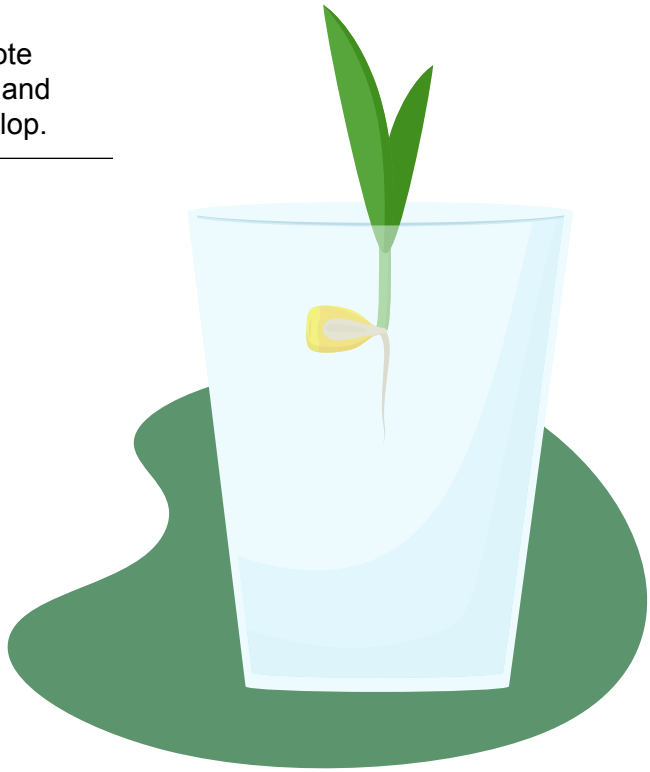
- Sweet corn seeds
- Clear plastic cups or jars
- Paper towels
- Water
- Labels and markers

DIRECTIONS

1. Fill the clear plastic cups or jars with folded paper towels. Make sure the paper towels are snugly fit inside the cups/jars.
2. Gently water the paper towels until they are damp but not soaking wet. This will create a moist environment for the seeds to germinate.
3. Carefully place the corn seeds between the paper towels and the side of the cup/jar. Make sure the seeds are visible from the outside so children can observe the germination process.
4. Use labels and markers to write the children's names and the date on each cup/jar.
5. Place the cups/jars in a warm, sunny spot. Encourage children to observe the seeds daily and record any changes they see. They can note when the seeds start to sprout and how the roots and shoots develop.

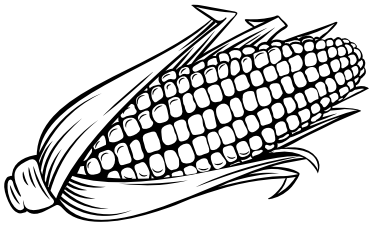
TIPS:

- **Corn seeds need warmth to germinate. Ensure the environment is warm enough for the seeds to sprout.**
- **Keep the paper towels moist but not soggy. Overwatering can cause the seeds to rot.**



Name _____ **Date** _____

Sweet Corn Video Trivia



Directions: Answer these trivia questions based on the video about the Florida sweet corn farm.

1. What does "harrow" mean? (Hint: You do this before planting the corn seeds.) _____

_____

2. How many ears of corn does one corn plant produce? _____

3. What three creatures were named as pollinators? _____

_____

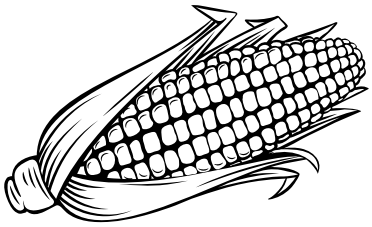
Circle whether the statements below are true or false.

4. The process for growing sweet corn takes 60 to 90 days.	**TRUE** | **FALSE**
5. Popcorn is harvested while the corn is soft and sweet corn is harvested when the corn gets hard.	**TRUE** | **FALSE**
6. Florida is the top producer of sweet corn in the United States.	**TRUE** | **FALSE**
7. Florida has good weather to grow corn.	**TRUE** | **FALSE**
8. Each ear of corn is picked by hand.	**TRUE** | **FALSE**

Name _____ **Date** _____

Hello, Farmer!

Directions: Write a letter to Ms. Stephanie and/or Mr. Vincent, the Florida sweet corn farmers featured in the farm field trip video. Tell them what you learned. You must use an address, greeting, body, closing and signature.



_____

_____

_____

_____

Dear, _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Sincerely,

_____

Name _____ **Date** _____

Life Cycle of Sweet Corn

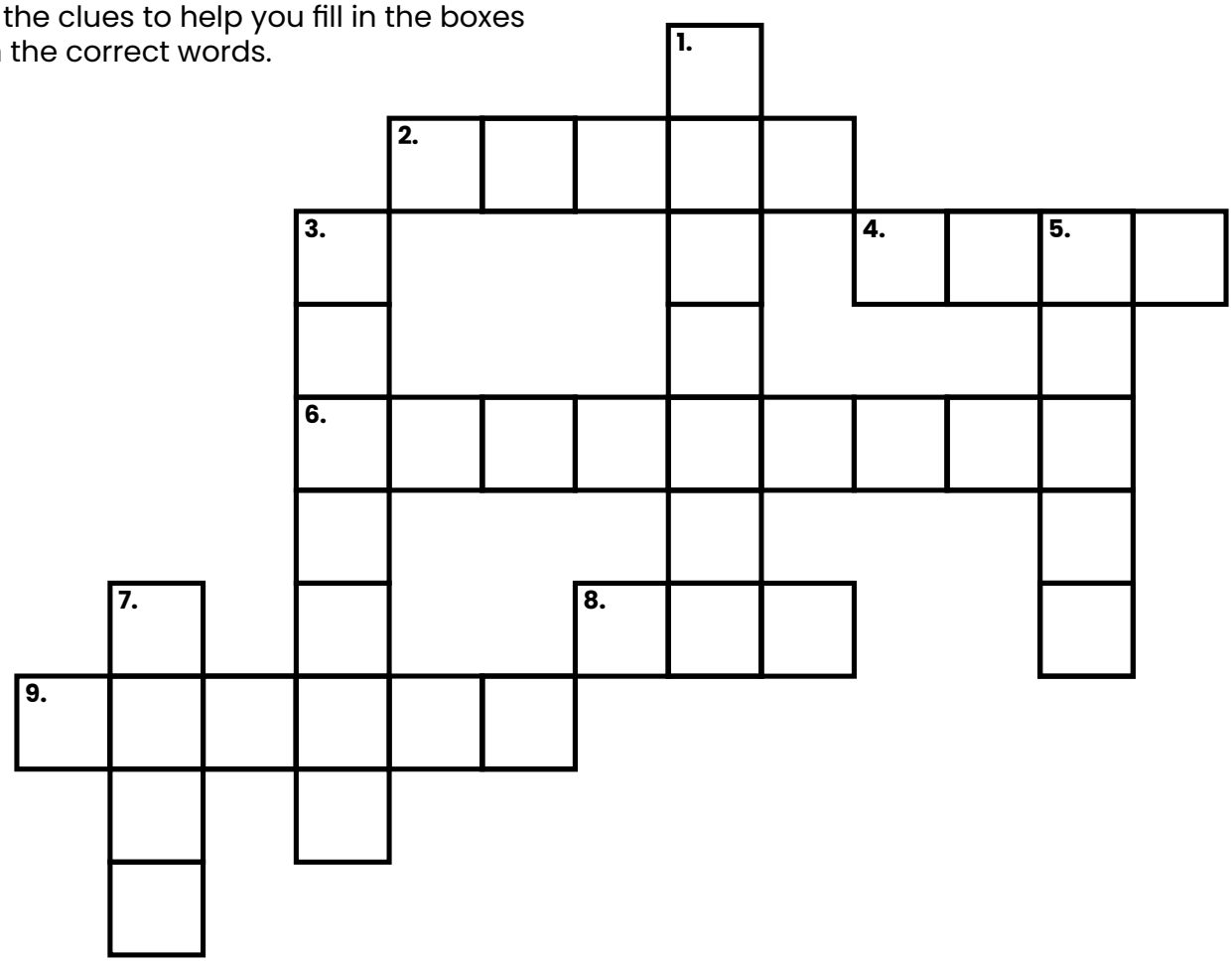
Directions: Label each part of the corn plant's life cycle using the terms in the word bank. Then, briefly describe what is happening in each phase.

Word Bank			
Seed	Germination	Sprout	Seedling
Flower (tassel)	Plant with fruit	Fruit with seeds	

Name _____ **Date** _____

Sweet Corn Crossword Puzzle

Directions: Complete the puzzle below. Use the clues to help you fill in the boxes with the correct words.



ACROSS

2. 2 or 3 ears of corn can come from one _____.
4. The green outside of corn that you have to remove before eating is called a ____.
6. Birds, bees and butterflies _____ corn.
8. We call each piece of corn an ___.
9. _____ means breaking up the soil to make it fluffy.

DOWN

1. _____ is the top producer of sweet corn in the United States.
3. Corn used for _____ is harvested after the corn gets hard.
5. _____ corn is harvested when the corn is soft.
7. Each ear of corn is picked by ____.

ANSWER KEY

Name _____ Date _____

Sweet Corn Video Trivia

Directions: Answer these trivia questions based on the video about the Florida sweet corn farm.

1. What does "harrow" mean? (Hint: You do this before planting the corn seeds.) breaking up the soil to make it fluffy
2. How many ears of corn does one corn plant produce? 2-3 ears
3. What three creatures were named as pollinators? birds, bees and butterflies

Circle whether the statements below are true or false.

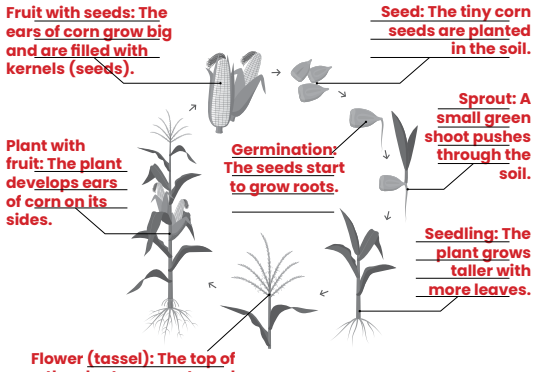
4. The process for growing sweet corn takes 60 to 90 days. **TRUE** FALSE
5. Popcorn is harvested while the corn is soft and sweet corn is harvested when the corn gets hard. TRUE **FALSE**
6. Florida is the top producer of sweet corn in the United States. **TRUE** FALSE
7. Florida has good weather to grow corn. **TRUE** FALSE
8. Each ear of corn is picked by hand. **TRUE** FALSE

VIRTUAL FARM FIELD TRIPS
4-5 Worksheet
Sweet Corn

Name _____ Date _____

Life Cycle of Sweet Corn

Directions: Label each part of the corn plant's life cycle using the terms in the word bank. Then, briefly describe what is happening in each phase.

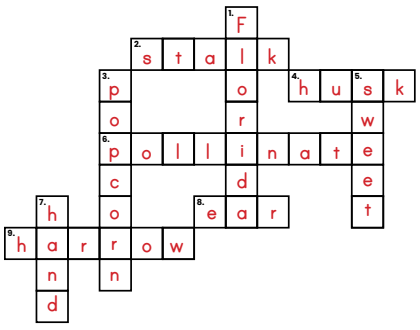


Word Bank			
Seed	Germination	Sprout	Seedling
Flower (tassel)	Plant with fruit	Fruit with seeds	

VIRTUAL FARM FIELD TRIPS
4-5 Worksheet
Sweet Corn

Name _____ Date _____

Sweet Corn Crossword Puzzle



ACROSS

2. 2 or 3 ears of corn can come from one _____.
4. The green outside of corn that you have to remove before eating is called a ____.
6. Birds, bees and butterflies _____ corn.
8. We call each piece of corn an ___.
9. _____ means breaking up the soil to make it fluffy.

DOWN

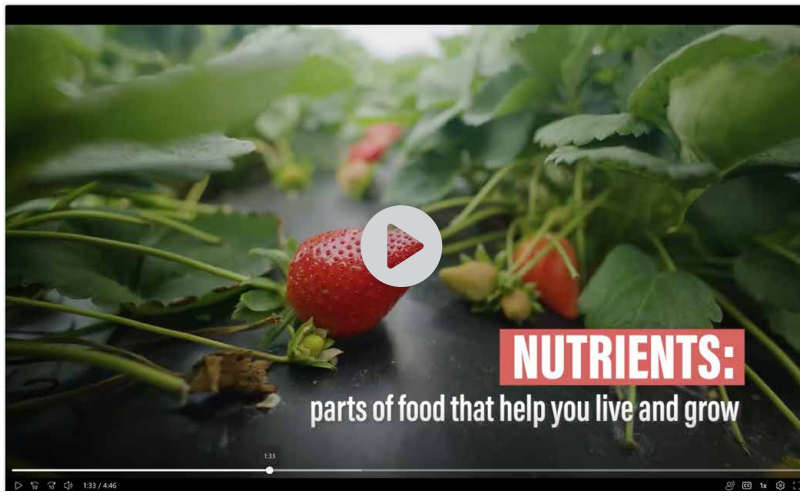
1. _____ is the top producer of sweet corn in the United States.
3. Corn used for _____ is harvested after the corn gets hard.
5. _____ corn is harvested when the corn is soft.
7. Each ear of corn is picked by ____.

Standard(s) Supported: SC.4.L.16.1, SC.5.L.15.1, SC.4.P.8.1, SC.4.L.16.4, SC.4.L.17.1, SC.5.L.14.2, HE.4.PHC.1.4, HE.5.PHC.1.4

LET'S LEARN ABOUT FLORIDA STRAWBERRIES!

This Virtual Farm Field Trip unit is all about strawberries. It begins with an informative 5-minute video, transporting students to Astin Farms in Plant City, Florida – the winter strawberry capital of the world! Your students will meet farmers and sisters Madison and Payton to learn how Florida strawberries are planted, grown, harvested and distributed.

We encourage you to expand the learning experience using this section's worksheets and guided activities, including a taste test. You may choose to use all these resources or pick the ones best suited to your classroom.



ACCESS VIRTUAL FARM FIELD TRIP

Scan code or visit:
FarmToSchoolFL.com/FieldTrips

FLORIDA STRAWBERRY FUN FACTS

- **Strawberries have nutrients like fiber, potassium and vitamin C. Eating foods with fiber makes you feel full, potassium helps your muscles move properly and vitamin C helps your body heal cuts and scrapes.**
- **Strawberries are the only fruit with seeds on the outside – and each strawberry has about 200 of them.**
- **Strawberries are technically part of the rose family.**
- **People love strawberries! In the United States, 94% of households eat strawberries.**
- **Unlike other fruits, like bananas or avocados, strawberries stop ripening as soon as they are harvested. That's why you want to eat them as soon as you can.**
- **While we put strawberries in the refrigerator to make them last longer, they actually taste best at room temperature. That's why they are so delicious right off the plant!**

BEFORE YOU WATCH: DISCUSSION STARTERS

Get students thinking about agriculture, science and nutrition by asking questions such as:

- *What are some examples of fruit?*
- *What fruits have you tasted? Which is your favorite?*
- *Have you ever picked your own fruit at a farm or in a garden? What did you pick?*
- *How do you think the food we eat gets from the farm to our table – at home and in school?*
- *Today we're going to talk about strawberries. How do you think they are grown and harvested?*

AFTER YOU WATCH: CHECK FOR UNDERSTANDING

Explore the activities and worksheets on the following pages – including a video trivia sheet! You might pass the trivia sheet out before starting the video so students can complete it as they watch or wait until after to test understanding.

