PRINTABLE ACTIVITIES SAMPLER

FLORIDA
Cross-Curricular Connections

SAVVAS SCIENCE EXPLORATIONS™

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Cross-Curricular Connections

Printable Activities Sampler

A Note to Reviewers

Thank you for reviewing *Florida Savvas Science Explorations,* a new program developed for today's Florida science classroom. *Florida Savvas Science Explorations* is written specifically for Florida and meets 100% of the Florida State Academic Standards for Science. We are excited to partner with you to create an exceptional Elementary Science experience for your students and teachers.

This sampler contains one Topic's worth of the Cross-Curricular Activities that are available online only on Savvas Realize®. Provided here are the online annotated teacher pages as a sampler for your review. Student pages are available online.

The Cross-Curricular Activities are designed to help you integrate social studies and math instruction into your science lessons. Activities have been aligned to the science topics you currently teach as well as to holidays. All activities should take between 10-20 minutes so they can be easily incorporated into your lessons. Each activity includes support for differentiating instruction to meet the needs of all your learners. Available online as editable Microsoft Word® documents or Google Docs®, (and social studies lessons are also available as editable PowerPoints®). All activities are available to assign, edit, and or print directly from within Savvas Realize®.

Thank you, again, for your review of *Florida Savvas Science Explorations*!

Name_____

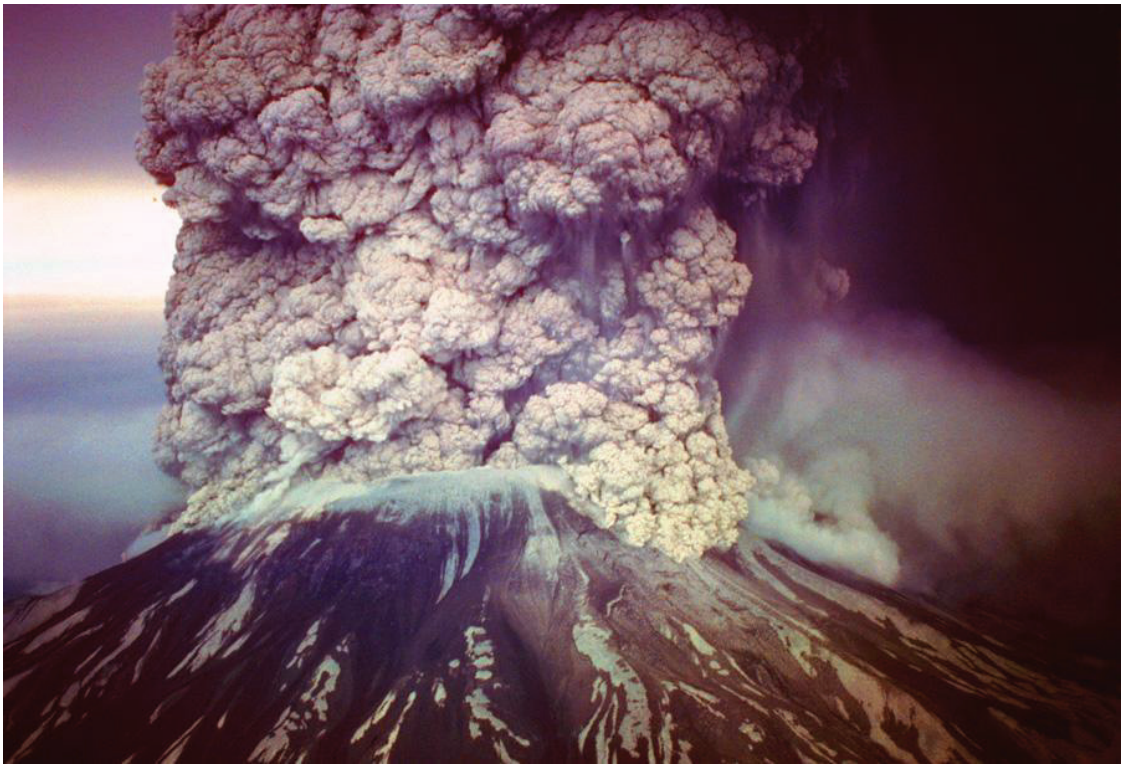
The Eruption of Mount Saint Helens

You will…

- Learn about a volcanic eruption.
- Compare information in a primary source and a secondary source.
- Identify central claims in a primary source and a secondary source.

