HMH Florida Science

FLORIDA STATEWIDE SCIENCE ASSESSMENT (FSSA) REVIEW AND PRACTICE

GRADE 4 STUDENT BOOKLET

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To the Student

Use the next two pages to find out about the types of questions that appear on the FSSA test given in Grade 5 and to see how your answers will be evaluated.

Multiple-Choice Questions

Most questions on the FSSA are multiple-choice. In these types of questions, four answer choices are given. The following tips will help you answer multiple-choice questions.

1. Read the question carefully. Restate the question in your own words.

2. Watch for key words such as **best, most, least, not,** or **except**.

3. Some questions may include tables, graphs, diagrams, or pictures. Be sure to study these carefully before choosing an answer.

4. Find the best answer for the question. Fill in the answer bubble for that answer. Do not make any stray marks around answer spaces.

1 Hawks are born with the ability to fly very fast so that they can catch their prey. This is called —

A desire
B hunger
C swiftness
D aerodynamics

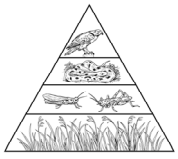
Name _____ Date _____

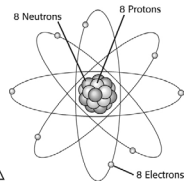
SC.4.N.1.1 Raise questions about the natural world, use appropriate reference materials that support understanding to obtain information (identifying the source), conduct both individual and team investigations through free exploration and systematic investigations, and generate appropriate explanations based on those explorations. **SC.4.N.1.6** Keep records that describe observations made, carefully distinguishing actual observations from ideas and inferences about the observations.

Skills Scientists Use

What Do Scientists Do?

Scientists ask questions and study the natural world. The study of science can be broken into different categories of Earth, life, and physical science. Earth science is the study of rocks and minerals, weather, and planets. Physical science studies matter and energy. Life science studies living things. Scientists may work alone or in teams, but they share ideas and discoveries with other scientists.





Scientists Observe and Ask Questions

Scientists make observations of the world around them. An observation is information collected using all five senses during free explorations and systematic **investigations**. Then, scientists ask questions about what they observe. To find answers, scientists conduct investigations that may include asking more questions, making more observations, finding more information through reading or talking to experts. When their investigation is finished, scientists describe what they learned, or draw a **conclusion**. Scientists may base these conclusions on actual observations or on **inferences** that they make about their observations. To infer means to draw a conclusion that was not directly observed but makes sense based on what was observed.

Investigate Using Scientific Methods

In a formal investigation, scientists can work alone or with a team to ask a question and then make a **hypothesis**, or statement about what they think the answer to the question is. They base their hypothesis on what they know. Every hypothesis can be tested. To test the hypothesis, scientists conduct an experiment, which is a fair test using one variable. Often scientists conduct multiple trials as part of the experiment. They record the results of trials. These results, or **data**, make up evidence that scientists use to support their claims. Often data is the result of measuring. A **claim** is a statement that can be supported by evidence. When the scientist shares the results with other scientists, they look at the evidence to see if the claims and conclusions are correct.

Investigations Without Experiments

Sometimes answers can be found by researching information that other scientists have shared. Some of this information is shared in science journals. Sometimes it is in books called **field guides**. Field guides have pictures and information about different topics, like flowers or snakes. Answers can also be found by making and using a **model**. Models are useful when the actual object is too big to hold, too small to see, or too difficult to reach. Sometimes scientists study recorded data, like weather reports, and look for a pattern. The pattern helps them predict what will likely happen.

Name _____ Date _____

Student-Response Activity

❶ Define these terms about scientific investigations:

Observation _____

Investigation _____

Hypothesis _____

Experiment _____

Data _____

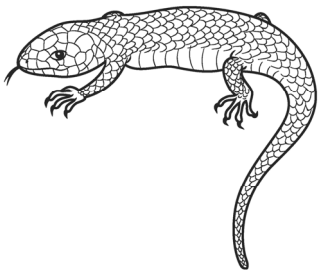
Claim _____

Model _____

Evidence _____

Conclusion _____

❷ Classify each statement about the lizard as an *observation*, *hypothesis*, *data,* or *claim*.



The lizard's tail is 5 cm long. _____

The lizard will be more active as its environment becomes warmer. _____

Since the lizard's activity increased with temperature, it will be more active in warm climates.

_____

The lizard is green and a has a red tongue. _____

The lizard's mass is 310 grams. _____

❸ What would you use to investigate each question—a model, a field guide, an experiment, or a pattern?

