

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) <i>On page 211</i>	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	<ul style="list-style-type: none"> - 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 <i>On page 216</i>	Standard(s) Supported: SC.4.P.9.1, SC.4.P.8.1, HE.4.PHC.1.4, HE.5.PHC.3.2	<ul style="list-style-type: none"> - 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 <i>On page 218</i>	Standard(s) Supported: SC.4.P.9.1, SC.4.P.8.1	<ul style="list-style-type: none"> - Blender - Cutting board - Knife - Measuring cup - Tablespoon <p><i>Adjust quantities based on class size:</i></p> <ul style="list-style-type: none"> - 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 <i>On page 219</i>	Standard(s) Supported: SC.5.N.1.1	<ul style="list-style-type: none"> - Measuring cup - Teaspoon <p><i>Per student:</i></p> <ul style="list-style-type: none"> - 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 <i>On page 221</i>	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	<ul style="list-style-type: none"> - Writing instrument 	This worksheet tests students' comprehension of the Virtual Farm Field Trip by asking questions answered in the video.	<p>You might hand the worksheet out before the video so students can answer as they go or wait until after the video.</p> <p>Consider enhancing this activity with the "Trivia Toss" activity, explained in this Classroom Guide, under "After You Watch."</p>
Letter to a Farmer <i>On page 222</i>	Standard(s) Supported: ELA.4.C.3.1, ELA.5.C.3.1, ELA.K12.EE.6.1	<ul style="list-style-type: none"> - 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.	<p>In addition to reinforcing comprehension, this worksheet allows students to practice their writing skills and teaches students how to format a letter.</p> <p>Be sure to write the farm's address on the board for students to copy (see Classroom Guide, under "Geography Moment").</p> <p>You might even send the letters to the farmers! (Just be sure to review content before sending.)</p>
Life Cycle of a Strawberry <i>On page 223</i>	Standard(s) Supported: SC.4.L.16.4, SC.4.L.16.1	<ul style="list-style-type: none"> - 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 <i>On page 224</i>	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	<ul style="list-style-type: none"> - 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 <i>On page 225</i>			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.

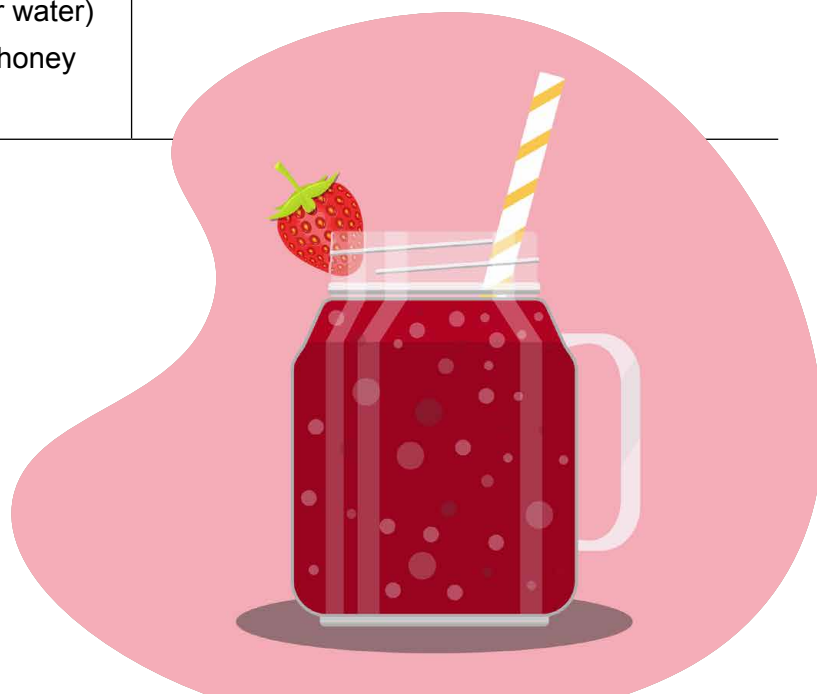
- 1 cup fresh strawberries
- 1 banana
- ½ cup yogurt
- ½ cup milk (or water)
- 1 tablespoon honey

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!

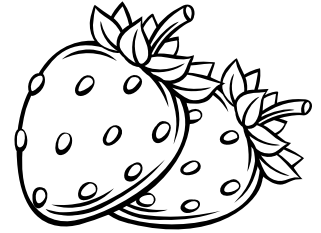


Step 11: Use the coffee stirrer to pick up strawberry DNA out of the liquid and observe.

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? _____

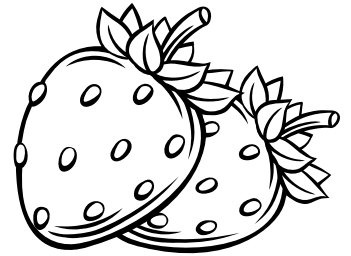
Circle whether the statements below are true or false.

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.