What You Need to Know

A primary source is one made or written by a person who witnessed an event firsthand. Primary sources can include historical documents, photographs, eyewitness accounts, or interviews. Secondary sources are written or created by someone who did not witness an event. Textbooks, encyclopedias, and biographies are secondary sources. In this activity, you will analyze a primary and secondary source as well as identify central claims for both sources.



Mount Saint Helens is photographed erupting on May 18, 1980.

Name_____

Steps

1. **Analyze a Primary Source** Read the eyewitness account from Austin Jenkins. Then, answer the question.

Primary Source

Excerpt from "When I Was 6, My Classmates And I Fled The Mount St. Helens Eruption"

On May 18, 1980, I was 6 years old and about 20 miles, as the crow flies, from Mount St. Helens.

My small, private elementary school — Puget Sound Primary School — had taken an end-of-year trip to Camp Cispus…

At about 8:30 that morning, the mountain blew sideways.

"First, I heard three booms," I later wrote in my first-grade journal. "Then my teacher said, 'Look up,' and I looked up and there was a big cloud…"

The decision was quickly made to evacuate.

…

The headlights barely illuminated the narrow road ahead.

"It was like having your headlights up against a concrete wall, the [ash] fall was so thick," Patterson said.

The darkness was broken only by flashes of volcanic lightning.

—Austin Jenkins, "When I Was 6, My Classmates And I Fled The Mount St. Helens Eruption"

Which might be a central claim of the primary source?

A. Volcanic lightning is neat to see.

B. Writing in a journal about volcanoes is fun.

C. Volcanoes are interesting to young students because they are also mountains.

D. Answer: The scariest part was that ash from the violent volcanic eruption spread across hundreds of miles in a matter of minutes.

Name_____

2. **Analyze a Secondary Source** Read the encyclopedia article about the Mount Saint Helens eruption. Then, answer the question.

Secondary Source

Excerpt from "Mount Saint Helens"

Mount Saint Helens is a volcano in southwestern Washington State. It is part of the Cascade mountain range. It erupted on May 18, 1980. It was one of the greatest volcanic explosions ever recorded in North America.

Some of the Native Americans who lived around Mount Saint Helens called it Louwala-Clough, or "smoking mountain." It had been dormant, or inactive, since 1857. However, a steam eruption began on March 27, 1980. On the morning of May 18, an earthquake caused a landslide on the north side of the mountain. This was followed by a blast of hot ash and stone that was thrown about 15 miles (24 kilometers) from the volcano. The blast was as hot as 660 °F (350 °C). It reached speeds of 300 miles (500 kilometers) per hour.

By the end of the eruption, the cone, or top, of Mount Saint Helens had been completely destroyed.

—Britannica Kids, "Mount Saint Helens"

Which sentence from the secondary source is a central claim?

A. "Mount Saint Helens is a volcano in southwestern Washington State."

B. Answer: "It was one of the greatest volcanic explosions ever recorded in North America."

C. "However, a steam eruption began on March 27, 1980."

D. "The blast was as hot as 660 °F (350 °C)."

Name_____

3. **Compare the Sources** What information do the sources have in common? What is different?

Sample Answer: The sources are both about Mount Saint Helens. One is an eyewitness account (a primary source) describing what the author felt and saw during the eruption. The other is an encyclopedia entry (a secondary source) about what happened during the eruption, including details on how destructive it was.

Name_____

In the News: Aquifers

You will…

- Learn about real-world issues and solutions regarding groundwater usage.
- Roleplay an interview concerning aquifers.
- Simulate making decisions about reducing groundwater usage.

What You Need to Know

Water from the Ogallala Aquifer is mainly used for irrigation. But did you know that it supplies drinking water for much of that region? Some argue the aquifer water should be considered a nonrenewable resource because it could take thousands of years to replenish.

Steps

1. **Learn About Solutions** Scientists, researchers, and farmers are working hard to reduce aquifer usage and rates. Read the table to learn what they are doing.