Which type of bird am I observing? _____

How can a submarine both float and sink? _____

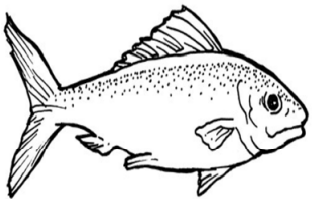
What is the difference in the amount of rainfall in fall and in spring? _____

At what temperature does chocolate melt? _____

Benchmark Assessment SC.4.N.1.1, SC.4.N.1.6

Fill in the letter of the best choice.

1 Which is an observation about this fish?



Ⓐ The fish's mass is 410 grams.
Ⓑ The fish swims in circles around its pond.
Ⓒ The fish will freeze in the winter.
Ⓓ Fish like worms, so that is good bait.

2 Which correctly orders the steps a scientist would follow in an experiment?

Ⓕ observation→communicate→ hypothesis→experiment→ claim
Ⓖ hypothesis→observation→ experiment→ claim→ communicate
Ⓗ observation→experiment→ hypothesis→ claim→ communicate
Ⓘ observation→hypothesis→ experiment→ claim→ communicate

3 You want to study the shape of raindrops. Which could be your hypothesis?

Ⓐ The raindrop appears bottom heavy.
Ⓑ The raindrop breaks apart when it hits something.
Ⓒ There are 50 raindrops that measure less than 2 ml of water.
Ⓓ With greater volume, the raindrops will fall slower.

4 Which is **not true** about an experiment?

Ⓕ It is a fair test.
Ⓖ It must be done by individuals.
Ⓗ Its results are recorded as data.
Ⓘ It is a type of investigation.

5 What do scientists use to support their claims?

Ⓐ conclusions
Ⓑ evidence
Ⓒ hypothesis
Ⓓ variables

Name _____ Date _____

SC.4.N.1.2 Compare the observations made by different groups using the same tools and seek reasons to explain the differences across groups. **SC.4.N.1.5** Compare the methods and results of investigations done by other classmates.

Why Scientists Compare Results

Scientists Gather and Share Evidence

Scientists often learn from other scientists through **research**. When scientists conduct research, they use reference materials like encyclopedias, books, articles, reliable websites, museums, or even interviews with other scientists. Sometimes sources do not agree. When this happens, scientists conduct more research to determine which data are correct.

Tools for Gathering Evidence

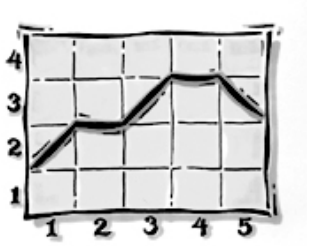
Scientists use tools to help them make observations and accurate measurements. Each tools has a specific purpose. Scientists must choose the correct tools for gathering evidence.

- **Telescopes** help scientists view objects that are far away. **Microscopes** help them view tiny objects.
- **Graduated cylinders** measure the volume of liquids or anything that can be poured.
- **Pan balances** measure mass in grams.
- **Spring balances** measure force in newtons.
- **Thermometers** measure temperature in degrees in Celsius or Fahrenheit.

Recording and Comparing Evidence

The information scientists gather from observations and measurements is called **data**. Scientists use this data as **evidence**. **Claims** are statements that are supported by evidence. After scientists analyze data, they draw **conclusions** that can then be communicated to other team members or even other scientists.

Data can be recorded in **data tables,** which make reading the data easier. **Graphs** can also be used to display the data and to help reveal patterns and relationships in the data. Graphs help scientists communicate their results and compare their results with others.



Scientists also communicate their results to others by giving talks, writing reports, or publishing articles. Sometimes this leads to new questions scientists want to investigate.

Different Results

Scientists like to compare their results with other scientists. Similar results tell the scientists that their results are probably right. Different results force scientists to explore further. They want to determine why the results are different. First they make sure that they used the same procedure. Different procedures can have different results. They also explore the possibility that they made errors in their measurements or in recording their data incorrectly. They may even repeat the experiment to see if they can get the same results the next time.

Name _____ Date _____

Student-Response Activity

❶ What is the purpose of each of the following in an experiment?

tools _____

data _____

data tables _____

graphs _____

evidence _____

❷ Two scientists compare their results and find that they are different. Why might this happen? Why do they want their results to be the same?