TRIVIA TOSS

Want to liven up your video trivia sheet exercise? Have students complete their worksheets separately, then come together in teams to compare and finalize answers. Go around the room asking each team a question. If they answer it correctly, they get a chance to toss a ball into one of three buckets to earn a prize for their team. Prizes might be a homework pass, free time, extra computer time or lunch in the classroom.

GEOGRAPHY MOMENT

Ask students to find Plant City on a map of Florida. (Hint: It's just east of Tampa.)

Also, if your students participate in the "Letter to a Farmer" activity, you can mail their letters right to the farmers at Astin Farms! Just be sure to review the letters before you send.

Their address:
Astin Strawberry Exchange
107 Holloway Road
Plant City, FL 33567

USING THESE TEACHING TOOLS

Below is an overview and guide for using the teaching tools included in this section, including guided activities, recipes and worksheets. We've included the education standards each tool complements, materials needed for each activity, a brief overview of each tool and tips for building your lessons.

You can find each of these tools on the following pages, along with additional information and pointers.

GUIDED ACTIVITIES

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Video, Discussion Questions and Trivia Toss (in Classroom Guide) *On page 211*	Standard(s) Supported: SC.4.L.16.1, SC.5.L.15.1, SC.4.P.8.1, SC.4.L.16.4, SC.4.L.17.1, SC.5.L.14.2, HE.4.PHC.1.4, HE.5.PHC.1.4	- 3 buckets, boxes or similar containers - 2 palm-sized balls (enough for each team to have one)	This activity gets students out of their seats as they respond to questions about the Virtual Farm Field Trip video.	Use this activity to complement or reinforce the Strawberry Video Trivia sheet.
Strawberry Three Ways *On page 216*	Standard(s) Supported: SC.4.P.9.1, SC.4.P.8.1, HE.4.PHC.1.4, HE.5.PHC.3.2	- Fresh strawberries - Strawberry jam/jelly - Strawberry smoothie (see recipe)	In this activity, you'll guide students through tasting strawberries in three different forms – as fresh strawberries, as strawberry jam and in a smoothie.	Start by asking your school nutrition team if they can support you by acquiring and/or preparing the food items. Use this activity to introduce students to new, nutritious foods. Educate them on the nutritional differences between whole foods – like fresh strawberries – and processed foods – like strawberry jam.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Recipe: Strawberry Smoothie *On page 218*	Standard(s) Supported: SC.4.P.9.1, SC.4.P.8.1	- Blender - Cutting board - Knife - Measuring cup - Tablespoon *Adjust quantities based on class size:* - 1 cup fresh strawberries - 1 banana - ½ cup yogurt - ½ cup milk (or water) - 1 tablespoon honey - Small cups (ideally clear) - Spoons	Use this recipe to prepare your own strawberry smoothie for the Strawberry Three Ways exercise.	You might prepare your smoothie before the lesson or demonstrate for the class for an added learning opportunity.
Strawberry DNA Extraction Activity *On page 219*	Standard(s) Supported: SC.5.N.1.1	- Measuring cup - Teaspoon *Per student:* - Resealable plastic bag - 2 strawberries - 2 teaspoons dish detergent - 1 teaspoon salt - ½ cup water - 2 plastic cups - 1 coffee filter - ½ cup cold rubbing alcohol - 1 coffee stirrer	This hands-on STEM activity walks students through the process of extracting DNA strands from strawberries.	This activity helps make abstract scientific concepts like genetics and DNA tangible and exciting for students, fostering curiosity and an understanding of biology. In addition to the Student Sheet with the materials list and procedure, we've provided a Teacher Companion Sheet, with additional insight about what DNA is and how it functions, as well as the purpose of various materials used in the experiment.

WORKSHEETS

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Strawberry Video Trivia *On page 221*	Standard(s) Supported: SC.4.L.16.1, SC.5.L.15.1, SC.4.P.8.1, SC.4.L.16.4, SC.4.L.17.1, SC.5.L.14.2	- Writing instrument	This worksheet tests students' comprehension of the Virtual Farm Field Trip by asking questions answered in the video.	You might hand the worksheet out before the video so students can answer as they go or wait until after the video. Consider enhancing this activity with the "Trivia Toss" activity, explained in this Classroom Guide, under "After You Watch."
Letter to a Farmer *On page 222*	Standard(s) Supported: ELA.4.C.3.1, ELA.5.C.3.1, ELA.K12.EE.6.1	- Writing instrument - Crayons, colored pencils or markers (optional)	This worksheet asks students to write a letter to the farmer(s) they met in the Virtual Farm Field Trip video, sharing something they learned.	In addition to reinforcing comprehension, this worksheet allows students to practice their writing skills and teaches students how to format a letter. Be sure to write the farm's address on the board for students to copy (see Classroom Guide, under "Geography Moment"). You might even send the letters to the farmers! (Just be sure to review content before sending.)
Life Cycle of a Strawberry *On page 223*	Standard(s) Supported: SC.4.L.16.4, SC.4.L.16.1	- Writing instrument - Crayons, colored pencils or markers (optional)	This worksheet invites students to (1) label the stages of a strawberry's life cycle, and (2) briefly describe what is happening in each stage.	This worksheet complements life science lessons about plant life cycles.
Strawberry Crossword Puzzle *On page 224*	Standard(s) Supported: SC.4.L.16.1, SC.5.L.15.1, SC.4.P.8.1, SC.4.L.16.4, SC.4.L.17.1, SC.5.L.14.2	- Writing instrument	This crossword puzzle asks students to fill in the blanks using facts they learned in the Virtual Farm Field Trip.	You might hand the worksheet out before the video so students can answer as they go or wait until after the video.
Answer Key *On page 225*			See here for answers to each worksheet.	

STRAWBERRY THREE WAYS

This group activity brings the field trip to life as students get the opportunity to taste strawberries three ways: as fresh berries, as strawberry jam or jelly and in a strawberry smoothie.

MATERIALS

Fresh strawberries

Strawberry jam/jelly

Strawberry smoothie
(see recipe on following pages)

Don't have time to prep or make a recipe? Swap the smoothie for a store-bought smoothie, strawberry yogurt or strawberry ice cream.

SUGGESTED QUESTIONS

Lead a discussion as your students try strawberries three different ways. Questions like the following can help kids better connect with their food, think about their preferences and encourage them to make nutritious choices in the future.

Before the tasting:

1. *Have you tried a strawberry before? What did you think?*
2. *If not, what do you think it will taste like?*
3. *Have you tried any foods with strawberries in them? What about foods that were strawberry flavored? What were they and what did you think?*

As they try the fresh strawberries:

1. *What do you think of the texture of the fresh strawberry? Is it crunchy or soft?*
2. *Do you like the smell of the strawberry? How would you describe it?*
3. *How would you feel about eating fresh strawberries as a snack? Why? What might you eat them with?*

COLLABORATE WITH YOUR CAFETERIA

You might also consider partnering with your school nutrition team to obtain these food items and/or prepare a strawberry-themed dish for your taste test. Be sure to contact them ahead of time, discuss the support you will need and show gratitude for their collaboration!

As they try the strawberry jam/jelly:

1. *How do you think they turn the strawberries into jam?*
2. *How does the taste of the jam compare to the fresh strawberries? How is it different and how is it the same?*
3. *What do you think about the texture of the jam compared to the fresh strawberries?*
4. *Have you had strawberry jam before? If so, what do you usually eat it with? If not, would you like to try it again?*
5. *Before today, did you know strawberry jam is made from fresh strawberries? What other fruits are turned into jam?*

As they try the strawberry smoothie:

1. *Can you taste the strawberries in the smoothie? How strong is the flavor?*
2. *What other flavors can you taste? Can you guess which other fruit(s) is (are) in the smoothie?*
3. *How does the flavor of the smoothie compare to the fresh strawberries?*
4. *What is the same about the fresh strawberries and the smoothie? What is different?*
5. *If you were making a fruit smoothie, what fruits would you add?*

TEACHER TIP:

You can also use this activity as a nutrition lesson for students! Explain how whole foods made of just one ingredient – like a fresh strawberry – are more nutritious than packaged, processed foods with many ingredients.

You can explain that food with lots of ingredients – like the jam – are like a big puzzle with many pieces, and some of those pieces might not be as healthy (like added sugar). The simple food with one ingredient is usually better for your body and helps you feel your best!

You might even pass around a processed food item to show the students the list of ingredients on the nutrition label. Then ask them where the fresh strawberry's ingredient list is. (There is none – because there's just one ingredient!)

STRAWBERRY SMOOTHIE RECIPE

STRAWBERRY SMOOTHIE

Estimated Servings: 20 oz, or (6-7) 3 oz tasters

EQUIPMENT REQUIRED

- Blender
- Cutting board
- Knife
- Measuring cup
- Tablespoon
- Small cups (ideally clear)
- Spoons

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- 1 cup fresh strawberries
- 1 banana
- ½ cup yogurt
- ½ cup milk (or water)
- 1 tablespoon honey

DIRECTIONS

1. Wash berries and cut away strawberry stems.
2. Combine all ingredients in a blender. Blend until smooth.
3. Pour into individual cups for serving and enjoy!

You might prepare your smoothie before the lesson or demonstrate for the class for an added learning opportunity!

CUSTOMIZE YOUR SMOOTHIE

Mix up your smoothie by adding other fresh ingredients like blueberries, pineapple chunks, orange segments, kiwis or even spinach! If you're demonstrating for your students, they can help decide which ingredients get added. Children are more likely to be excited about eating food they choose and help prepare themselves!

If you prep the recipe ahead of time, ask them to guess what else you added.

STRAWBERRY DNA EXTRACTION ACTIVITY TEACHER COMPANION SHEET

With only a few household items, you can extract DNA from strawberries just about anywhere! Students will be able to complete the activity individually or in small groups using the following "Strawberry DNA Extraction Activity" Student Sheet. Reference this Teacher Sheet to further enrich the learning experience.

WHAT DOES DNA STAND FOR?

DNA stands for deoxyribonucleic acid. DNA is a long molecule in the shape of a double helix – two spirals twisting around each other. These spirals are the backbone of the DNA and are made up of sugars and phosphates. The spirals are connected by chemicals known as bases, which stretch between the spirals like the rungs of a ladder.

WHAT DOES DNA DO?

DNA is the molecule that controls everything that happens in a cell – the most basic unit of life. DNA contains instructions that direct the activities of cells and, ultimately, the body. Like a recipe book or instructions for Legos, DNA holds the instructions for making all our proteins, which do all the jobs in our bodies.

WHY DO WE USE DISHWASHING LIQUID?

The dishwashing liquid bursts open the cells of the strawberries, releasing the DNA.

WHY DO WE USE SALT?

It ensures the proteins in the cell are kept separate from the DNA.

WHY DO WE USE ALCOHOL?

When molecules are insoluble (unable to be dissolved), they clump together and become visible. DNA is not soluble in alcohol; therefore, alcohol makes the DNA strands clump together and become visible to the naked eye.

Learn more and watch a video of the science experiment by scanning the QR code or visiting: bit.ly/Strawberry-DNA

Strawberry DNA Extraction Activity

All living things — from humans to strawberries — have DNA.

Deoxyribonucleic acid (DNA) provides the chemical instructions on how to make a living thing. Many people assume that because DNA is so small, we can't see it without powerful microscopes. Actually, DNA can be easily seen with the naked eye when collected from thousands of cells. Let's try it using strawberries!

Equipment Needed

- Measuring cup
- Teaspoon

Materials

- Resealable plastic bag
- 2 strawberries *(fresh or frozen, but remove the green leaves)*
- 2 teaspoons dish detergent
- 1 teaspoon salt
- ½ cup water
- 2 plastic cups
- 1 coffee filter
- ½ cup cold rubbing alcohol
- 1 coffee stirrer

Procedure

Steps 1 and 2: Place strawberries in a plastic bag. After closing the bag, ***SMASH the strawberries*** for about 2 minutes until nice and crushed!

Step 3: Make the DNA extraction solution by adding the following to the first plastic cup:

- 2 teaspoons dish detergent
- 1 teaspoon salt
- ½ cup water

Step 4: Gently mix the extraction solution (until salt is dissolved).

Step 5: Pour the solution into the bag of smashed strawberries.

Step 6: Reseal the bag and gently massage and combine the mixture for 1 minute. Try to avoid making too many soap bubbles!

Steps 7 and 8: Place the coffee filter over the opening of the second plastic cup. Open the plastic bag and pour the liquid onto the coffee filter. Then wait for the liquid to drip through the coffee filter into the plastic cup, leaving the strawberry mash on the coffee filter.

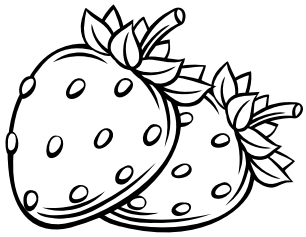
Step 9: You're almost there! Pour an equal amount of cold rubbing alcohol into the liquid in the second plastic cup.

Step 10: Gently move the cup around in circles and watch the whitish, stringy material form in the upper layer of liquid — that is the strawberry DNA!

Step 11: Use the coffee stirrer to pick up strawberry DNA out of the liquid and observe.

Name _____ **Date** _____

Strawberry Video Trivia



Directions: Answer these trivia questions based on the video about the Florida strawberry farm.

1. How are strawberry seeds different than other fruit seeds? _____

_____

2. Each strawberry has about how many seeds? _____

3. What do you call the shape of a strawberry? _____

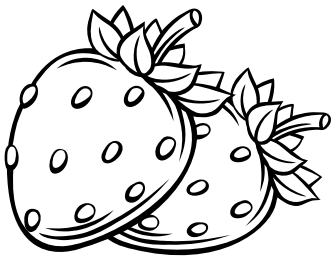
Circle whether the statements below are true or false.

4. There is only one type of strawberry.	**TRUE** | **FALSE**
5. Eight strawberries have more vitamin C than one orange.	**TRUE** | **FALSE**
6. Strawberries are picked by machines.	**TRUE** | **FALSE**
7. Strawberries ripen faster when it's warmer.	**TRUE** | **FALSE**
8. An acre is the size of a basketball court.	**TRUE** | **FALSE**
9. Strawberries are healthy for you.	**TRUE** | **FALSE**

Name _____ **Date** _____

Hello, Farmer!

Directions: Write a letter to Ms. Madison and/or Ms. Payton, the Florida strawberry farmers featured in the farm field trip video. Tell them what you learned. You must use an address, greeting, body, closing and signature.