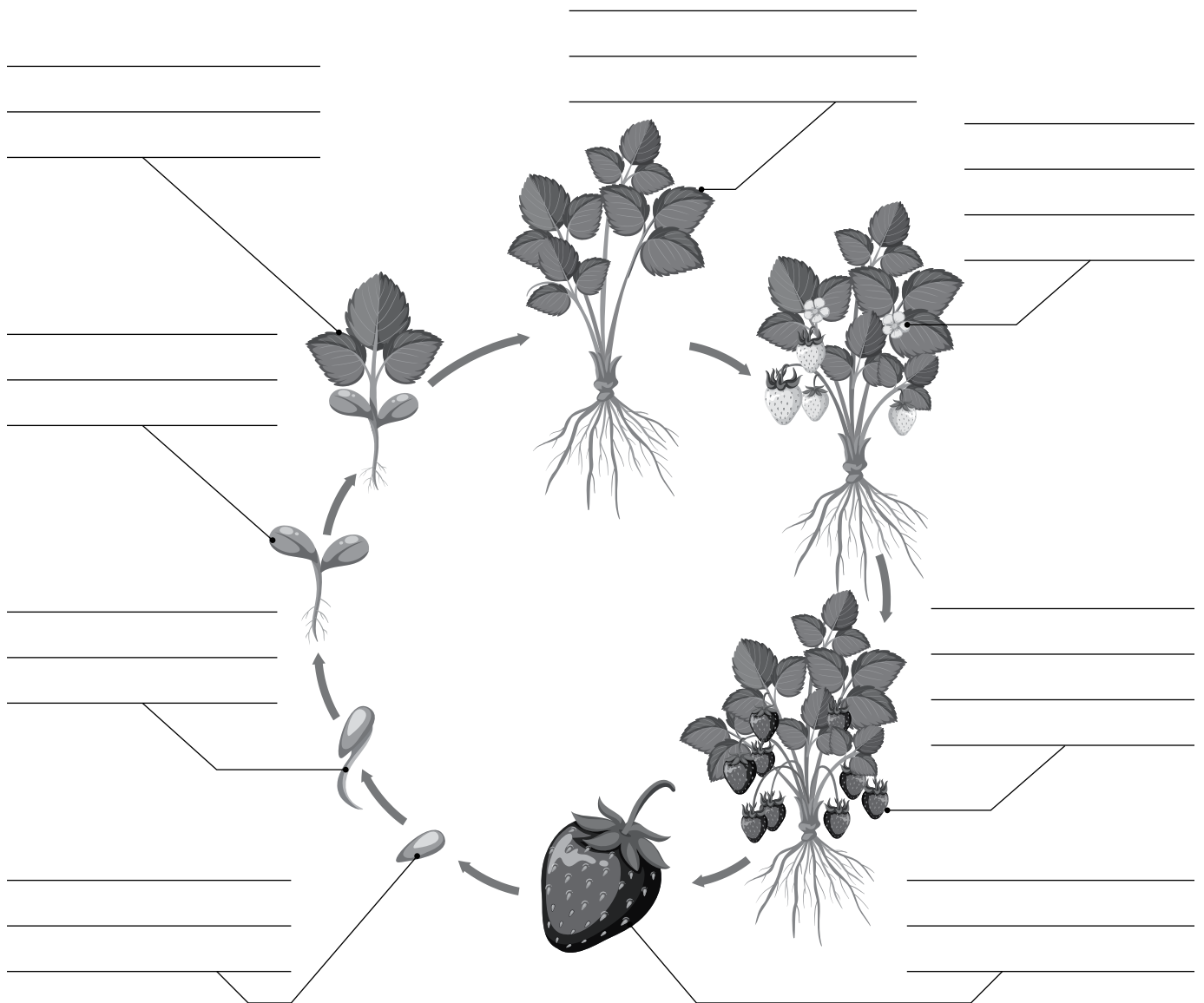
Dear, _____

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

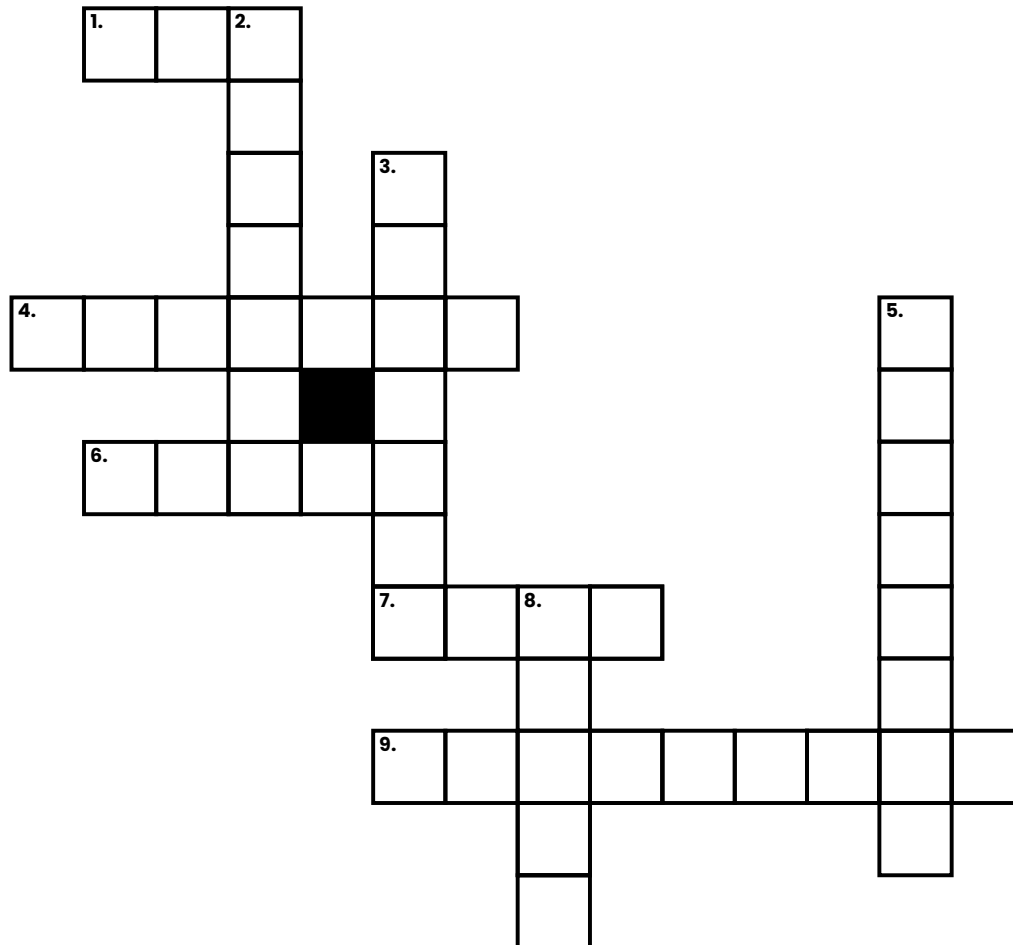
Sprout

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

4-5 Worksheet Strawberry

Name _____ Date _____

Strawberry Video Trivia

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



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

Circle whether the statements below are true or false.

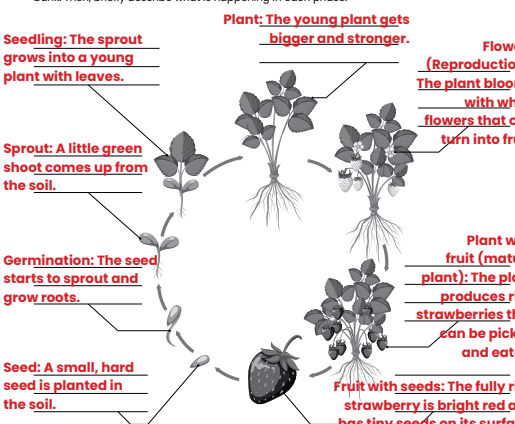
4. There is only one type of strawberry.	TRUE FALSE
5. Eight strawberries have more vitamin C than one orange.	TRUE FALSE
6. Strawberries are picked by machines.	TRUE FALSE
7. Strawberries ripen faster when it's warmer.	TRUE FALSE
8. An acre is the size of a basketball court.	TRUE FALSE
9. Strawberries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

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.



Seedling: The sprout grows into a young plant with leaves.

Plant: The young plant gets bigger and stronger.

Flowers (Reproduction): The plant blooms with white flowers that can turn into fruit.