_____

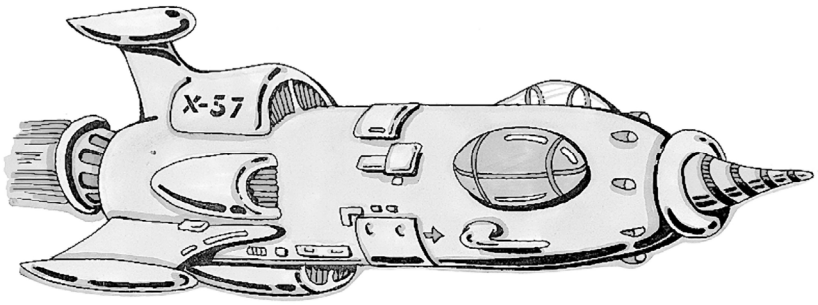
_____

_____

_____

_____

❸ Name two resources you can use to research space travel. Explain what you should do if the sources disagree.



_____

_____

_____

_____

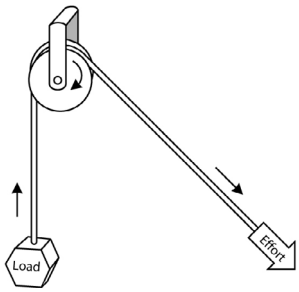
_____

_____

Benchmark Assessment SC.4.N.1.2, SC.4.N.1.5

Fill in the letter of the best choice.

❶ Observe this diagram.



Which tool would you use to measure the force of the load?

Ⓐ graduated cylinder
Ⓑ pan scale
Ⓒ spring scale
Ⓓ tape measure

❷ Which research source would be **best** to study full-size dinosaur fossils?

Ⓕ books
Ⓖ museum
Ⓗ science articles
Ⓘ website

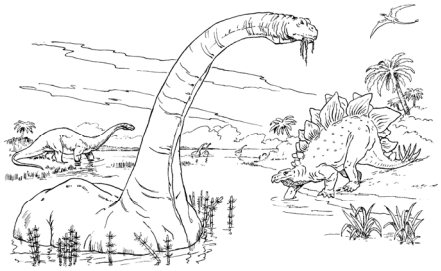
❸ How do scientists communicate their results?

Ⓐ giving talks and publishing articles
Ⓑ evidence
Ⓒ confirming their hypothesis
Ⓓ analyzing data in bar graphs

❹ What would be the **most likely** reason two teams doing the same investigation draw different conclusions?

Ⓕ They started with a different hypothesis.
Ⓖ One used observations and the other an experiment to collect data.
Ⓗ One used a pan scale and the other a spring scale to weigh their samples.
Ⓘ They recorded their data in tables.

❺ Two scientists draw different conclusions about dinosaurs.



Why might this happen?

Ⓐ They read the same website.
Ⓑ Many books agree that dinosaurs existed.
Ⓒ They heard different scientists share their conclusions about dinosaurs.
Ⓓ Scientists make inferences because alligators look like dinosaurs.

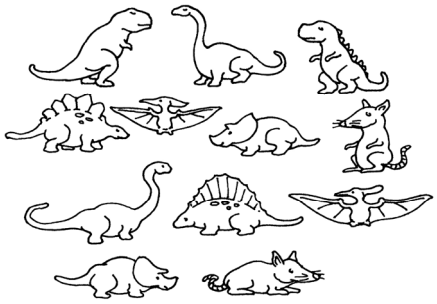
Name _____ Date _____

SC.4.N.1.3 Explain that science does not always follow a rigidly defined method ("the scientific method") but that science does involve the use of observations and empirical evidence.
SC.4.N.1.7 Recognize and explain that scientists base their explanations on evidence.

Observations and Evidence

Using Evidence

Not all scientific questions can be answered through experiments alone. What questions do you think came up when the first dinosaur fossils were found long ago? Through **observation**, or information collected using their senses, scientists could not match the fossils to any animal they knew. In fact, these scientists concluded that these fossils were from an oversized man! Since the 1700s, more fossil evidence has been found and scientists have general agreement that dinosaurs ruled the earth about 150 million years ago. Scientists studied and compared the fossil evidence from many scientists in different countries over a long period of time to reach this conclusion.



Investigation Methods

In the example above, you can have an investigation without an experiment. In an investigation, you still have a hypothesis, but the evidence to support your conclusions comes from different sources. Scientists may use identification guides as evidence when it comes to determining a type of living thing. Pictures and descriptions in the guide can support the scientist's claim.