_____

_____

_____

_____

Dear, _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Sincerely,

_____

Name _____ **Date** _____

Life Cycle of a Strawberry

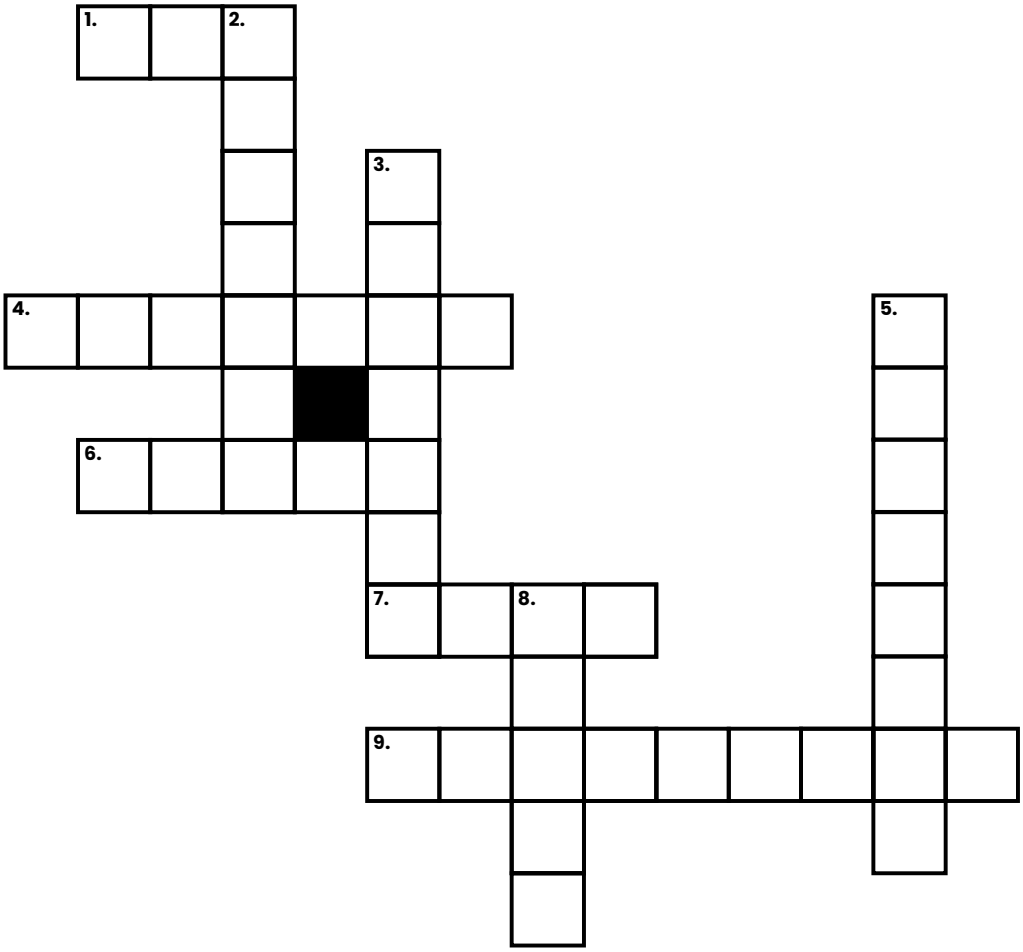
Directions: Label each part of the strawberry plant's life cycle using the terms in the word bank. Then, briefly describe what is happening in each phase.

Word Bank				
Fruit with seeds	Germination	Seedling	Flowers (reproduction)	Plant with fruit (mature plant)
Seed	Sprout	Plant		

Name _____ **Date** _____

Strawberry Crossword Puzzle

Directions: Complete the puzzle below. Use the clues to help you fill in the boxes with the correct words.



ACROSS

1. Each strawberry has about ___ hundred seeds.
4. The shape of strawberries. (Another word for "like a cone.")
6. Cooler weather can make strawberries taste _____.
7. Strawberries get ____ faster when it's warmer.
9. This is the box strawberries are stored in.

DOWN

2. Strawberries are the only fruit with seeds on the _____.
3. A _____ can prepare four rows of strawberry beds at a time.
5. An acre is about the size of a _____ field.
8. _____ City, Florida is the winter strawberry capital of the world.

ANSWER KEY

Name _____ Date _____

Strawberry Video Trivia

Directions: Answer these trivia questions based on the video about the Florida strawberry farm.

1. How are strawberry seeds different than other fruit seeds? Their seeds are on the outside.
2. Each strawberry has about how many seeds? About 200
3. What do you call the shape of a strawberry? Conical, or like a cone

Circle whether the statements below are true or false.

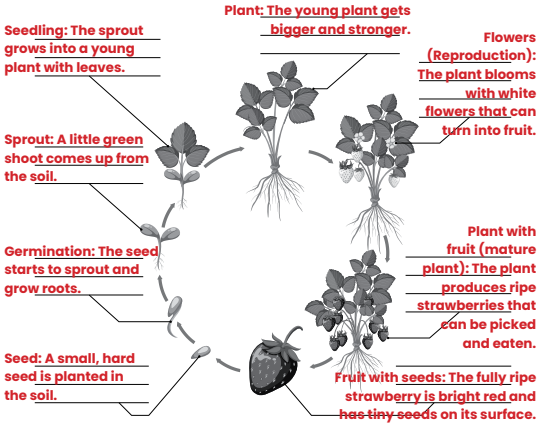
4. There is only one type of strawberry.	TRUE	(FALSE)
5. Eight strawberries have more vitamin C than one orange.	(TRUE)	FALSE
6. Strawberries are picked by machines.	TRUE	(FALSE)
7. Strawberries ripen faster when it's warmer.	(TRUE)	FALSE
8. An acre is the size of a basketball court.	TRUE	(FALSE)
9. Strawberries are healthy for you.	(TRUE)	FALSE

VIRTUAL FARM FIELD TRIPS
4-5 Worksheet
Strawberry

Name _____ Date _____

Life Cycle of a Strawberry

Directions: Label each part of the strawberry plant's life cycle using the terms in the word bank. Then, briefly describe what is happening in each phase.



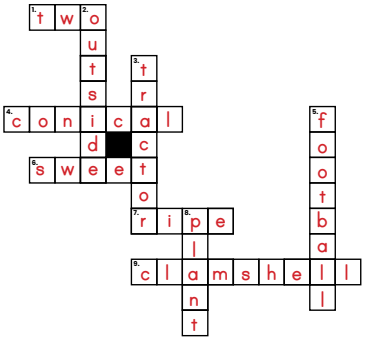
Word Bank				
Fruit with seeds	Germination	Seedling	Flowers (reproduction)	Plant with fruit (mature plant)
Seed	Sprout	Plant		

VIRTUAL FARM FIELD TRIPS
4-5 Worksheet
Strawberry

Name _____ Date _____

Strawberry Crossword Puzzle

Directions: Complete the puzzle below. Use the clues to help you fill in the boxes with the correct words.



ACROSS

1. Each strawberry has about ___ hundred seeds.
4. The shape of strawberries. (Another word for "like a cone.")
6. Cooler weather can make strawberries taste _____.
7. Strawberries get ____ faster when it's warmer.
9. This is the box strawberries are stored in.

DOWN

2. Strawberries are the only fruit with seeds on the _____.
3. A _____ can prepare four rows of strawberry beds at a time.
5. An acre is about the size of a _____ field.
8. _____ City, Florida is the winter strawberry capital of the world.

Standard(s) Supported: SC.5.L.15.1, SC.4.P.8.1, SC.4.L.16.4, SC.4.L.17.1, SC.5.L.14.2, HE.4.PHC.1.4, HE.5.PHC.1.4

LET'S LEARN ABOUT FLORIDA LETTUCE!

This Virtual Farm Field Trip unit is all about lettuce. It begins with an informative 5-minute video, transporting students to Traders Hill Farm in Hilliard, Florida. Your students will meet farmers Tracy and Kathy to learn how Florida lettuce is planted, grown, harvested and distributed.

We encourage you to expand the learning experience using this section's worksheets and guided activities, including a taste test. You may choose to use all these resources or pick the ones best suited to your classroom.

ACCESS VIRTUAL FARM FIELD TRIP

Scan code or visit:
FarmToSchoolFL.com/FieldTrips

FLORIDA LETTUCE FUN FACTS

- **Fresh lettuce is mostly water. Eating it helps you stay hydrated.**
- **Lettuce has vitamin K for strong bones.**
- **Lettuce comes in many colors: green, red and even purple.**
- **Romaine is the second most common type of lettuce grown in the U.S. behind iceberg, both of which are grown right here in Florida.**
- **Lettuce can grow in different ways! Field lettuce grows outside in the dirt, drinking rain and soaking up sunshine. Hydroponic lettuce grows with its roots right in water filled with plant food. Aquaponic lettuce grows in water too, but with fish. The nutrients from the fish feed the plants.**
- **In Florida, lettuce is largely grown outside in the rich soils south of Lake Okeechobee.**

BEFORE YOU WATCH: DISCUSSION STARTERS

Get students thinking about agriculture, science and nutrition by asking questions such as:

- *What do plants need to grow? What happens if they don't get what they need?*
- *Can a plant grow without dirt? What might it need instead?*
- *Let's name some vegetables. Can you think of any that are green?*
- *Close your eyes and imagine you are at a farm. What do you see? Hear? Smell?*
- *Today, we'll be taking a virtual field trip to visit a Florida lettuce farm. What do you know about lettuce?*
- *Have you eaten lettuce before? What did it taste like?*

TRIVIA TOSS

Want to liven up your video trivia sheet exercise? Have students answer questions or complete their worksheets separately, then come together in teams to compare and finalize answers. Go around the room asking each team a question. If they answer it correctly, they get a chance to toss a ball into one of three buckets to get a prize for their team. Prizes might be a homework pass, free time, extra computer time or lunch in the classroom.

AFTER YOU WATCH: SUGGESTED QUESTIONS

Find video comprehension questions, answers and video timestamps for finding those answers below. See the worksheet section of these resources for a trivia sheet covering the questions below for more independent student work.

- *What animals live in the water and help feed the lettuce?* ***(Fish, tilapia; 0:43)***
- *What is it called when plants are grown in water instead of soil?* ***(Hydroponics, and adding fish makes it aquaponics; 0:36)***
- *How long is the growing cycle of lettuce on this farm?* ***(About 35–40 days; 0:59)***
- *True or false: Romaine lettuce is about 95% water.* ***(True; 1:45)***
- *What is the ideal temperature for growing lettuce?* ***(About 70°F; 2:02)***

  Teacher Tip: 70°F is about the same temperature we keep inside our homes and classrooms. Ask why growing lettuce inside a greenhouse helps farmers hold that perfect temperature all year, even when it's really hot or really cold outside.
- *What does it mean when a lettuce plant "bolts"?* ***(It starts growing flowers and seeds and won't taste as good; 2:50)***
- *True or false: Lettuce is a good source of vitamin K, which helps keep your bones strong.* ***(True; 2:53)***

  Teacher Tip: Ask students what other foods keep bones strong. (Dairy!)
- *What happens to the fish waste in the filtration system?* ***(The system turns fish waste into food for the plants; 3:32)***
- *True or false: Lettuce is part of the legume (or pea) family.* ***(False, it's in the sunflower family; 3:51)***
- *What is a nursery on the farm?* ***(A place where plants are grown, where lettuce starts growing from the seed; 4:00)***
- *True or false: An outdoor farm can grow more lettuce in less space than a greenhouse using hydroponics or aquaponics.* ***(False, this greenhouse grows 5 times more lettuce in the same space; 1:50)***

GEOGRAPHY MOMENT

Ask students to find Hilliard on a map of Florida.
(Hint: It's in the far northeast corner, near the Georgia border just above Jacksonville.)

USING THESE TEACHING TOOLS

Below is an overview and guide for using the teaching tools included in this section, including guided activities, recipes and worksheets. We've included the education standards each tool complements, materials needed for each activity, a brief overview of each tool and tips for building your lessons.

You can find each of these tools on the following pages, along with additional information and pointers.

GUIDED ACTIVITIES

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Video, Discussion Questions and Trivia Toss (in Classroom Guide) *On page 226*	Standard(s) Supported: SC.5.L.15.1, SC.4.P.8.1, SC.4.L.16.4, SC.4.L.17.1, SC.5.L.14.2, HE.4.PHC.1.4, HE.5.PHC.1.4	- 3 buckets, boxes or similar containers - 2 palm-sized balls (enough for each team to have one)	This activity gets students out of their seats as they respond to questions about the Virtual Farm Field Trip video.	Use this activity to complement or reinforce the Romaine Lettuce Video Trivia sheet. You might also watch the video a second time after the discussion so students can listen for details they missed.
Lettuce Three Ways *On page 233*	Standard(s) Supported: SC.4.P.8.1, SC.4.P.9.1, HE.4.PHC.1.4, HE.5.PHC.3.2	- Head of romaine lettuce - Lemon and/or salt, or a homemade vinaigrette (see recipe on following pages) - Store-bought creamy salad dressing	In this activity, you'll guide students through tasting lettuce in three different forms – plain, with a simple seasoning and with a creamy dressing.	Start by asking your school nutrition team if they can support you by acquiring and/or preparing the food items. Use this activity to introduce students to new, nutritious foods. Educate them on the nutritional differences between whole foods – like fresh lettuce – and packaged foods with long ingredient lists – like store-bought dressing.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Lemon and Olive Oil Vinaigrette *On page 235*	Standard(s) Supported: SC.4.P.9.1, SC.4.P.8.1	Equipment required: - Small jar with a tight-fitting lid - Measuring cup - Measuring spoons - Paper or cloth towels for spills - Bowls or cups to serve Ingredients (adjust quantities based on class size): - ⅓ cup extra virgin olive oil - 1 tablespoon white wine vinegar or apple cider vinegar - 1 tablespoon lemon juice - 2 teaspoons honey or sugar - ¼ teaspoon garlic powder - ¼ teaspoon salt - Pinch black pepper	Use this recipe to prepare your own vinaigrette for the Lettuce Three Ways exercise.	At this grade level, students can make the dressing themselves in groups of four. Multiply equipment and ingredient quantities by the number of groups.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Lettuce Lab: What Makes Water Climb a Leaf? (Teacher Guide and Student Sheets) *On page 236*	Standard(s) Supported: SC.5.N.1.1, MA.4.DP.1.2 / MA.4.DP.1.3	- Pale inner romaine leaves: 2 per group, cut from the same head and as close to the same size as possible, plus a few extras (some won't take the dye well) - Clear cups: 2 per group - Water - Dark food coloring: red or blue work best; 15–20 drops per cup for a deep color - Scissors - Ruler: for measuring both leaves before the test begins - Timer or clock: for recording observation times - Paper plates or newspaper: the rib holds a lot of water and slicing gets wet - Paper towels: for drips and dye spills (dye stains!) - Magnifying glass (optional): for viewing the xylem lines up close - Aprons or old shirts (optional): food coloring stains hands and clothes	In this investigation, students compare a whole romaine leaf with a trimmed one standing in dyed water, recording where the color appears and how bright it is over time. The contrast between the two leaves shows that water leaves the plant fastest wherever a tube is open.	This activity complements life science lessons about how plants move water, and the timed observations and brightness scale make it a data collection lesson as well. Standardize the trim across groups so results can be compared, and remind students that the dyed lettuce is for science, not snacking.

WORKSHEETS

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Romaine Lettuce Video Trivia & Farm Math *On page 240*	Standard(s) Supported: MA.4.AR.1.1 / MA.4.AR.2.2, MA.5.AR.1.1	- Writing instrument	This worksheet tests students' comprehension of the Virtual Farm Field Trip by asking questions answered in the video, then applies farm facts to word problems.	You might hand the worksheet out before the video so students can answer as they go, or wait until after. Consider pairing it with the "Trivia Toss" activity in this Classroom Guide.
Farm Math: Lettuce *On page 242*	Standard(s) Supported: MA.4.AR.1.1, MA.4.AR.2.2, MA.5.AR.1.1, MA.5.AR.2.1, MA.5.AR.2.4, MA.4.M.1.2, MA.4.DP.1.2 / MA.4.DP.1.3	- Writing instrument	This worksheet opens with a box of farm facts, then asks students to use them across a set of multi-step problems: writing and solving equations, working with remainders and reading a table of one week's harvest.	This worksheet complements math lessons on equations, division and data. Students show their work and carry an answer forward from one problem to the next, so it suits partner work or a guided walkthrough as a class.
Reading: Ways to Grow Lettuce, with Close Reading and Replay! Sum It Up *On page 244*	Standard(s) Supported: ELA.4.C.3.1, ELA.4.R.3.2, SC.4.L.16.2 / ELA.5.C.3.1, ELA.5.R.3.2	- Writing instrument	This worksheet pairs a passage covering all three ways lettuce is grown with close reading questions and a short written summary that draws on both the passage and the video.	This worksheet complements reading comprehension and vocabulary lessons. The summary at the end asks students to pull from two sources at once, which is good preparation for the essay prompt later in this section.
Life Cycle of Lettuce *On page 247*	Standard(s) Supported: SC.4.L.16.1	- Writing instrument	This worksheet has students label each stage of the lettuce plant's life cycle using a word bank, then briefly describe what is happening in each phase.	This worksheet complements life science lessons about plant life cycles and reproduction. It builds on the 2–3 version by asking students to explain each stage rather than only order it.