How Are People Working to Reduce Aquifer Usage and Rates?	
Scientists and Researchers	**Farmers**
Scientists are using simulations and models to learn how they can conserve water. They can simulate changes in physical water availability–for example, if a well were to dry up. Scientists are also providing educational material to farmers using these simulations.	Some farmers in the Ogallala Aquifer area are reducing their dependence on groundwater. For example, instead of plowing fields after a harvest, some farmers leave the leftover plant matter and plant a new crop in it. The old plant matter reduces soil erosion and decreases moisture loss significantly. Other farmers are planting drought-tolerant corn.
At a USDA research facility in Texas, scientists have installed sensors that can measure plant temperatures. By reading the plant temperatures, scientists can tell when the plants need water and when they don't.	Other farmers are turning their farms into areas for livestock grazing by planting native grasses. Because the grasses are native to the area, they require much less water.

Name_____

2. **Roleplay an Interview** One person will take on the role of a reporter for Channel Zero News. One person will take on the role of a farmer. Ask the following questions and write two questions of your own to ask. Answer: Students' questions and answers will vary.

   - What are you doing to reduce your dependence on water from the Ogallala Aquifer?

   _____

   _____

   - Are there ways you conserve water on the farm?

   _____

   _____

   - What would you like scientists to help with concerning this issue?

   _____

   _____

   - _____

   _____

   - _____

   _____

3. **Simulate a Town Hall Discussion** Imagine your local town has an aquifer that is heavily used for drinking water and irrigation. The town council has just implemented a water reduction mandate. It needs to slow the water usage rate by at least half. The town council has asked citizens to propose ways to reduce water usage. Write down one way your town could reduce water usage and simulate having a town hall discussion as a class.

Sample Answer: Citizens could only water their gardens or wash their cars on certain days so that less water would be used.

Name_____

Tidal Energy: For or Against?

You will…

- Read about the pros and cons of tidal energy.
- Decide if you are for or against tidal energy.
- Engage in a civil discourse about tidal energy.
- Vote to show if your viewpoint has changed.

What You Need to Know

A civil discourse is a conversation between people to discuss opposing views. It is important to be respectful, courteous, and calm when participating in these discussions. The goal of a civil discourse is not to reach any particular conclusions about a certain topic. Rather, it's about listening to and thinking about a variety of different views while being respectful towards one another.

Steps

1. **Read the Pros and Cons** Read about the benefits and drawbacks of tidal energy.

Tidal Energy: Pros and Cons	
Pros	**Cons**
Tidal energy is more reliable than any other energy source.	Tidal turbines are very expensive to make because they need to be so sturdy and heavy.
Harnessing tidal energy is pollution free.	There could be environmental impacts on marine habitats. Because this is a new technology, the effects are unknown.
The cost per kilowatt of energy produced is very low.	Silt can get caught in tidal barrages, which clogs them and requires cleaning.
Tidal barrages reduce the damage of high tidal surges on the land.	There are only a few suitable sites in the United States for tidal barrages.

Name_____

2. **Decide For or Against** Are you for or against harnessing tidal energy? Break into two groups (for and against) and spend 10 minutes with your group discussing your view. What are the main points you wish to make in support of your view? Capture them here. Sample Answer: Students' answers will vary depending on if they are for or against harnessing tidal energy. Students' answers should include details and evidence to support their point of view.

3. **Hold a Civil Discourse** Now, hold a classroom civil discourse. Be sure to include supporting evidence when it's your group's turn to speak. Make sure everyone in your group gets a chance to speak. Practice listening carefully to each person. Answer: Students should hold a civil discourse and discuss why they are for or against tidal energy using supporting evidence.

4. **Vote** Have you been persuaded by the viewpoints shared during the discussion? Now hold a vote on whether you are for or against tidal energy. Answer: Students should vote whether they are for or against tidal energy.

Name _____

enVision® STEM Activity 2-2

Blast Off!

Did You Know? A space shuttle is made up of three main parts: the orbiter, a large external gas tank, and rocket boosters. The rocket boosters provide most of the lift during the first two minutes of the shuttle's flight. During the first two minutes, the boosters exert energy to push the shuttle into space.