In other cases, such as why there are different phases of the moon, the best method to gather evidence is to construct a model. Scientists cannot make Earth, the moon, and the sun move at their command, but they can use models of Earth and the moon and a light for the sun to see how the shadows can cause the different moon phases. **Models** are particularly helpful when the objects being studied are very large or very small. Sometimes, models are used because it might be too dangerous to gather data directly.

Scientists also use existing reports to gather evidence. For example, weather data is collected for the purpose of predicting the weather. However, scientists also analyze it to find evidence of seasonal weather patterns.

Research Sources

Another great way to answer scientific questions is to find **research**, or conclusions that other scientists have already reached through their own investigations. When scientists discover something new, they often publish their results in science journal articles, write books, or give talks about their findings. Encyclopedias contain information about a large number of scientific subjects. Museums also contain large amounts of evidence and other findings in one building. Of course, you can also use your computer to find information on reliable websites through Internet searches. All of these sources help scientists and can help you answer scientific questions.

Name _____ Date _____

Student-Response Activity

❶ Explain how scientists can gather evidence without doing an experiment.

_____

_____

_____

_____

_____

❷ Which is the **best** method (*model, identification guide, data patterns*) a scientist should follow to gather evidence in support of each hypothesis? The answers can be used more than once.

The sun rises in the east due to Earth's rotation. _____

The bird is a male mockingbird. _____

The altitude in Colorado will lead to more home runs in their stadium. _____

The plant is a type of fern. _____

The shape of a cruise boat is what allows it to float. _____

❸ Describe how you would use an encyclopedia, books, websites, and museums for a science project.

_____

_____

_____

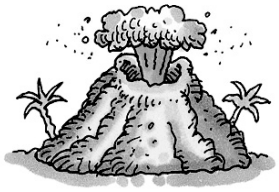
_____

_____

Benchmark Assessment SC.4.N.1.3, SC.4.N.1.7

Fill in the letter of the best choice.

1. Which model would help you study how lava flows?

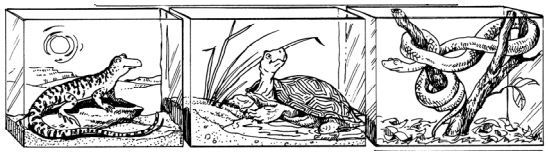


Ⓐ blender mixing yogurt
Ⓑ water flowing through a straw
Ⓒ ice cubes pouring from a glass
Ⓓ pudding pouring down a ramp

2. Which is **not true** about a hypothesis?

Ⓕ It only applies to investigations that include experiments.
Ⓖ It is a statement about what scientists think will happen in an investigation.
Ⓗ Scientists use evidence to determine if it was right or wrong.
Ⓘ It answers the question being asked in an investigation.

3. Which is the **best** resource for identifying the types of reptiles below?



Ⓐ historical records
Ⓑ model of reptile life cycle
Ⓒ identification guide
Ⓓ experimental data

4. What is common about most research data?

Ⓕ They all have the same hypotheses.
Ⓖ Their results are always based on experiments.
Ⓗ They communicate the evidence of investigations.
Ⓘ They always draw the same conclusion.

5. Which evidence is **not** the result of an observation?

Ⓐ The average mass of the five rocks is 3 grams.
Ⓑ The arrowhead fossils all have the same shape.
Ⓒ The rainfall totals in the summer are half of the totals in the spring.
Ⓓ The volcano's lava flow advanced at 5 feet per second.

Name _____ Date _____

SC.4.E.5.1 Observe that the patterns of stars in the sky stay the same although they appear to shift. **SC.4.E.5.2** Describe the changes in the observable shape of the moon over the course of about a month. **SC.4.E.5.3** Recognize that Earth revolves around the Sun in a year and rotates on its axis in a 24-hour day. **SC.4.E.5.4** Relate that the rotation of Earth (day and night) and apparent movements of the Sun, Moon, and stars are connected.

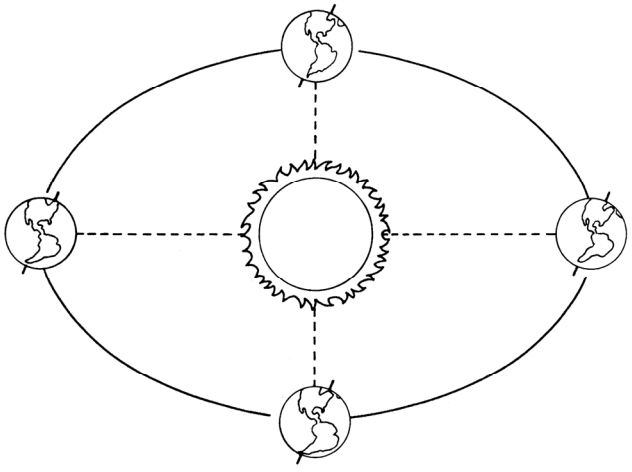
The Sun, Earth, Moon, and Stars

Patterns and Cycles

Many events on Earth take place in cycles. A **cycle** is a series of events that takes place over and over again. There are many cycles in Earth's movement in space.