WORKSHEETS

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Expository Essay Prompt and Plan Your Essay *On page 248*	Standard(s) Supported: ELA.4.C.1.4 / ELA.5.C.1.4, ELA.4.C.3.1 / ELA.5.C.3.1	- Writing instrument - A separate sheet of paper for the finished essay	This prompt asks students to write an expository essay explaining how aquaponic farming grows lettuce without soil, and giving reasons a school might choose to serve locally grown lettuce. A planning page walks them through a hook, a central idea, two body sections and a conclusion.	The source notes box supplies facts from the video, so students practice selecting and citing evidence rather than recalling from memory. You might have students plan in class and draft at home.
Teacher Scoring Guide *On page 250*	Standard(s) Supported: ELA.4.C.1.4 / ELA.5.C.1.4, ELA.4.C.3.1 / ELA.5.C.3.1		This guide gives you what to look for when scoring the expository essay — structure, evidence and elaboration, and conventions — along with sample strong points a student might include.	Use this guide to set your expectations before students write. You might also share the three scoring categories with the class so they know what is being assessed.
Answer Key *On page 251*			See here for answers to each worksheet.	

LETTUCE THREE WAYS

This group activity brings the field trip to life as students get the opportunity to taste lettuce three ways: plain, with simple seasoning or with a creamy dressing.

MATERIALS

Head of romaine lettuce

Lemon and/or salt, or a homemade vinaigrette *(see recipe on following pages)*

Store-bought creamy salad dressing

COLLABORATE WITH YOUR CAFETERIA

Consider partnering with your school nutrition team to obtain these food items and/or prepare a lettuce-wrap-style dish for your taste test. Be sure to contact them ahead of time, discuss the support you will need and show gratitude for their collaboration!

SUGGESTED QUESTIONS

Lead a discussion as your students try lettuce three different ways. Questions like the following can help kids better connect with their food, think about their preferences and encourage them to make nutritious choices in the future.

Before the tasting:

1. *Have you tried romaine lettuce before? How did you eat it? What did you think?*
2. *If not, what do you think it will taste like?*
3. *Did you know that there are hundreds of lettuce types? How do you think the different kinds look, feel and taste different from each other?*

As they try the plain lettuce:

1. *What do you think of the texture of the plain lettuce? Is it crunchy or soft?*
2. *Describe the flavor. Is it like lettuce you've tasted before? If yes, how so? If not, how is it different?*
3. *How would you feel about eating fresh lettuce as a snack? Why? What might you eat it with?*

As they try the lettuce with a squeeze of lemon, sprinkle of salt or homemade vinaigrette:

1. *How is this lettuce similar to the plain lettuce you just tried?*
2. *How is it different?*
3. *Have you eaten lettuce like this before? How else have you had it? Which way do you prefer?*

As they try the lettuce with the creamy dressing:

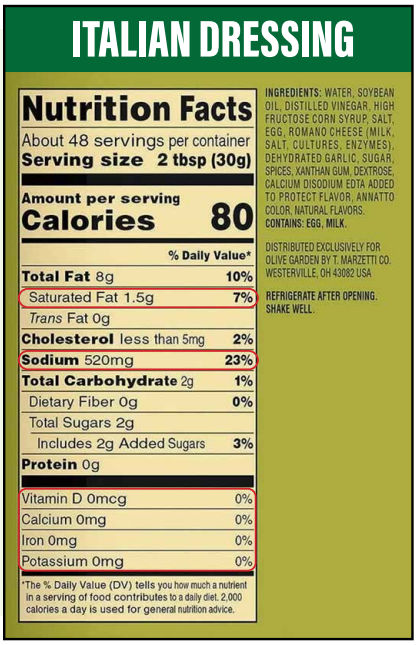
1. *How does the texture of this lettuce compare to the other lettuce you tried?*
2. *Describe how the creamy dressing looks and tastes. How is it the same or different from the lemon, salt or vinaigrette you tried?*
3. *Before today, did you know that adding different dressings can change the texture of the lettuce? What other dips, dressings or sauces might you try eating with lettuce?*
4. *What's one new way you'd like to try eating lettuce after today?*

TEACHER TIP:

Use this as a quick nutrition lesson. Explain that whole foods with just one ingredient — like fresh lettuce — are usually more nutritious than packaged foods with a long list of ingredients.

A food with lots of ingredients — like store-bought dressing — is like a puzzle with many pieces, and some pieces might not be so nutritious (like added sugar). Simple foods you recognize are better for your body and help you feel your best.

Pass around the dressing bottle and read the ingredient list together. Ask: "Any long words we can't say?" Then you may point out the amount of sodium and saturated fat, and lack of vitamins in one serving. Encourage students to compare this to fresh lettuce. There isn't an ingredient list — because it's just lettuce!



ALTERNATE IDEAS

If you have extra time to prepare, or if your school's nutrition team agrees to prepare a dish for your taste test, here are some great options to use in place of either of the dressing options:

- **Lettuce varieties side by side**
- **Chilled vs. room-temperature lettuce**
- **Lettuce as a dipper (with hummus or ranch)**
- **"Massaged" romaine (massage vinaigrette into lettuce for a change in taste and texture)**
- **Lettuce wrap burger sliders**
- **Lettuce boats with Southwestern style fillings**
- **Lettuce cups with Asian-inspired chicken filling**

LEMON AND OLIVE OIL VINAIGRETTE RECIPE

Estimated Yield: About ½ cup dressing (4 two-tablespoon servings)

EQUIPMENT REQUIRED

- Small jar with a tight-fitting lid
- Measuring cup
- Measuring spoons
- Paper or cloth towels for spills
- Bowls or cups to serve

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- ⅓ cup extra virgin olive oil
- 1 tablespoon white wine vinegar or apple cider vinegar
- 1 tablespoon lemon juice
- 2 teaspoons honey or sugar
- ¼ teaspoon garlic powder
- ¼ teaspoon salt
- Pinch black pepper

DIRECTIONS

1. Combine all ingredients in the small jar.
2. Seal jar tightly and shake vigorously until dressing appears combined and slightly cloudy.
3. Serve over chopped romaine.

TIP: You might choose to demonstrate how to make the dressing for the class, or have students work in small groups to shake and mix their own jars as a hands-on activity. Observe how the oil and vinegar combine/emulsify, then discuss why they eventually separate into distinct layers.

CUSTOMIZE YOUR DRESSING

Switch up your dressing by experimenting with other flavors. Stir in a tablespoon of grated Parmesan cheese for a richer, cheesy flavor. Add a teaspoon of Dijon mustard to add a little kick and help the dressing emulsify. Or have fun playing with different seasonings and herbs like basil, Italian seasoning or chives.

LETTUCE LAB: WHAT MAKES WATER CLIMB A LEAF?

TEACHER GUIDE

In this investigation, students place two romaine leaves in dyed water — one left whole, one with the leafy part trimmed down to its white rib — and compare how fast and how brightly the color appears in each. The trimmed leaf is the surprise: Because every cut edge is an open tube where water can escape, the dye races to those edges and pools there, often within a single class period. Students see, with their own eyes, that the brightest spots mark where water is leaving the leaf fastest. It ties directly to what they saw on Traders Hill Farm, where nutrient-rich water travels from the fish tanks, up through the roots and out into every leaf.

The Science: Plants move water through tiny tubes called **xylem** that run from the roots up into every leaf. Water isn't pushed up — it's **pulled**. As water evaporates from the leaf's surface into the air (**transpiration**), it tugs the next water molecule up behind it, and the whole column of water holds together and rises, a lot like sipping juice through a straw. The dye rides along with the water, so wherever water exits fastest, the dye piles up and shows brightest.

Why the trimmed leaf matters: *An intact blade has a waxy coating and tiny pores that slow water's escape, so its color spreads gradually along the veins. A trimmed rib has* ***open, exposed xylem*** *all along its cut edges — an unobstructed exit. Water rushes out there, so the dye concentrates into a bold line right at the cuts. That contrast is the whole lesson, and students can reason their way to it if you let them.*

Time: ~15-20 minutes setup

Check after a few hours, but the boldest results appear the next day. If you can, start in the morning so students see progress before the day ends. Check back again the next day.

SETUP TIP: Re-cut each stem right before the students stand it in the water. A fresh cut reopens the tubes and is the #1 thing that makes color show.

MATERIALS (PER GROUP)

- **Pale inner romaine leaves: 2 per group, cut from the same head and as close to the same size as possible, plus a few extras (some won't take the dye well)**
- **Clear cups: 2 per group**
- **Water**
- **Dark food coloring: red or blue work best; 15–20 drops per cup for a deep color**
- **Scissors**
- **Ruler: for measuring both leaves before the test begins**
- **Timer or clock: for recording observation times**
- **Paper plates or newspaper: the rib holds a lot of water and slicing gets wet**
- **Paper towels: for drips and dye spills (Dye will stain hands and fabric.)**
- **Magnifying glass (optional): for viewing the xylem lines up close**
- **Aprons or old shirts (optional): food coloring stains hands and clothes**

Ask your cafeteria for a few heads of romaine if you can. Pale inner leaves show the color far better than the dark outer ones.

Standardize the trim. This is where results can go sideways between groups. Show the class exactly what "trimmed" means: green blade snipped off both sides, rib and tip left intact. If one group barely trims and another strips it bare, their data won't be comparable, which is worth pointing out as a real-world lesson in why scientists standardize procedures.

WHAT TO EXPECT / TROUBLESHOOTING

- **What success looks like:** Leaf B (trimmed) shows a bold, concentrated line of color right along its cut edges, often visible within an hour. Leaf A (whole) colors more slowly and diffusely, following its veins and midrib.
- **Faint color?** The dye may be too weak, the cut wasn't fresh or not enough time has passed. Add more dye, re-cut the base and wait longer (overnight is best).
- **No color at all?** The leaf may be too thick or dark, or the base dried out and sealed. Try a paler inner leaf with a fresh cut.
- **Both leaves look the same?** The trim was too light. More blade needs to come off so the rib is genuinely exposed.
- **Leaf wilted or slimy?** The leaf was old, or it's sitting too deep. Use a fresh inner leaf and about an inch of water.

FACILITATING THE DISCUSSION

Use the "Defend Your Conclusion" questions on the student sheet to guide students from what they saw to what caused it to how it works on the farm. Find an answer key to the right.

Student Sheet "Analyze: Defend Your Conclusion" Answer Key:

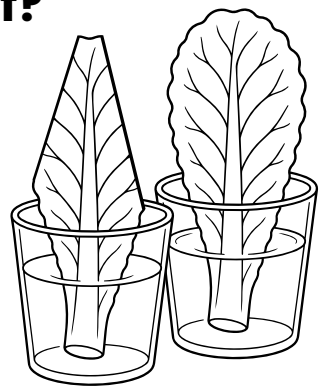
1. **Which showed color faster?** Leaf B, the trimmed one (usually clearly ahead by the 30-minute check).
2. **Where did the color collect?** Leaf A: gradually along the veins and mid-rib. Leaf B: concentrated in a bright line right along the cut edges, where the xylem is open and water escapes fastest.
3. **Prediction and evidence:** Accept any prediction. Require students to cite specific times and brightness numbers from their table, not just a yes or no.
4. **Farm connection:** Both show water being pulled up from the bottom. At Traders Hill Farm, nutrient-rich water moves from the fish tanks to the roots, up the stem and out into the leaves. As water evaporates from those leaves, it keeps tugging more up behind it, feeding the whole plant all the way to the top.

EXTEND LEARNING

- **Change the environment:** Put one cup in direct sun and one in shade, or aim a fan at one. Faster evaporation means faster color. Students can predict this before testing it.
- **Look closer:** Slice a rib open lengthwise and view the xylem with a magnifying glass, or hold a dyed leaf up to a window. The colored veins glow and are much easier to trace.
- **Graph it:** Plot brightness (1–5) against time for both leaves on the same grid. Two lines on one graph make the difference impossible to miss and hit the data standards directly.

Name _____ **Date** _____

Lettuce Lab: What Makes Water Climb a Leaf?



At Traders Hill Farm, water is always on the move, carrying nutrients from the fish to the lettuce roots. But how does water travel *up* through a plant, against gravity? In this investigation, you'll find out by watching colored water move through two leaves that are shaped differently, making the invisible visible.

Our Question:

How does trimming the leaf blade change how colored water moves?

Materials (per group)

- Pale inner romaine leaves: 2 per group, cut from the same head and as close to the same size as possible, plus a few extras (some won't take the dye well)
- Clear cups: 2 per group
- Water
- Dark food coloring: red or blue works best; 15–20 drops per cup for a deep color
- Scissors
- Ruler: for measuring both leaves before the test begins
- Timer or clock: for recording observation times
- Paper plates or newspaper: the rib holds a lot of water and slicing gets wet
- Paper towels: for drips and dye spills (dye stains!)
- Magnifying glass (optional): for viewing the xylem lines up close
- Aprons or old shirts (optional): food coloring stains hands and clothes

Set Up a Fair Test

1. **Fill both cups with the same amount of water** and stir in the same number of drops of red or blue food coloring.
2. **Prepare Leaf A:** full blade. Leave this romaine leaf whole, with all its green.
3. **Prepare Leaf B:** trimmed. Carefully snip the green blade off both sides. Leave the white rib and the very tip intact.
4. **Make a fresh cut** — don't skip this!

   Right before you put each leaf in its cup, snip straight across the bottom of the leaf to make a clean, fresh cut.

   Why? The bottom of a leaf seals itself shut once it's been sitting out — like a scab. A fresh cut reopens the tiny tubes so water can climb inside. If you skip this step, your leaf may not take up any color at all.

   Cut both leaves the same way and put them in the water **right away**.
5. **Start your timer** as soon as both leaves are standing in their cups. Record the clock time on your lab sheet.

This lettuce is for science, not snacking.
Food coloring stains — protect your clothes and your table.

Continued →

Lettuce Lab Log

Predict

Before you start, write your prediction: Which leaf do you think will show the color faster and brighter? And where on each leaf do you think the color will collect? Why?

Observe and Describe

Check your leaves after about 30 minutes, again after a few hours, and again the next day if you can. Each time, look closely and record on your worksheet for each leaf:

- Where is the color?
- How bright is it, on a scale of 1 (barely any) to 5 (bold and vivid)?
- On a separate page, sketch what you see so you can compare over time.

Time checked	Leaf A — Full blade (Where is the color? brightness 1–5)	Leaf B — Trimmed rib (Where is the color? brightness 1–5)
Start (0 min)		
After ~30 min		
After ____ hours		
Next day		

Analyze: Defend Your Conclusion

1. Which leaf showed color faster? _____

2. Where did the color collect on each leaf? On the trimmed rib, watch what happens right at the cut edges. What did you notice there? _____

3. Was your prediction correct? What does the evidence show? _____

4. How is this like the way water travels from the fish tanks all the way up into the lettuce plants at Traders Hill Farm? _____

Look Closer

Try holding a dyed leaf up to a window or light. The colored veins glow and are much easier to trace. A magnifying glass makes the xylem lines and the rest of the leaf structure even easier to see up close.

Name _____ **Date** _____

Romaine Lettuce Video Trivia & Farm Math

Write a complete sentence to answer each question below.

1. In aquaponics, the fish help the lettuce grow. Explain how the fish help feed the lettuce plants.

_____

_____

2. What does it mean when a lettuce plant "bolts"? _____

_____

3. Name one reason eating lettuce is good for your body. _____

_____

Circle whether the statements below are true or false.