During orbit, the average speed of a space shuttle is 17,350 miles per hour. That takes a lot of energy!

The table below shows the recorded speeds of four different rockets. Use this information to answer the questions below.

Rocket	Speed (miles per hour)
A	6,324
B	7,832
C	5,392
D	7,429

1. Round each speed to the nearest thousand.

A: 6,000; B: 8,000; C: 5,000; D: 7,000

2. Round each speed to the nearest hundred.

A: 6,300; B: 7,800; C: 5,400; D: 7,400

3. **Extension** Look at the estimates found in Exercises 1 and 2. Which gives the more precise estimates?

Rounding to the nearest hundred is closer to the actual speed than rounding to the nearest thousand.

4. Scientists often run smaller simulations prior to running actual experiments.

A. In a simulation, Rocket A exerts 4 times more energy than Rocket B. If Rocket B exerts 100 joules of energy, what is the energy of Rocket A?

400 joules

B. In a simulation, Rocket C exerts 9 times more energy than Rocket D. If Rocket D exerts 100 joules of energy, what is the energy of Rocket C?

900 joules

Name _____

enVision® STEM Activity 2-4

Swinging Back and Forth

Did You Know? A pendulum is a weight that hangs from a point and can swing back and forth. The time it takes for a pendulum to swing back and forth depends on the length and weight of the pendulum and also the force of the push.

A tire swing is one example of a pendulum.

1. Josie pushes Max on a tire swing. Max swings for 9 seconds with each push. Complete the chart to show the amount of time Max swings with 1, 2, 3, 4, and 5 pushes.

Push	Swing Time
1	9 seconds
2	18 seconds
3	27 seconds
4	36 seconds
5	45 seconds

2. How many pushes are needed for Max to swing at least 60 seconds? Explain.

7 or more pushes; Sample answer: 7 pushes last 63 seconds because $7 \times 9 = 63$. So, 7 or more pushes are needed for Max to swing at least 60 seconds.

3. **Extension** How long will Max swing if Josie pushes him 10 times on the swing?

90 seconds

Name _____

Kicking a Ball

Did You Know? A soccer player's foot contains energy. When the foot hits the ball, the energy is released. The ball is in motion and it is headed to a new position.

The speed the ball moves depends on the amount of force the player uses to kick the ball. How far the ball travels depends on how forceful or gentle the kick is.

Lucas kicked a golf ball, a baseball, and a soccer ball. He kicked each ball 3 times. The distance the ball traveled after each kick is shown in the table below.

	Kick 1	Kick 2	Kick 3
Golf ball	5 yards	5 yards	5 yards
Baseball	9 yards	9 yards	9 yards
Soccer ball	10 yards	10 yards	10 yards

1. Draw a bar diagram to represent the total distance that the soccer ball was kicked.

Check students' bar diagrams.

2. Draw a number line to represent the total distance that the soccer ball was kicked.

Check students' number lines.

3. What is the total distance that the soccer ball was kicked?

30 yards

4. **Extension** How many more yards did Lucas kick the soccer ball than the baseball? Show your work.

3 yards; Sample answer:

$10 \times 3 = 30; 9 \times 3 = 27; 30 - 27 = 3$

Name _____

enVision® STEM Activity 3-2

Loggerhead Turtles

Did You Know? Animals use their instincts for survival. Instincts are inherited traits. A newly hatched loggerhead turtle breaks out of its eggshell and crawls toward the ocean. There are no parents to guide the turtle. When the loggerhead reaches the ocean, it swims for 36 hours. Loggerheads face many predators on their long swim to shelter. Sometimes they need to camouflage themselves by hiding in seaweed.

A loggerhead turtle hides every 4 hours along its swim to shelter.

1. Write and solve an equation to represent how many times the loggerhead turtle hides during the entire 36-hour journey.

   Sample answer: $4 \times ? = 36$; $? = 9$ times

2. Write and solve an equation to represent how many times the loggerhead turtle hides after it has swum for 12 hours.

   Sample answer: $4 \times ? = 12$; $? = 3$ times

3. Write and solve an equation to represent how many times the loggerhead turtle hides after it has swum for 24 hours.

   Sample answer: $4 \times ? = 24$; $? = 6$ times

4. **Extension** Write and solve an equation involving a loggerhead turtle that hides every 4 hours and swims for 40 hours. How many times does the turtle hide?