Sprout: A little green shoot comes up from the soil.

Germination: The seed starts to sprout and grow roots.

Seed: A small, hard seed is planted in the soil.

Plant with fruit (mature plant): The plant produces ripe strawberries that can be picked and eaten.

Fruit with seeds: The fully ripe strawberry is bright red and has tiny seeds on its surface.

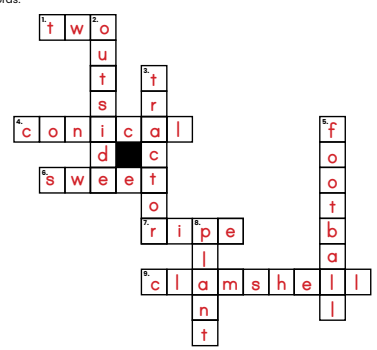
Word Bank				
Fruit with seeds	Germination	Seedling	Flowers (reproduction)	Plant with fruit (mature plant)
Seed	Sprout	Plant		

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	DOWN
1. Each strawberry has about ____ hundred seeds.	2. Strawberries are the only fruit with seeds on the _____.
4. The shape of strawberries. (Another word for "like a cone.")	3. A _____ can prepare four rows of strawberry beds at a time.
6. Cooler weather can make strawberries taste _____.	5. An acre is about the size of a _____ field.
7. Strawberries get _____ faster when it's warmer.	8. _____ City, Florida is the winter strawberry capital of the world.
9. This is the box strawberries are stored in.	