4. At Traders Hill Farm, lettuce is grown in water instead of soil.	**TRUE** | **FALSE**
5. A garden outside can grow more lettuce in a small space than a greenhouse can.	**TRUE** | **FALSE**
6. Lettuce grows best in cold weather, around 40°F.	**TRUE** | **FALSE**

Choose the correct word to fill each blank.

Word Bank: **fish · nursery · hydroponics**

7. _____ means growing plants in water instead of soil.
8. Adding _____ to a hydroponic system turns it into an aquaponic system.
9. A _____ is the place on the farm where lettuce plants first start growing from seeds.

Continued →

Farm Math

Solve each problem and write your answer in the box.

1. Romaine lettuce takes about 40 days to grow. If 15 days have already passed, how many more days until the lettuce is ready to pick?

_____ days

2. Each flat holds 25 lettuce plants. One row on the farm has 50 flats. How many lettuce plants are in a full row?

_____ plants

3. A row has 50 flats. The workers have already planted 32 flats. If they can plant 6 more flats each hour, how many more hours until the row is finished?

_____ hours

4. Remember that one row holds 50 flats, and each flat holds 25 lettuce plants. Farmer Tracy wants to harvest one full row and share it equally among 8 school cafeterias. How many lettuce plants will each cafeteria receive, and will she have any leftover? If so, how many?

_____ plants

_____ leftover plants

Name _____ **Date** _____

Farm Math: Lettuce

At Traders Hill Farm, romaine lettuce grows in **8 lanes**. Seedlings start in trays called **flats**, and each flat holds **25 plants**. **50 flats** fit in one row. Nearby, **5 tilapia tanks** (with about **200 fish each**) feed the plants through aquaponics. From seed to harvest, romaine takes about **40 days** to grow.

Directions: Use these farm facts to solve the problems below. Show your work and write your answer in the box.

1. The farm has 8 lanes of romaine lettuce, and each lane has the same number of plants. Altogether, the farm has 10,000 plants. Write and solve an equation using "n" for the number of plants in one lane.

   Equation:

   Answer: _____

2. The farm has 5 tilapia tanks, and each tank holds about 200 fish. Write a multiplication equation and solve it to find about how many tilapia live at the farm in all.

   Equation:

   Answer: _____

3. A crop of lettuce takes about 40 days to grow from seed to harvest. The water pumps run 24 hours a day, every day. How many total hours do the pumps run during one crop cycle?

   Answer: _____

4. A farmer has 1,355 lettuce seedlings from the nursery ready to be put into flats. If 25 plants fit on one flat, how many flats will the farmer need to plant all the lettuce? (Careful — think about the leftover plants!)

   Answer: _____

   4a. 50 flats fit in one row. How many rows will the farmer need for all of those flats?

   Answer: _____

5. All 8 lanes are harvested (see your answer to question 1 for the number of plants per lane). The heads are packed into cases, with 24 heads per case. How many full cases can the farm fill, and how many heads of lettuce will be left over? Show your work.

Full cases: _____

Heads left over: _____

6. The chart below shows how many cases of lettuce the farm harvested each day for one week.

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Cases harvested	280	300	250	320	290

6a. How many cases did the farm harvest total that week?

Answer: _____

6b. Which day had the most cases, and which had the fewest? What is the difference between them?

Most: _____ Fewest: _____ Difference: _____

Name _____ **Date** _____

Ways to Grow Lettuce

Directions: Read the passage about how lettuce is grown. Then, answer the questions.

Did you know there's more than one way to grow lettuce? In fact, there are three! Farmers can grow lettuce in soil, in water with added nutrients, or in water using fish.

The most common way is to grow lettuce in soil, out in an open field. The plant's roots pull water and nutrients from the dirt. This is how most store-bought lettuce is usually grown. But lettuce doesn't really need soil. It needs water and nutrients. So, farmers have found ways to grow it right in water. The catch is that the water must have nutrients added, or the plants won't survive.

There are two ways to add nutrients. **Hydroponic** lettuce grows in water, and farmers add the nutrients by hand. **Aquaponic** lettuce also grows in water, but its nutrients come from a surprising source: fish! The fish live in nearby tanks. As water flows out of the tanks, it passes through a filtration system that turns the fish waste into nutrients, the tiny bits of food plants need. That nutrient-rich water then flows to the lettuce, where the roots drink it up.

That is the kind of farming they do at Traders Hill Farm in Hilliard, Florida. The farm was founded in 2013, and its mission is to help people live healthier lives. At Traders Hill, farmers raise their lettuce inside greenhouses. Greenhouses are special buildings that protect plants from the outdoors. Inside, the lettuce grows in pools of water. Nearby, fish in tanks provide nutrients for the lettuce plants. This is what makes Traders Hill an aquaponic farm.

Growing indoors has big advantages. Outside in a field, a lot of lettuce goes bad and gets thrown away. But inside, the conditions are just right, so fewer plants are wasted. That also means the farm can grow fresh lettuce all year long, even when it is cold outside! Greenhouses also keep out bugs, so farmers use fewer harsh chemicals. That is healthier for you and for the environment. Because aquaponic and hydroponic systems reuse their water, they use far less of it than lettuce grown outdoors in a field.

Close Reading

Circle the best answer.

1. What is this passage ***mostly*** about?
   a. How fish live in the water tanks on a farm
   b. The three different ways farmers can grow lettuce
   c. Why lettuce is a healthy food to eat
   d. How to build a greenhouse

2. In the passage, the word ***nutrients*** means:
   a. kinds of soil
   b. substances that help plants grow
   c. tools that farmers use
   d. types of fish

3. According to the passage, what is one ***advantage*** of growing lettuce in a greenhouse?
   a. Farmers use fewer harsh chemicals.
   b. Lettuce grown outdoors uses fewer chemicals.
   c. Greenhouse lettuce cannot grow all year long.
   d. Lettuce grown outdoors can grow all year long.

4. Based on the passage, which of these is ***NOT*** a way farmers grow lettuce?
   a. By using nutrients from fish waste
   b. By planting lettuce in fishponds
   c. By adding nutrients to the water lettuce grows in
   d. By planting lettuce in the soil

Dig Deeper

Answer in complete sentences.

5. The passage says that when lettuce is grown indoors, fewer plants are wasted. Why do you think growing indoors leads to less waste? Use details from the passage to explain.

6. In one sentence, explain where aquaponic lettuce gets its nutrients.

Replay! Sum It Up

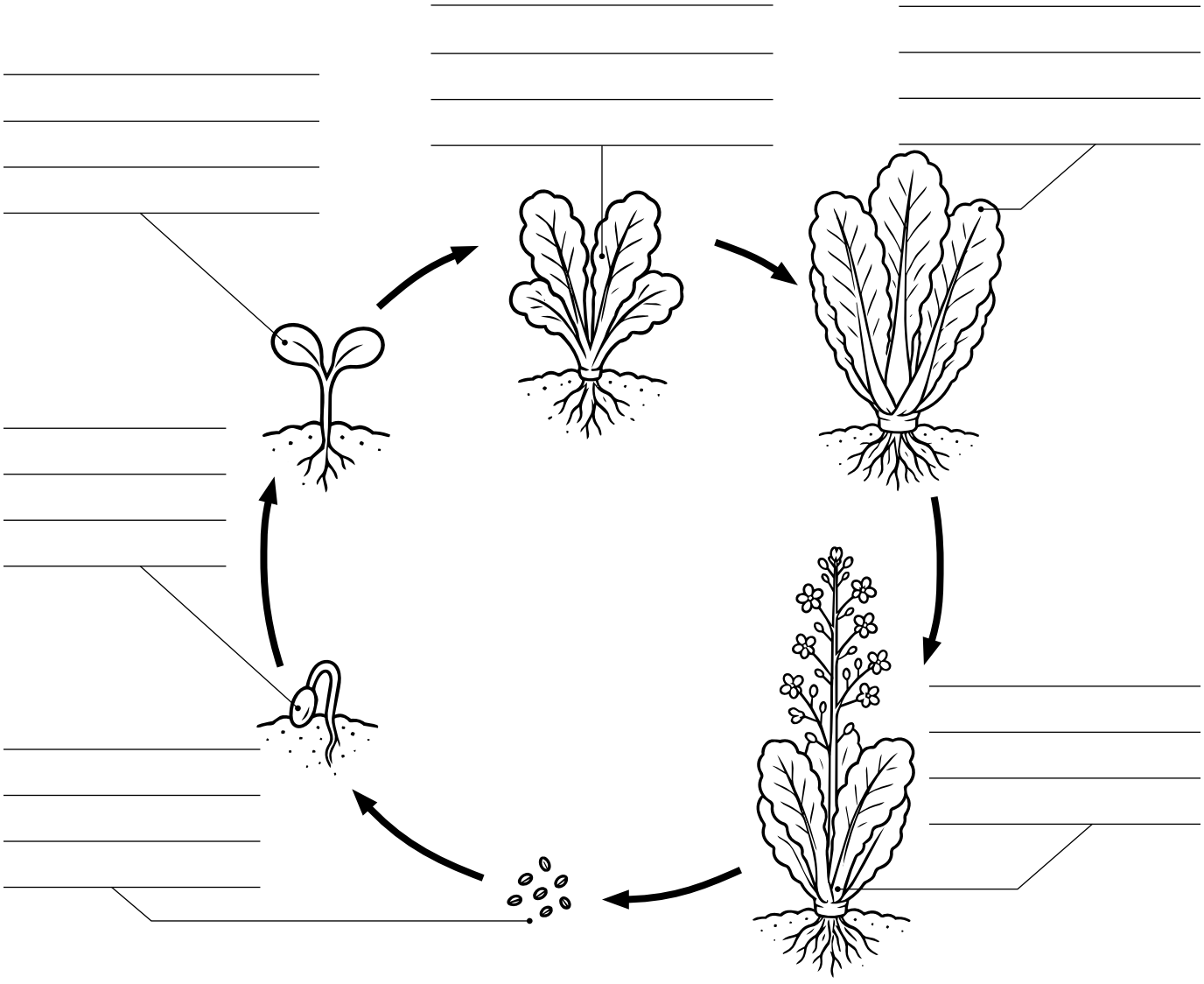
Using the passage **and** the video, write 3–4 sentences that summarize the different ways lettuce is grown.

Be sure to name all three methods and tell one way aquaponic farming is different from growing lettuce in a field.

Name _____ **Date** _____

Life Cycle of Lettuce

Directions: Label each part of the lettuce plant's life cycle using the terms in the word bank. Then, briefly describe what is happening in each phase.



Word Bank		
Seed	Seedling	Mature Plant
Germination	Young Plant	Flowering/Bolting (reproduction)

Name _____ **Date** _____

Expository Essay Prompt

Write an expository essay explaining how aquaponic farming grows lettuce without soil and giving reasons a school might choose to serve locally grown lettuce. Use facts and details from the video to support your ideas.

Be sure to:

- Introduce your topic clearly and state a central idea.
- Group related information into paragraphs.
- Develop your topic with facts, details and examples from the video.
- Use linking words and phrases (*because, another reason, for example, also, finally*) to connect your ideas.
- Write a conclusion that wraps up your essay.
- Check your spelling, capitalization and punctuation.

Source Notes from the Video:

Facts you can use as evidence.

- Aquaponic lettuce grows in water, not soil — the roots hang in nutrient-rich water.
- The farm raises fish (tilapia). The filtration system turns the fish's waste into nutrients that feed the plants; the clean water flows back to the fish, all day, every day.
- The farm grows lettuce **365 days a year**, even when it is cold outside.
- Growing indoors, the farm grows about **5 times more lettuce** in the same space as an outdoor field, and uses far less water.
- Screens and covers keep out pests, so the farmers use **fewer harsh chemicals**.
- Romaine takes about **35–40 days** to grow.
- Lettuce is harvested early in the morning and shipped to local schools the **same day**, so it arrives very fresh. The farm's biggest customer is the school district.

Plan Your Essay

Introduction

Hook (an interesting first sentence): _____

_____

What will your essay explain? (central idea): _____

_____

Facts & Details (Body)

Part 1: How does aquaponic farming grow lettuce without soil?

- Detail: _____

  _____

- Detail: _____

  _____

Part 2: Why might a school choose locally grown lettuce? (Give at least two reasons.)

- Reason: _____

  _____

- Reason: _____

  _____

Conclusion

Restate your central idea in a new way: _____

_____

A final thought for your reader: _____

_____

Write Your Essay

Write your essay on a separate sheet of paper.

Teacher Scoring Guide

Purpose, Focus & Organization (structure): Look for a clear central idea, a logical order (introduction → body → conclusion), grouped paragraphs and transitions connecting ideas.

Evidence & Elaboration (development): Look for relevant facts and details from the video, explained in the student's own words — e.g., that plants grow in nutrient-rich water instead of soil; that fish waste becomes the plants' food; and reasons for local lettuce such as freshness (same-day delivery), year-round supply, less water and fewer chemicals, and supporting a nearby farm.

Conventions: Look for complete sentences, correct capitalization, end punctuation and grade-appropriate spelling.

Sample strong points a student might include:

- How it works without soil: The roots sit in water full of nutrients; the fish and the filtration system provide those nutrients; and the water recirculates so little is wasted.
- Reasons a school might choose local lettuce: It arrives shortly after being picked, so it is very fresh; it can be grown all year; it uses less water and fewer chemicals; and buying it supports a local Florida farm.

ANSWER KEY

Name _____ Date _____

Romaine Lettuce Video Trivia

Write a complete sentence to answer each question below.

1. In aquaponics, the fish help the lettuce grow. Explain how the fish help feed the lettuce plants.
The fish make waste, and the farm's system turns that waste into nutrients (food) that the lettuce plants use to grow.

2. What does it mean when a lettuce plant "bolts"? **It means the plant starts growing flowers and going to seed. Its leaves turn bitter, so it does not taste as good.**

3. Name one reason eating lettuce is good for your body. **Accept either: Romaine is about 95% water, so it helps keep you hydrated; or it has vitamin K, which helps keep your bones strong.**

Circle whether the statements below are true or false.

4. At Traders Hill Farm, lettuce is grown in water instead of soil.	**(TRUE)** FALSE
5. A garden outside can grow more lettuce in a small space than a greenhouse can.	TRUE	**(FALSE)**
6. Lettuce grows best in cold weather, around 40°F.	TRUE	**(FALSE)**

Choose the correct word to fill each blank.

Word Bank: **fish** · **nursery** · **hydroponics**

7. **Hydroponics** means growing plants in water instead of soil.
8. Adding **fish** to a hydroponic system turns it into an aquaponic system.
9. A **nursery** is the place on the farm where lettuce plants first start growing from seeds.

Continued →

Farm Math

Solve each problem and write your answer in the box.

1. Romaine lettuce takes about 40 days to grow. If 15 days have already passed, how many more days until the lettuce is ready to pick?

40 - 15 = 25 days

2. Each flat holds 25 lettuce plants. One row on the farm has 50 flats. How many lettuce plants are in a full row?

25 x 50 = 1,250 plants

3. A row has 50 flats. The workers have already planted 32 flats. If they can plant 6 more flats each hour, how many more hours until the row is finished?

50 - 32 = 18 flats left;
18 ÷ 6 = 3 hours hours

4. Remember that one row holds 50 flats, and each flat holds 25 lettuce plants. Farmer Tracy wants to harvest one full row and share it equally among 8 school cafeterias. How many lettuce plants will each cafeteria receive, and will she have any leftover? If so, how many?