   Sample answer: $4 \times ? = 40$; $? = 10$ times

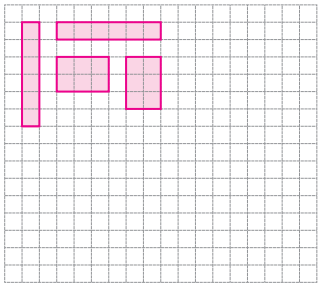
Name _____

Feeding the Animals

Did You Know? Animals have specific nutritional requirements. Zookeepers determine how much protein, fat, fiber, carbohydrates, and vitamins each animal needs. Zookeepers have to keep track of what types of foods and how much food animals eat each day.

Animal	Number of Animals
Elephant	6
Dolphin	8
Giraffe	10
Penguin	30
Snake	15

The table above shows the number of each type of animal the zookeeper feeds each day. Suppose animals could be arranged in the feeding areas in different ways.



1. Use the grid to show all the possible ways the zookeeper could arrange the elephants during feeding time.

2. What are the factors of 6?

   1, 2, 3, 6

3. How many different arrays could the zookeeper make to arrange the penguins into feeding areas during feeding time?

   8 different arrays

4. What are the factors of 30?

   1, 2, 3, 5, 6, 10, 15, 30

5. **Extension** The zookeeper would be able to arrange all but one of the animals into feeding-area arrays with two rows. For which animal would an array with two rows **NOT** be possible? Explain.

   Snake; Sample answer: The factors of 15 are 1, 3, 5, and 15. So an array with two rows is not possible.

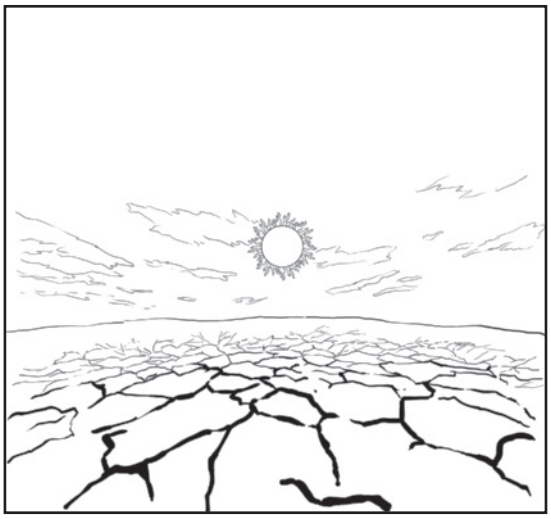
Name _____

enVision® STEM Activity 8-4

What Is a Drought?

Did You Know? A drought is a long period of dry weather. Because plants and animals depend on water, a drought can destroy important habitats. Sometimes droughts create long-lasting problems for animals and their environments.

A drought can also help some animals and plants. Droughts can dry out wetlands. When wetlands dry out, plants and animals can start life in newly enriched soil.

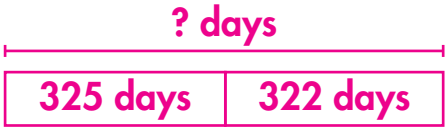


The students of a Grade 3 class decided to track the annual number of days without rainfall in some cities. See the data in the table to the right.

Days Without Rain

	2012	2013
Las Vegas	337	333
Phoenix	325	322
Albuquerque	306	286

1. How many days were without rainfall in Phoenix in 2012 and in 2013? Draw a bar diagram to represent and solve the problem.



647 days; 325 + 322 = 647

2. During the 2 years, did Las Vegas or Phoenix have more days without rain? Explain.

Las Vegas; Sample answer: Las Vegas had 337 + 333 = 670 days without rain. Phoenix had 647 days without rain. 670 > 647

3. **Extension** Use place value to find how many more days without rain Albuquerque had in 2012 than 2013. Show your work.

20 days; Sample answer: 30 tens − 28 tens is 2 tens, or 20.