The Sun in the Sky

One of the most obvious patterns on Earth occurs every day. You are so used to it that you probably don't even notice it. Every day, the sun appears to rise in the east, to be high in the sky at midday, and to set in the west in the evening. This pattern is so regular that we can predict the exact time that the sun will rise and set at any place on Earth. This cycle of day and night is actually caused by the spinning of Earth on its axis, which is called **rotation**.



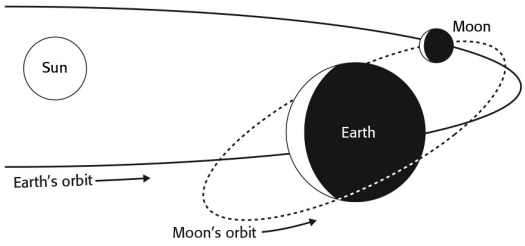
Earth rotates on its axis once every 24 hours. It is daytime for the half of Earth that faces the sun. It is nighttime for the other half of Earth, which faces away from the sun. Earth is constantly spinning, so the parts of Earth experiencing day and night are constantly changing.

Apparent Motion

People used to think that the sun traveled around Earth each day. This explained why the sun seemed to move across the sky. We now know that the sun does not move across the sky. If you stand in place and spin in a circle, you will see objects appear to move around you. The same thing happens each day with the sun, moon, and stars in the sky. Due to Earth's rotation, the sun, stars, and moon appear to move from east to west in the sky.

Earth Movement Around the Sun

As Earth rotates, it also travels around the sun. The movement of one object around another is called a **revolution**. When Earth completes one trip around the sun, that is one revolution. It takes Earth one year, or about 365 days, to complete one revolution around the sun.



The path that Earth takes around the sun is an **orbit**. Earth travels around the sun in an elliptical orbit, similar to an oval. As Earth travels around the sun, its distance from the sun changes. Due to the oval-like shape of its orbit, Earth is farther from the sun at some points than others.

The Moon's Patterns

When you look at the night sky and observe the moon, you are looking at another cycle. The moon's appearance changes from day to day. Some nights the moon looks like a bright circle. Other nights you only see it as a small sliver. The different shapes the moon appears to have are called **moon phases**.

The moon does not give off its own light. You see the moon because it reflects light from the sun. The sun gives off its own light. Light travels from the sun to the moon and bounces off of it. Some of that light is reflected toward Earth.

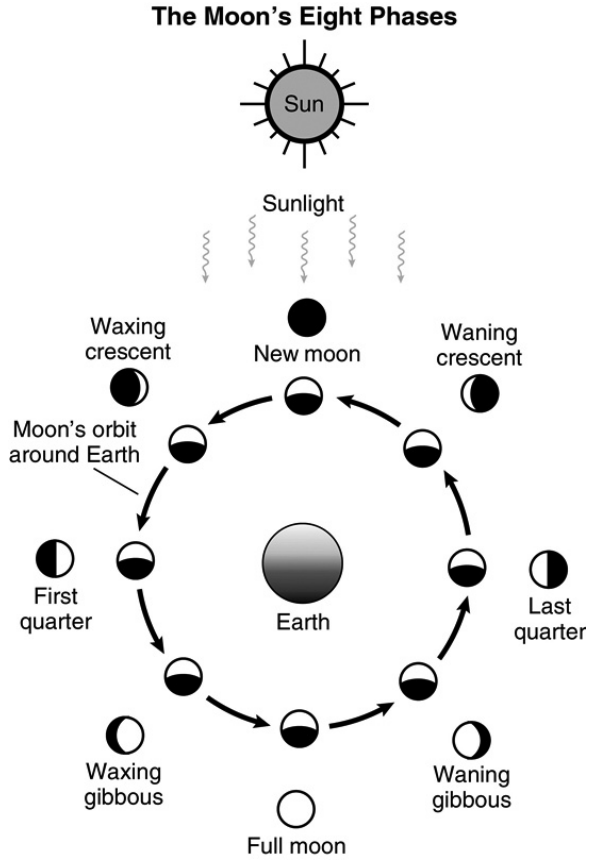
Like Earth, half of the moon is lit by the sun at any time. However, you can't always see the part of the moon that is lit. That's because the moon revolves around Earth. It takes just less than one month for the moon to orbit Earth one time. A full moon occurs once every 29½ days. Many calendars mark when a full moon occurs.