50 x 25 = 1,250 plants
1,250 ÷ 8 = 156 remainder 2

156 plants plants
2 leftover plants leftover plants

Name _____ Date _____

Farm Math: Lettuce

At Traders Hill Farm, romaine lettuce grows in **8 lanes**. Seedlings start in trays called **flats**, and each flat holds **25 plants**. **50 flats** fit in one row. Nearby, **5 tilapia tanks** (with about **200 fish each**) feed the plants through aquaponics. From seed to harvest, romaine takes about **35–40 days** to grow.

Directions: Use these farm facts to solve the problems below. Show your work and write your answer in the box.

1. The farm has 8 lanes of romaine lettuce, and each lane has the same number of plants. Altogether, the farm has 10,000 plants. Write and solve an equation using "n" for the number of plants in one lane.

Equation:

8 × n = 10,000 (or 10,000 ÷ 8 = n).
n = 1,250 plants per lane.

Answer: _____

2. The farm has 5 tilapia tanks, and each tank holds about 200 fish. Write a multiplication equation and solve it to find about how many tilapia live at the farm in all.

Equation:

5 × 200 = 1,000.
About 1,000 tilapia.

Answer: _____

3. A crop of lettuce takes about 40 days to grow from seed to harvest. The water pumps run 24 hours a day, every day. How many total hours do the pumps run during one crop cycle?

40 × 24 = 960 hours.

Answer: _____

4. A farmer has 1,355 lettuce seedlings from the nursery ready to be put into flats. If 25 plants fit on one flat, how many flats will the farmer need to plant all the lettuce? (Careful — think about the leftover plants!)
1,355 ÷ 25 = 54 remainder 5. Fifty-four flats hold 1,350 plants, and 5 plants are still left, so the farmer needs 55 flats (round up, the leftover plants still need a flat).
Answer: _____

4a. 50 flats fit in one row. How many rows will the farmer need for all of those flats?

55 ÷ 50 = 1 remainder 5. One row isn't enough for all 55 flats, so the farmer needs 2 rows.

Answer: _____

5. All 8 lanes are harvested (see your answer to question 1 for the number of plants per lane). The heads are packed into cases, with 24 heads per case. How many full cases can the farm fill, and how many heads of lettuce will be left over? Show your work.

8 × 1,250 = 10,000 heads. 10,000 ÷ 24 = 416 remainder 16. The farm can fill 416 full cases, with 16 heads left over.

Full cases: **416**

Heads left over: **16**

6. The chart below shows how many cases of lettuce the farm harvested each day for one week.

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Cases harvested	280	300	250	320	290

6a. How many cases did the farm harvest total that week?

280 + 300 + 250 + 320 + 290 = 1,440 cases.

Answer: _____

6b. Which day had the most cases, and which had the fewest? What is the difference between them?

Most: Thursday (320). Fewest: Wednesday (250).
Difference: 320 - 250 = 70 cases.

Most: _____ Fewest: _____ Difference: _____

ANSWER KEY

Close Reading

Circle the best answer.

1. What is this passage ***mostly*** about?
   a. How fish live in the water tanks on a farm
   b. The three different ways farmers can grow lettuce
   c. Why lettuce is a healthy food to eat
   d. How to build a greenhouse

2. In the passage, the word ***nutrients*** means:
   a. kinds of soil
   b. substances that help plants grow
   c. tools that farmers use
   d. types of fish

3. According to the passage, what is one ***advantage*** of growing lettuce in a greenhouse?
   a. Farmers use fewer harsh chemicals.
   b. Lettuce grown outdoors uses fewer chemicals.
   c. Greenhouse lettuce cannot grow all year long.
   d. Lettuce grown outdoors can grow all year long.

4. Based on the passage, which of these is ***NOT*** a way farmers grow lettuce?
   a. By using nutrients from fish waste
   b. By planting lettuce in fishponds
   c. By adding nutrients to the water lettuce grows in
   d. By planting lettuce in the soil

Dig Deeper

Answer in complete sentences.

5. The passage says that when lettuce is grown indoors, fewer plants are wasted. Why do you think growing indoors leads to less waste? Use details from the passage to explain.

Sample answer: Indoors, the conditions are "just right" and greenhouses protect the plants from the outdoors and keep out bugs, so more plants grow well. Outside in a field, weather and pests cause more lettuce to go bad, so more of it is thrown away.

6. In one sentence, explain where aquaponic lettuce gets its nutrients.

Accept: "The fish's waste is turned into nutrients that feed the plants." (Also accept the surrounding sentence about the nutrients coming from fish.)

VIRTUAL FARM FIELD TRIPS
4-5 Worksheet
Lettuce
Standard(s) Supported: ELA.4.C.3.1, ELA.4.R.3.2, SC.4.L.16.2 / ELA.5.C.3.1, ELA.5.R.3.2

Replay! Sum It Up

Using the passage **and** the video, write 3–4 sentences that summarize the different ways lettuce is grown.

Be sure to: name all three methods and tell one way aquaponic farming is different from growing lettuce in a field.

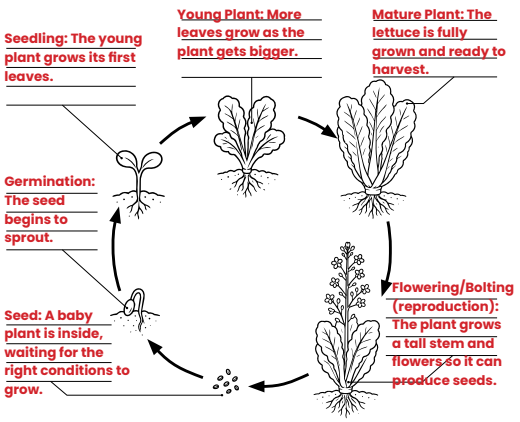
Sample answer: Lettuce can be grown in three ways: in soil in an open field, in water with nutrients added by hand (hydroponic) or in water using fish (aquaponic). In aquaponic farming, like at Traders Hill Farm, the fish's waste feeds the plants instead of farmers adding nutrients by hand. Growing lettuce indoors in water also wastes fewer plants and uses less water than growing it outside in a field.

VIRTUAL FARM FIELD TRIPS
4-5 Worksheet
Lettuce
Standard(s) Supported: SC.4.L.16.4 / SC.4.L.16.1

Name _____ **Date** _____

Life Cycle of Lettuce

Directions: Label each part of the lettuce plant's life cycle using the terms in the word bank. Then, briefly describe what is happening in each phase.



Word Bank		
Seed	Seedling	Mature Plant
Germination	Young Plant	Flowering/Bolting (reproduction)

LET'S LEARN ABOUT FLORIDA GREEN BEANS!

This Virtual Farm Field Trip unit is all about green beans. It begins with an informative 5-minute video, transporting students to R.C. Hatton Farms near Hobe Sound, Florida. Your students will meet farmers Charlie and Jonathan to learn how Florida green beans are planted, grown, harvested and distributed.

We encourage you to expand the learning experience using this section's worksheets and guided activities, including a taste test. You may choose to use all these resources or pick the ones best suited to your classroom.

ACCESS VIRTUAL FARM FIELD TRIP

Scan code or visit:
FarmToSchoolFL.com/FieldTrips

FLORIDA GREEN BEAN FUN FACTS

- **Green beans are part of the legume family, like black beans, lima beans and chickpeas.**
- **Green beans have vitamin C, which helps keep your body fueled, and fiber, which helps your body digest food.**
- **Green beans make a snap when you break them in half. That's why they're often called snap beans.**
- **Green beans used to be called "string beans" because some varieties had a tough string along the pod you had to pull off before eating. Farmers later created stringless beans, but the nickname stuck around.**
- **Some green beans climb up tall like a vine, and some grow on short, bushy plants.**
- **We eat green beans as a vegetable, but scientists consider them a fruit because they are the seed-holding pod of the plant. Open one up and you'll find tiny bean seeds tucked inside!**

BEFORE YOU WATCH: DISCUSSION STARTERS

Get students thinking about agriculture, science and nutrition by asking questions such as:

- *Where do the vegetables you eat come from and how do they reach your school?*
- *What do plants need to grow? What happens if they don't get what they need?*
- *Have you eaten green beans before — raw or cooked? What did you think?*
- *A green bean holds seeds inside. What other foods have seeds inside?*
- *As you watch this video, listen for how the farm uses water to help the beans grow.*

TRIVIA TOSS

Want to liven up your video trivia sheet exercise? Have students answer questions or complete their worksheets separately, then come together in teams to compare and finalize answers. Go around the room asking each team a question. If they answer it correctly, they get a chance to toss a ball into one of three buckets to get a prize for their team. Prizes might be a homework pass, free time, extra computer time or lunch in the classroom.

AFTER YOU WATCH: SUGGESTED QUESTIONS

Find video comprehension questions, answers and video timestamps for finding those answers below. See the worksheet section of these resources for a trivia sheet covering the questions below for more independent student work.

- *What are commodities?* ***(Crops grown and harvested on a farm; 0:26)***
- *Why do farmers build raised beds before planting green beans?* ***(To help keep seeds from getting drowned by too much water when it rains; 0:34)***
- *About how many green bean pods does a farmer hope to grow on each plant?* ***(About 20 pods per plant; 0:58)***
- *True or false: The little white flowers on a green bean plant can turn into bean pods.* ***(True; 1:05)***
- *Green beans are part of which plant family?* ***(Legume; 2:33)***

Teacher Tip: Ask students to name other foods in the legume family. Answers might include black beans, kidney beans, chickpeas and lentils.

- *How long does it take a tiny bean pod to grow into a full-sized pod?* ***(About 3 weeks; 1:18)***
- *What kind of effect helps water move through the soil to plant roots?* ***(Capillary effect; 2:08-2:26)***

Teacher Tip: Have students think of other resources that plants need to make their own food besides water.

- *True or false: Green beans are a good source of vitamin C and fiber.* ***(True; 3:37)***

GEOGRAPHY MOMENT

Ask students to find Hobe Sound on a map of Florida. (Hint: It's on the southeastern coast, east of Lake Okeechobee and about 35 miles north of West Palm Beach.)

USING THESE TEACHING TOOLS

Below is an overview and guide for using the teaching tools included in this section, including guided activities, recipes and worksheets. We've included the education standards each tool complements, materials needed for each activity, a brief overview of each tool and tips for building your lessons.

You can find each of these tools on the following pages, along with additional information and pointers.

GUIDED ACTIVITIES

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Video, Discussion Questions and Trivia Toss (in Classroom Guide) *On page 253*	Standard(s) Supported: SC.4.L.16.1, SC.4.P.8.1, HE.4.PHC.1.4, HE.5.PHC.1.4	- 3 buckets, boxes or similar containers - Palm-sized balls (enough for each team to have one)	This activity gets students out of their seats as they respond to questions about the Virtual Farm Field Trip video.	Use this activity to complement or reinforce the Green Bean Video Trivia sheet. You might also watch the video a second time after the discussion so students can listen for details they missed.
Green Beans Three Ways *On page 259*	Standard(s) Supported: SC.4.P.8.1, SC.4.P.9.1, HE.4.PHC.1.4, HE.5.PHC.3.2	- Raw green beans in the pod - Freshly steamed green beans (see Quick Steam Green Beans Recipe) - Quick-pickled "dilly" beans (see Dilly Beans Recipe)	In this activity, you'll guide students through tasting green beans three ways – fresh in the pod, steamed and quickly pickled.	Start by asking your school nutrition team if they can support you by acquiring and/or preparing the food items. Use this activity to introduce students to new, nutritious foods. Educate them on the nutritional differences between whole foods – like fresh green beans – and packaged foods with long ingredient lists – like frozen, breaded green beans.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Recipe: Quick Steam Green Beans *On page 261*	Standard(s) Supported: SC.4.P.9.1, SC.4.P.8.1	- Large microwave-safe bowl - Microwave-safe plate or lid - Tongs - Measuring spoons - Bowls or cups to serve - Small microwave-safe bowl (optional, for customizing). - Adjust quantities based on class size: 1 pound fresh green beans, washed with ends trimmed - 2 tablespoons water	Use this recipe to prepare the steamed green beans for the Green Beans Three Ways exercise.	At this grade level, students can trim the beans, measure the water and time the cooking in groups, with you handling the microwave and the hot bowl. Multiply ingredient quantities by the number of groups.
Recipe: Dilly Beans *On page 262*	Standard(s) Supported: SC.4.P.9.1, SC.4.P.8.1	Equipment needed: - 1 quart-sized mason jar with lid - Measuring cup - Spoon to stir - Kid-safe scissors - Small saucepan - Heat source, such as a stovetop, hot plate or classroom-approved cooking appliance (for teacher use only). Materials and ingredients (adjust quantities based on class size): - 1 pound green beans, washed and trimmed to fit the jar standing upright - 1 cup white vinegar - 1 cup water - 1 tablespoon kosher salt - 3 cloves garlic, cut in half - 2 tablespoons fresh dill - 2 tablespoons sugar (optional)	Use this recipe to prepare the quick-pickled “dilly” beans for the Green Beans Three Ways exercise.	Older students can pour the warm brine with close supervision. Have students predict how the beans’ flavor, smell and texture will change during pickling, then compare the fresh and pickled beans and discuss the differences.

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Grow Green Beans From Seed: A Science Investigation (Teacher Guide and Student Sheets) *On page 263*	Standard(s) Supported: SC.5.N.1.1, SC.4.L.16.2, SC.4.L.16.1, MA.4.DP.1.3	- Packet of bush green bean seeds - Foam cups, at least four for the Sunny group and four for the Dark group, plus extras for demonstration plants - Sharpened pencils, for poking drainage holes - Seed-starting mix (avoid garden soil or topsoil, which hold too much water and can rot the seeds) - Trays or plates, to set under the cups and catch the water that drains out - A sunny windowsill and a dark closet or light-blocking box - Rulers (centimeters) - Water and a small watering cup - Seed Packet Reading page - Observation Log - Science Report page	In this multi-week investigation, students test whether seeds need sunlight to sprout by growing one group of bean seeds on a sunny windowsill and one in the dark. Both groups sprout, but only the sunny plants stay green and sturdy, introducing students to etiolation and photosynthesis.	This activity complements life science lessons on what plants need and math lessons on measurement and data. Keep the dark cups out of the light except for brief observations, and coach students to judge the plants by color and sturdiness rather than height alone, since the dark-grown plants may actually grow taller.

WORKSHEETS

TOOL	COMPLEMENTARY STANDARDS	MATERIALS NEEDED	ABOUT THIS TOOL	TEACHER TIPS
Green Bean Video Trivia & Farm Math *On page 270*	Standard(s) Supported: MA.4.AR.1.1, MA.4.AR.2.2, MA.5.AR.1.1	- Writing instrument	This worksheet tests students' comprehension of the Virtual Farm Field Trip by asking questions answered in the video, then applies farm facts to word problems.	You might hand the worksheet out before the video so students can answer as they go, or wait until after. Consider pairing it with the "Trivia Toss" activity in this Classroom Guide.
Farm Math: Green Beans *On page 272*	MA.4.AR.1.1, MA.4.AR.2.2, MA.5.AR.1.1, MA.5.AR.2.1, MA.5.AR.2.4, MA.4.M.1.2, MA.4.DP.1.2 / MA.4.DP.1.3	- Writing instrument	This worksheet opens with a box of farm facts, then asks students to use them across a set of multi-step problems: writing and solving equations, converting pounds to ounces, working with remainders and reading a table of one week's harvest.	This worksheet complements math lessons on equations, division and data. Students show their work and carry an answer forward from one problem to the next, so it suits partner work or a guided walkthrough as a class.
What's Inside a Flower? Flower Parts & Pollination *On page 274*	Standard(s) Supported: SC.4.L.16.1, SC.5.L.14.2	- Writing instrument - Crayons, colored pencils or markers (optional)	This worksheet has students (1) label a green bean flower using a word bank, (2) match each flower part with a description of its job and (3) number the four steps from pollination to a growing pod.	This worksheet complements life science lessons about plant reproduction. Green bean flowers usually pollinate themselves, so it also gives students a contrast to the bee-pollinated flowers they may know better.
Life Cycle of a Green Bean *On page 276*	Standard(s) Supported: SC.4.L.16.1	- Writing instrument	This worksheet has students label each stage of the green bean plant's life cycle using a word bank, then briefly describe what is happening in each phase.	This worksheet complements life science lessons about plant life cycles and reproduction. It builds on the 2–3 version by asking students to explain each stage rather than only order it.
Answer Key *On page 277*			See here for answers to each worksheet.	