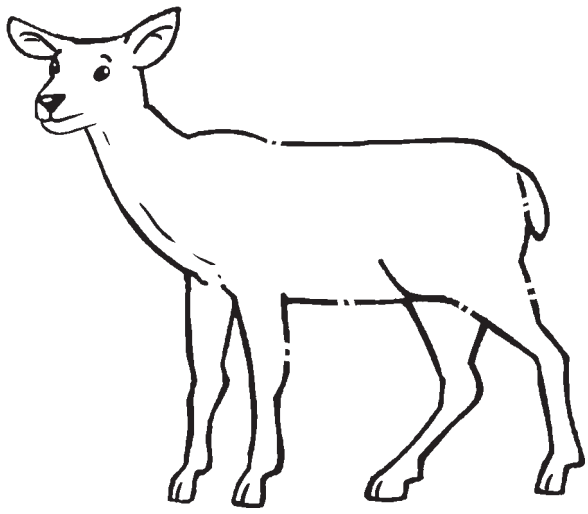
Name _____

enVision® STEM Activity 8-6

Deer Population

Did You Know? White-tailed deer live in wooded areas. In some areas, too many deer are a problem. They often eat farmers' crops and also can cause accidents.

At one time, gray wolves hunted white-tailed deer. The wolves helped keep the deer population under control. But human development has decreased the population of gray wolves. The balance in nature is different, but some communities have found other solutions.



Recently, the wildlife service in a remote area learned that their deer population had become too large. The wildlife service came up with a plan. They brought in some gray wolves to help control the deer population. After one year, the deer population decreased from 581 to 376.

1. How many fewer deer were there after one year? Explain how you know.

205 deer; Sample answer: I can subtract to find the difference. 581 − 376 = 205

2. If the deer population continues decreasing by the same number the following year, how many deer will remain? Show your work.

171 deer; 376 − 205 = 171

3. **Extension** Use place-value blocks or a bar diagram to show how you solved Exercise 2.

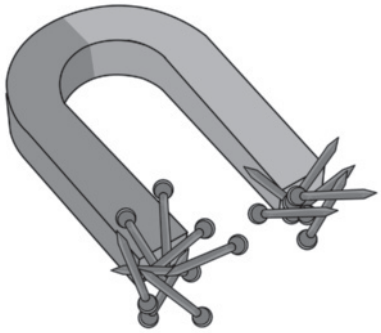
Check students' work.

Name _____

enVision® STEM Activity 13-9

Magnetic Attraction

Did You Know? Magnets attract only certain metals, such as nickel, iron, and cobalt. Most metals, such as copper, silver, gold, and aluminum, are not attracted to magnets. Magnets do not attract non-metallic materials, such as glass or wood. Magnets vary in strength: some can lift a car off the ground, while others can only hold a piece of paper to a refrigerator.



Bai works in a recycling center that uses magnets to sort metal items. The table shows the maximum mass of an object that can be lifted by each magnet.

Magnet Mass Limits

Magnet	A	B	C
Mass Limit	1,000 g	10 kg	1,000 kg

1. Bai's supervisor asks her to move some toaster ovens. Bai thinks Magnet B will be the best magnet to pick up the toaster ovens. Do you agree? Explain.

Yes, Magnet B has a mass limit of 10 kilograms, which is about the mass of a toaster oven.

2. Bai needs to pick up some metallic flakes around the computers. Which magnet should she use? Explain.

She should use Magnet A so that it picks up only the metallic flakes.

3. **Extension** The recycling center wants to add another magnet to lift objects such as a refrigerator or a car. What would be an appropriate mass limit for the new magnet?

Sample answer: 2,000 kilograms; A stronger magnet should lift an object with a mass greater than 1,000 kilograms.

FLORIDA

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A small population of panthers lives in the Florida Everglades National Park today. Even though this species once thrived throughout the southern United States, biologists estimate that fewer than 100 panthers remain. Florida panthers prefer to live and hunt in upland habitats, but they have demonstrated incredible resilience by learning to thrive in Florida's lower, wetland areas. How are animal behaviors influenced by their habitats? Explore animal behaviors in Topic 6, as well as other phenomena from our living world in *Savvas Science Explorations!*

GRADE 4

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