GREEN BEANS THREE WAYS

This group activity brings the field trip to life as students get the opportunity to taste green beans three ways: fresh in the pod, steamed and quickly pickled.

MATERIALS

Raw green beans in the pod

Freshly steamed green beans *(see recipe on following pages)*

Quick-pickled "dilly" beans *(see recipe on following pages)*

COLLABORATE WITH YOUR CAFETERIA

Consider partnering with your school nutrition team to obtain these food items and/or prepare a green-bean-themed dish for your taste test. Be sure to contact them ahead of time, discuss the support you will need and show gratitude for their collaboration!

SUGGESTED QUESTIONS

Lead a discussion as your students try green beans three different ways. Questions like the following can help kids better connect with their food, think about their preferences and encourage them to make nutritious choices in the future.

Before the tasting:

- *Have you tried green beans before? What did you think?*
- *If not, what do you think they will taste like?*
- *Did you know that you can pickle green beans? Do you know what that means? How do you think pickling might change the green beans' texture or flavor?*

  Teacher Note: Pickling is a way of preserving food by soaking it in a salty or vinegar-based liquid, which can change its flavor and texture.

As they try the fresh green beans:

- *As you bit into the raw green bean, what did you hear? What did it feel like?*
- *Do you like the smell of the fresh green beans? How would you describe it?*
- *Describe the flavor. Is it like green beans you've tasted before? If yes, how so? If not, how is it different?*
- *How would you feel about eating fresh green beans as a snack? Why? What might you eat them with?*

As they try the steamed green beans:

- *How is the warm steamed green bean different from the cold, raw one? Does cooking change the way it tastes?*
- *What do you notice about the texture? Is the steamed bean softer or crunchier than the raw one?*
- *What do you notice about the color of the steamed green beans compared to the fresh ones? Is it brighter or darker?*
- *How do you feel after eating the steamed green beans? Would you like to try them again?*

As they try the pickled "dilly" beans:

- *Have you had regular pickles before? If so, how are the pickled green beans different from or similar to pickled cucumbers?*
- *How does the flavor of the dilly beans compare to the flavor of the fresh green beans? Is it saltier or more sour?*
- *Would you enjoy having dilly beans as a snack? Why or why not?*
- *Before today, did you know that you could change the taste and texture of vegetables by pickling them yourself? What other vegetables would you like to try pickling?*

TEACHER TIP:

Use this as a quick nutrition lesson. Explain that whole foods with just one ingredient — like fresh green beans — are usually more nutritious than packaged foods with a long list of ingredients.

A food with lots of ingredients — like a frozen package of crispy breaded green beans — is like a puzzle with many pieces, and some pieces might not be so nutritious (like lots of sodium). Simple foods you recognize are better for your body and help you feel your best.

Encourage students to count how many ingredients there are in these frozen breaded green beans. Then you may point out the amount of sodium and saturated fat in one serving. Encourage students to compare this to fresh green beans. There isn't an ingredient list — because it's just green beans!

FROZEN CRISPY BREADED GREEN BEANS

Nutrition Facts

About 4 Servings Per Container

Serving size 3 oz (84g/about 24 pieces)

Amount per serving

Calories 210

	% Daily Value*
Total Fat 11g	14%
Saturated Fat 2g	10%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 410mg	18%
Total Carbohydrate 23g	8%
Dietary Fiber 4g	14%
Total Sugars 1g	
Includes 0g Added Sugars	0%
Protein 3g	
Vitamin D 0mcg	0%
Calcium 30mg	2%
Iron 0.7mg	4%
Potassium 170mg	4%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

INGREDIENTS: GREEN BEANS, WHEAT FLOUR, SOYBEAN OIL, WATER, CONTAINS LESS THAN 2% OF: RICE FLOUR, SALT, MODIFIED CORN STARCH, FLAXSEED, SUGAR, LEAVENING (SODIUM ACID PYROPHOSPHATE, SODIUM BICARBONATE, MONOCALCIUM PHOSPHATE), YEAST EXTRACT, DEXTROSE, GARLIC POWDER, ONION POWDER, PAPRIKA EXTRACT (COLOR), SPICE, YEAST.

CONTAINS: WHEAT.

QUICK STEAM GREEN BEANS RECIPE

Estimated Yield: 1 pound green beans (~6 small servings)

EQUIPMENT REQUIRED

- Large microwave-safe bowl
- Microwave-safe plate or lid
- Tongs
- Measuring spoons
- Bowls or cups to serve
- Small microwave-safe bowl (optional, for customizing)

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- 1 pound fresh green beans, washed with ends trimmed
- 2 tablespoons water

DIRECTIONS

1. Add the green beans and water to the large microwave-safe bowl and cover with the microwave-safe plate or lid.
2. Microwave on high, checking at the halfway point, for 4–6 minutes, or until the beans are bright green and just tender when pierced with a fork. Time may vary.
3. Carefully uncover the beans (watch for steam) and drain any excess water.
4. Serve warm in cups or bowls.

CUSTOMIZE YOUR BEANS

For a more exciting flavor, melt 1 tablespoon butter or olive oil with 1 minced garlic clove (or ¼ teaspoon garlic powder) in the small microwave-safe bowl, microwaving in short bursts until just melted and fragrant. Pour over the drained beans, season with a pinch of black pepper and toss to coat.

You can also finish the beans with a squeeze of lemon juice or a sprinkle of grated Parmesan cheese.

DILLY BEANS RECIPE

TEACHER NOTE:

Pickled green beans are often called "dilly beans" because they're pickled with dill, a leafy herb that gives them a tangy, savory flavor.

Estimated Yield: 1 quart dilly beans

This activity can be completed as a teacher demonstration or in small groups with teacher assistance.

Students can help wash and pack the green beans, measure ingredients and observe the pickling process, while the teacher handles heating the brine — the mixture of water, vinegar and salt used to pickle and preserve foods — and pouring the hot liquid into the jars.

EQUIPMENT REQUIRED

- 1 quart-sized mason jar with lid
- Measuring cup
- Spoon to stir
- Kid-safe scissors
- Small saucepan
- Heat source, such as a stovetop, hot plate or classroom-approved cooking appliance (for teacher use only)

MATERIALS AND INGREDIENTS

Adjust quantities based on class size.

- 1 pound green beans, washed and trimmed to fit the jar standing upright
- 1 cup white vinegar
- 1 cup water
- 1 tablespoon kosher salt
- 3 cloves garlic, cut in half
- 2 tablespoons fresh dill
- 2 tablespoons sugar (optional)

DIRECTIONS

1. **Students:** Wash the green beans and trim them so they fit inside the jar. Pack the beans upright in the jar with the garlic and dill.
   a. **Tip:** Any beans that don't fit in the jar make a great raw snack — enjoy them fresh!
2. **Students:** Measure the vinegar, water, salt and sugar (if using) into a saucepan.
3. **Teacher:** Heat the mixture on a stovetop until it comes to a gentle boil, stirring until the salt and sugar dissolve.
4. **Teacher:** Carefully remove the brine from the heat and allow it to cool for 2–3 minutes.
5. **Teacher (or older students with close supervision):** Pour the warm brine into the jar until the green beans are completely covered.
6. **Students:** Secure the lid and gently shake the jar to combine the ingredients.
7. Place the jar in the refrigerator and let the beans pickle for at least 2 days before tasting.
8. Store refrigerated and enjoy within about 2 months.

CUSTOMIZE YOUR BEANS

For a spicy punch, add ¼ teaspoon red pepper flakes and ¼ teaspoon whole black peppercorns. Or try swapping half the white vinegar for red wine vinegar.

TEACHER TIP: Have students predict how the green beans' flavor, smell and texture might change during pickling. After tasting, compare the fresh and pickled beans and discuss the differences.

GROW GREEN BEANS FROM SEED: A SCIENCE INVESTIGATION

TEACHER GUIDE

In this multi-week investigation, students test the question: **Do bean seeds need sunlight to sprout?**

They plant two groups of green bean seeds, one on a sunny windowsill and one in a dark closet, then observe what happens over 2–3 weeks.

Students discover an unexpected result: Both groups sprout at about the same time. As the plants continue growing, however, important differences emerge. Through observation and measurement, students learn that seeds do not need light to germinate or even grow, but healthy plants need sunlight to stay green, make their own food and thrive.

MATERIALS

- **Packet of bush green bean seeds**
- **Foam cups — at least four for the "Sunny" group, four for the "Dark" group, plus a few extras for demonstration plants**
- **Sharpened pencils (for poking drainage holes)**
- **Seed-starting mix (avoid "garden soil" or "topsoil," which hold too much water and can rot the seeds)**
- **Trays or plates — to set under the cups and catch the water that drains out**
- **A sunny windowsill and a dark closet (or a box that blocks all light)**
- **Rulers (centimeters)**
- **Water and a small watering cup**
- **Seed Packet Reading page (on following pages)**
- **Observation Log (on following pages)**

HOW TO RUN THE INVESTIGATION

1. Read the Seed Packet

Before planting, have students read the seed packet and complete the Seed Packet Reading page, recording findings such as:

- Planting depth
- Days to germination
- Sun requirements

Point out that the packet calls for "full sun," and pose the investigation's question: The grown plant needs sun, but does the seed need light just to sprout?

2. Set Up the Investigation

You might have each individual student follow the instructions below, or sort them into groups.

1. Poke four small holes in the bottom of each foam cup with a sharpened pencil, plus four more around the lower sides.

   Teacher Note: The holes let extra water drain so the seeds don't sit waterlogged. This is a good moment to ask why every cup needs the same drainage: If one cup drained poorly and stayed soggy, water would become a hidden second variable between the plants, and the test would no longer be fair.

2. Fill each cup with seed-starting mix.
3. Plant two bean seeds in each cup at the depth listed on the packet.
4. Place the Sunny cups on a bright windowsill and the Dark cups in a closet or covered box where no light can reach them.

3. Start a Few Demonstration Seedlings

These become pass-around plants students can handle up close, so some plants can stay undisturbed. Also, some fragile stems will break as students measure them, so it's good to have extras.

OBSERVE AND RECORD

At the beginning of the investigation and every 2–3 days over the next 2–3 weeks, have students observe both groups of plants. Using their observation log, students should:

- Predict what they think will happen to each set of plants
- Record the date
- Note when sprouts appear
- Measure the tallest plant (in centimeters)
- Describe the color
- Describe the strength/sturdiness
- Reflect on the outcome

PROTECT YOUR RESULTS:

When you bring the dark cups out to observe or measure, keep it brief — a few minutes — then return them to the closet. Light causes the dark plants to begin greening, so extended or frequent exposure will erase the contrast you're trying to show.

NOTE: The dark-grown plants may actually grow taller than the sunny ones, so height alone is misleading. Coach students to also note color and sturdiness, such as green and firm versus pale and floppy.

WHAT'S GOING ON? ETIOLATION!

Etiolation (ee-tee-uh-LAY-shun) is what happens when a plant grows without enough light. A seedling in the dark can't make food through photosynthesis, so it channels its limited stored seed energy into stretching its stem upward as fast as it can — a survival gamble to reach light before that stored food runs out. Normally, light works like a brake on stem stretching, and a signal to make chlorophyll, open the leaves and thicken the stem. Remove the light and you remove the brake: The stem shoots up tall, pale and spindly, with small leaves and little to no green. It's also why height is a misleading measure of health here, and why students should judge the plants by color and sturdiness.

TRY THIS NEXT: RESCUE A DARK PLANT

Move one dark-grown seedling into the sunny window and have students predict what will happen. Over the next few days, the pale, stretched plant will green up.

WEEKENDS ARE FINE

A two-day gap with no watering won't hurt your beans at any point in the investigation. Just water the cups well before you leave, and the moist soil will carry them through.

DISCUSSION QUESTIONS

As the plants grow and again at the end, lead a discussion with prompts such as:

- Did the seeds in the dark sprout? Was that what you predicted?
- Which group's plants ended up greener and stronger?
- The dark plants grew tall but pale and weak. Why might a plant in the dark grow tall yet not stay healthy? (Hint: What does a plant need light to do?)
- What was the one variable we tested?
- R.C. Hatton grows its beans in bright, sunny fields. Based on what you saw, why does sunlight matter so much once a plant has sprouted?

TEACHER TIPS & WHAT TO EXPECT

What Students Will Observe

- For the first several days, both groups will look similar as the seeds germinate underground.
- Around days 5–10, seeds in both groups should sprout at about the same time.
- Over the following weeks, differences become easier to spot: Plants grown in sunlight stay green and sturdy, while plants grown in the dark stay pale as they become taller and weaker.
- When the investigation ends after 2-3 weeks, dark-grown plants will decline because they cannot make food without sunlight.

Key Science Concepts:

- Seeds do not need sunlight to germinate because they use energy stored inside the seed.
- Once that stored energy is used, plants need sunlight to make their own food through photosynthesis.
- Sunlight also allows plants to produce chlorophyll, the pigment that makes plants green.

Watering Tip:

Keep the soil evenly moist, like a wrung-out sponge. Water slowly until the first drops reach the drainage holes, then stop and empty any standing water from the tray.

Name _____ **Date** _____

Seed Packet Reading

Farmers and gardeners need to know what a plant needs before they put seeds in the ground. Seed packets provide important growing information, like how deep to plant the seeds, how much sunlight they need and how long they take to grow.

Read your seed packet and fill in the blanks below.

1. What are you growing?

   _____

2. How deep should you plant the seeds?

   _____

3. How many days until germination?

   _____

4. How many days until harvest?

   _____

5. Does your plant require sun, shade or both? How much?

   _____

6. If you were planting outside, when would be the best time to plant based on where you live?

   _____

Draw a picture of your plant.

Name _____ **Date** _____

Green Bean Investigation: Observation Log

Our Question: ***Do bean seeds need sunlight to sprout?***

My Prediction:

1. Will the seeds in the dark sprout? Why or why not?

2. Which group will grow into healthier plants? Why?

Directions: Check your plants every 2–3 days. Measure the tallest plant in each group, and describe its color and how strong/sturdy it looks.

Color: Green / Light Green / Yellow / White

Strength: Strong / Somewhat Weak / Weak & Floppy

Date	Day #	Sunny: Sprouted? (Y/N)	Sunny: Height (cm)	Sunny: Color & Strength	Dark: Sprouted? (Y/N)	Dark: Height (cm)	Dark: Color & Strength

First Sprout Observed:

Sunny group: Day _____ Dark group: Day _____

Name _____ **Date** _____

Science Report

Scientists share their work so others can understand what they did and what they discovered. Use complete sentences to answer each question below.

1. Question: What question were you trying to answer in this investigation?

2. Prediction (Hypothesis): What did you think would happen? Explain why.

3. Variable: What was the one thing you changed in this investigation? What did you keep the same to make it a fair test?

4. Materials and Methods: What materials did you use? What steps did you follow?

Continued →

5. Observations and Data: Use evidence from your Observation Log to answer each of the following questions.

Which group sprouted first? _____

What were the final heights of the plants? _____

How did the plants' color and strength/sturdiness compare? _____

6. Conclusion: Answer the question you were trying to answer in this investigation using the evidence you have collected. Did the bean seeds need sunlight to sprout? What happened to the plants grown without light, and why? Connect it to why R.C. Hatton Farms grows its beans in full sun.

_____

_____

_____

_____

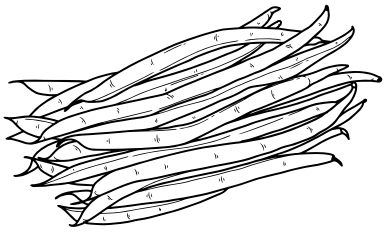
_____

_____

_____

Name _____ **Date** _____

Green Bean Video Trivia & Farm Math



Directions: Answer these trivia questions based on the video you watched about the Florida green bean farm.

1. How many days does it take for green beans to be ready to harvest? _____
2. What plant family are green beans part of? _____

   Bonus: Name two other foods in that family. _____
3. What happens to the green beans on the "bean line" before they are packaged? _____

   _____

Circle whether the statements below are true or false.

4. Green beans are also called string beans or snap beans.	**TRUE** | **FALSE**
5. Green beans grow underground like potatoes.	**TRUE** | **FALSE**
6. The capillary effect can pull water upward, against gravity.	**TRUE** | **FALSE**
7. Farmers rely only on rain straight from the sky to water green bean crops.	**TRUE** | **FALSE**

Choose the correct word from the word bank to fill each blank.

Word Bank: **irrigate · vitamin C · bed**

8. Farmers build a _____ of raised soil for each row, so the seeds don't get drowned by rain.
9. Culverts, canals and ditches are used to move water and _____ the farm.
10. Green beans are a good source of fiber and _____.

Continued →

Farm Math

Solve each problem and write your answer on the line.

1. One green bean plant grows about 20 pods. About how many pods would 5 plants grow?

_____ pods

2. A bushel of green beans weighs about 28 pounds. About how many pounds do 3 bushels weigh?

_____ pounds

3. A farmer produced 120 green bean pods. If the pods came from 6 plants, and each plant grew the same number of pods, how many pods grew on each plant?

_____ pods

Bonus: Farmer Jonathan harvests 7 bushels of green beans. Remember that each bushel of beans weighs about 28 pounds. He delivers 40 pounds of the beans to school cafeterias and packs the rest into crates that hold 50 pounds each. How many crates will Farmer Jonathan need for the remaining beans?

_____ crates

Farm Math: Green Beans

At R.C. Hatton Farms, green beans grow in wide Florida fields. Each plant grows about 20 pods, and each acre produces around **200 bushels**. A **bushel** of green beans weighs about **28 pounds**, and the beans are ready to harvest roughly **55–63 days** after planting.

Directions: Use these farm facts to solve the problems below. Show your work and write your answer on the line.

1. Each acre produces about **200 bushels** of green beans. One field produced **2,400** bushels. Write and solve an equation using ***a*** for the number of acres.

   Equation: _____ Answer: _____

2. A section of the field contains **35 green bean plants**. If each plant produces about **20 pods**, about how many pods will that section produce?

   Equation: _____ Answer: _____

3. A farmer harvests **9 bushels** of green beans. Each bushel weighs **28 pounds**. Find the total number of pounds they harvested.

   Equation: _____ Answer: _____

4. The farm ships green beans in **5-pound bags**. How many **ounces** are in one 5-pound bag? (Remember: 1 pound = 16 ounces.)

   Equation: _____ Answer: _____

Continued →

5. The farm harvested 500 bushels of green beans. The beans are packed into crates that hold 8 bushels each. How many full crates can they fill, and how many bushels are left over?

Equation: _____

Full crates: _____ Bushels left over: _____

The chart below shows how many bushels the farm harvested each day for one week.

Use the chart to answer the following questions.

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Bushels harvested	180	210	195	220	195

6. How many bushels did the farm harvest in all that week?

Equation: _____ Answer: _____

7. What is the range — the difference between the most and the fewest bushels in a day?

Equation: _____ Answer: _____

8. What is the mode — the number of bushels that appears most often? Equation:

Equation: _____ Answer: _____

Name _____ **Date** _____

What's Inside a Flower? Flower Parts & Pollination

Every green bean pod starts out as a small white flower. Before a pod and seeds can form, the flower must be pollinated.

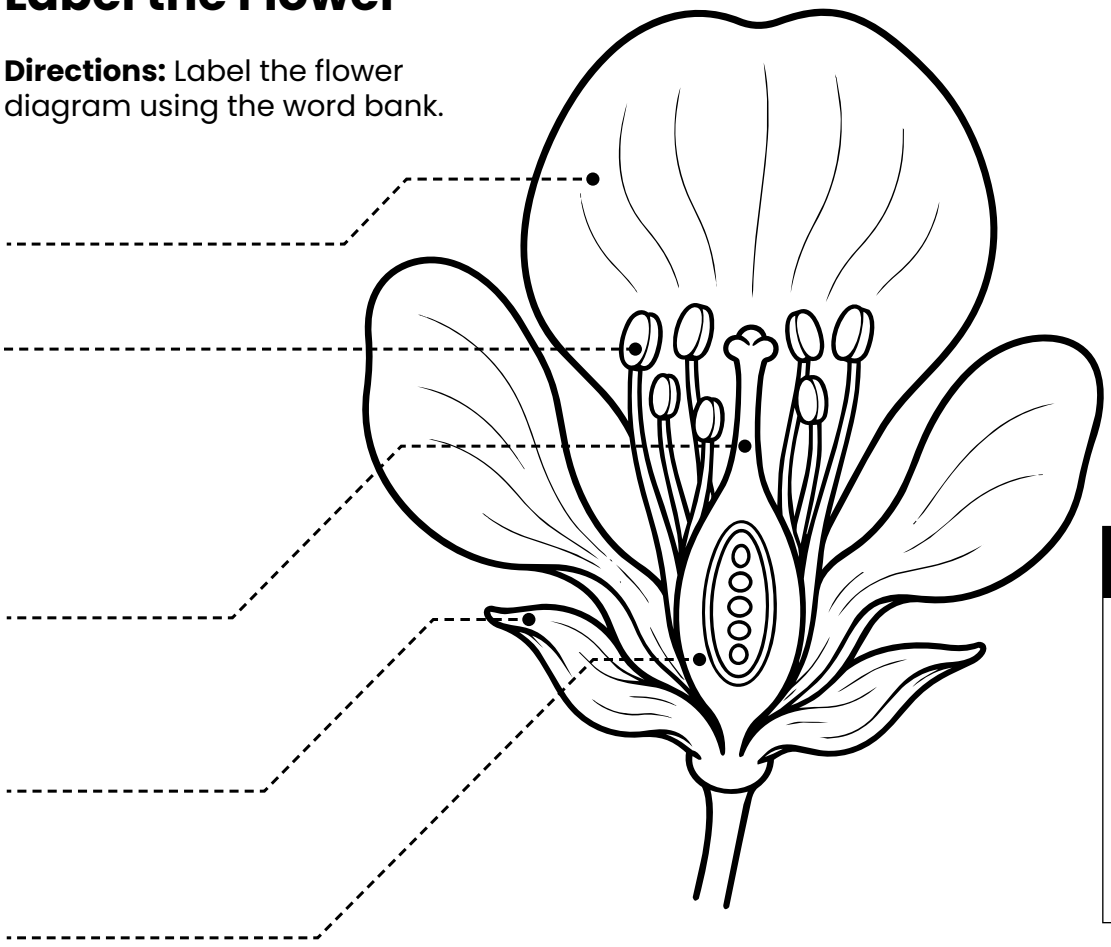
Did You Know?

Many flowers rely on bees or the wind to move pollen. Green bean flowers are different because they usually pollinate themselves. Their pollen moves from the stamen to the pistil inside the same flower.

Bonus Fact: Inside the pistil is the ovary, the part of the flower that grows into the green bean pod after pollination.

Label the Flower

Directions: Label the flower diagram using the word bank.



Word Bank
Petal
Sepal
Stamen
Pistil
Ovary

Continued →

Match Each Part to Its Job

Directions: Draw a line from each flower part to the job it does.

Petal	Makes pollen
Sepal	The colorful part of the flower that can attract pollinators such as bees
Ovary	Receives pollen and holds the ovary, where the seeds form
Stamen	The small leaf-like part that protects the flower bud before it opens
Pistil	Part of the flower that grows into the green bean pod after pollination

---

From Flower to Bean

Directions: Number the steps 1–4 in the order they happen.

_____ The flower withers as a tiny pod begins to form.

_____ Pollen from the stamen lands on the pistil.

_____ The pod grows longer as seeds develop inside.

_____ Pollen fertilizes the flower.

Name _____ **Date** _____

Life Cycle of a Green Bean

Directions: Label each part of the green bean plant's life cycle using the terms in the word bank. Then, briefly describe what is happening in each phase.

Word Bank		
Flowering Plant	Seedling	Germination
Seeds (beans)	Sprout	Bean Pod

ANSWER KEY

Name _____ Date _____

Green Bean Video Trivia & Farm Math

Directions: Answer these trivia questions based on the video you watched about the Florida green bean farm.

1. How many days does it take for green beans to be ready to harvest? 55–63 days in the ground. (2:40)
2. What plant family are green beans part of? The legume family. (2:33)
   Bonus: Name two other foods in that family. Example answer: black beans and chick peas (from video)
3. What happens to the green beans on the "bean line" before they are packaged? The beans are washed and their ends are snipped (cut off). (3:41)

Circle whether the statements below are true or false.

4. Green beans are also called string beans or snap beans. **TRUE** FALSE
5. Green beans grow underground like potatoes. TRUE **FALSE**
6. The capillary effect can pull water upward, against gravity. **TRUE** FALSE
7. Farmers rely only on rain straight from the sky to water green bean crops. TRUE **FALSE**

Choose the correct word from the word bank to fill each blank.

Word Bank: **irrigate** · **vitamin C** · **bed**

8. Farmers build a bed of raised soil for each row, so the seeds don't get drowned out by rain.
9. Culverts, canals and ditches are used to move water and irrigate the farm.
10. Green beans are a good source of fiber and vitamin C

Continued →

Farm Math

Solve each problem and write your answer on the line.

1. One green bean plant grows about 20 pods. About how many pods would 5 plants grow?

   20 × 5 = 100 pods

2. A bushel of green beans weighs about 28 pounds. About how many pounds do 3 bushels weigh?

   28 × 3 = 84 pounds

3. A farmer produced 120 green bean pods. If the pods came from 6 plants, and each plant grew the same number of pods, how many pods grew on each plant?

   120 ÷ 6 = 20 pods

Bonus: Farmer Jonathan harvests 7 bushels of green beans. Remember that each bushel of beans weighs about 28 pounds. He delivers 40 pounds of the beans to school cafeterias and packs the rest into crates that hold 50 pounds each. How many crates will Farmer Jonathan need for the remaining beans?

7x28=196 196-40=156 156/50=3 remainder 6. 4 crates crates

Farm Math: Green Beans

At R.C. Hatton Farms, green beans grow in wide Florida fields. Each plant grows about 20 pods, and each acre produces about **200 bushels**. A **bushel** of green beans weighs about **28 pounds**, and the beans are ready to harvest about **55–63 days** after planting.

Directions: Use these farm facts to solve the problems below. Show your work and write your answer on the line.

1. Each acre produces about **200 bushels** of green beans. One field produced **2,400** bushels. Write and solve an equation using **a** for the number of acres.

   200 × a = 2,400 (or 2,400 ÷ 200 = a). a = 12 acres

   Equation: _____ Answer: _____

2. A section of the field contains **35 green bean plants**. If each plant produces about **20 pods**, about how many pods will that section produce?

   20 × 35 = 700 pods

   Equation: _____ Answer: _____

3. A farmer harvests **9 bushels** of green beans. Each bushel weighs **28 pounds**. Find the total number of pounds they harvested.

   9 × 28 = 252 pounds

   Equation: _____ Answer: _____

4. The farm ships green beans in **5-pound bags**. How many **ounces** are in one 5-pound bag? (Remember: 1 pound = 16 ounces.)

   5 × 16 = 80 ounces

   Equation: _____ Answer: _____

Continued →

5. The farm harvested 500 bushels of green beans. The beans are packed into crates that hold 8 bushels each. How many full crates can they fill, and how many bushels are left over?

   500 ÷ 8 = 62 remainder 4. The farm can fill 62 full crates, with 4 bushels left over

   Equation: _____

   Full crates: _____ Bushels left over: _____

The chart below shows how many bushels the farm harvested each day for one week.

Use the chart to answer the following questions.

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Bushels harvested	180	210	195	220	195

6. How many bushels did the farm harvest in all that week?

   180 + 210 + 195 + 220 + 195 = 1,000 bushels

   Equation: _____ Answer: _____

7. What is the range — the difference between the most and the fewest bushels in a day?

   Most: 220 (Thu); fewest: 180 (Mon). 220 - 180 = 40 bushels

   Equation: _____ Answer: _____

8. What is the mode — the number of bushels that appears most often? Equation:

   195 bushels (it appears twice; every other number appears once)

   Equation: _____ Answer: _____

ANSWER KEY

Name _____ Date _____

What's Inside a Flower? Flower Parts & Pollination

Every green bean pod starts out as a small white flower. Before a pod and seeds can form, the flower must be pollinated.

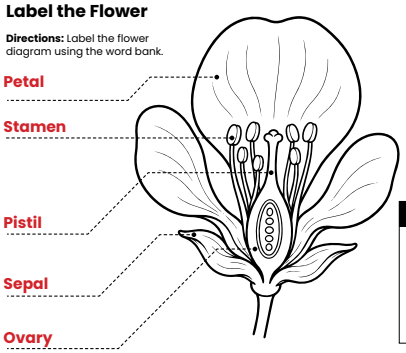
Did You Know?

Many flowers rely on bees or the wind to move pollen. Green bean flowers are different because they usually pollinate themselves. Their pollen moves from the stamen to the pistil inside the same flower.

Bonus Fact: Inside the pistil is the ovary, the part of the flower that grows into the green bean pod after pollination.

Label the Flower

Directions: Label the flower diagram using the word bank.



Word Bank
Petal
Sepal
Stamen
Pistil
Ovary

Continued →

Match Each Part to Its Job

Directions: Draw a line from each flower part to the job it does.

Petal	Makes pollen
Sepal	The colorful part of the flower that can attract pollinators such as bees
Stamen	Receives pollen and holds the ovary, where the seeds form
Pistil	The small leaf-like part that protects the flower bud before it opens
Ovary	Part of the flower that grows into the green bean pod after pollination

From Flower to Bean

Directions: Number the steps 1–4 in the order they happen.

3 The flower withers as a tiny pod begins to form.

1 Pollen from the stamen lands on the pistil.

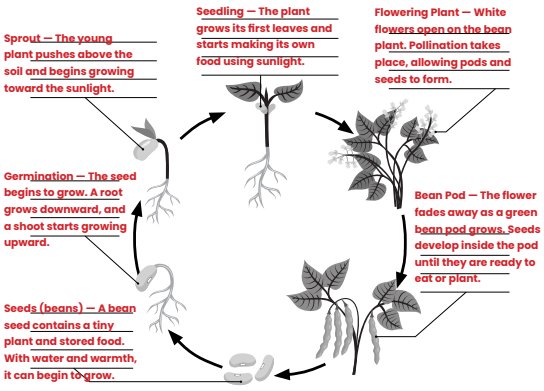
4 The pod grows longer as seeds develop inside.

2 Pollen fertilizes the flower.

Name _____ Date _____

Life Cycle of a Green Bean

Directions: Label each part of the green bean plant's life cycle using the terms in the word bank. Then, briefly describe what is happening in each phase.



Word Bank		
Flowering Plant	Seedling	Germination
Seeds (beans)	Sprout	Bean Pod

(Accept reasonable descriptions in students' own words. Look for the key idea in each stage.)