The moon's phases are constantly changing. When the moon looks like a large circle in the sky, it is called a full moon. If you are outside during a full moon, it provides light for you to see. Nights with a full moon are not as dark as other nights. A full moon occurs when Earth is between the moon and the sun. You can see the entire lighted part of the moon.

Each night over the next two weeks, you see less and less of the lit half of the moon. A new moon occurs when the moon is between the sun and Earth. The entire lit side of the moon is facing away from Earth, and you cannot see the moon in the sky. Nights when there is a new moon are very dark. Then, over the next two weeks, the moon slowly returns to being full.

Name _____ Date _____

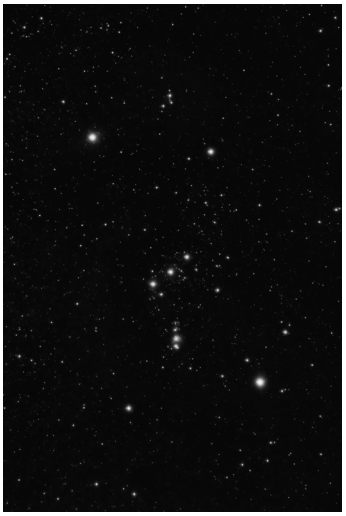
Benchmark Review
SC.4.E.5.1, SC.4.E.5.2, SC.4.E.5.3, SC.4.E.5.4



Star Patterns

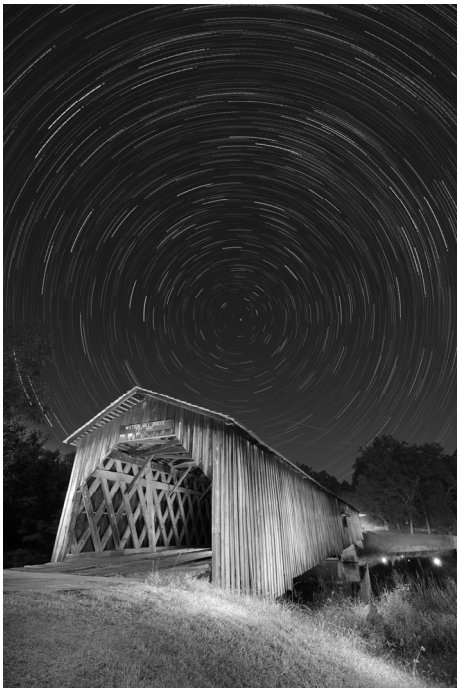
For thousands of years, people have observed patterns of stars in the night sky. As Earth rotates on its axis, stars appear to move across the sky. And, as Earth revolves around the sun, the star patterns appear to move.

Some star patterns are visible only during certain seasons. For example, Orion is a bright star pattern that occurs during winter in the Northern Hemisphere. During the summer Orion is below the horizon and is not visible.



Orion is a star pattern that many people recognize in the night sky.

In the Northern Hemisphere, Polaris, or the North Star, appears in the night sky above the North Pole. As Earth spins on its axis, the stars around Polaris appear to revolve around it.



Name _____ Date _____

Student-Response Activity

❶ Write a definition for each term below.

rotation _____

_____

revolution _____

_____

orbit _____

_____

❷ Explain how Earth's rotation causes day and night.

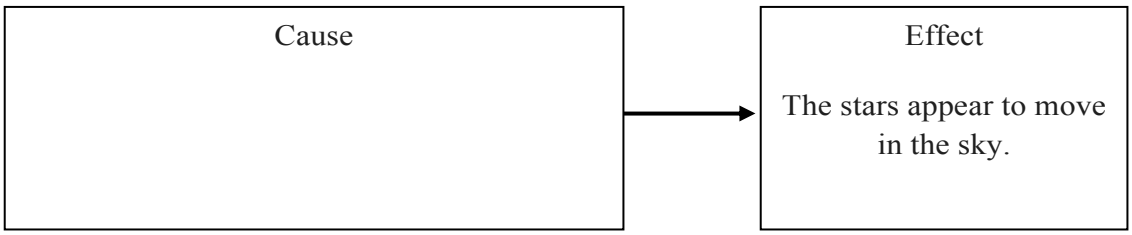
_____

_____

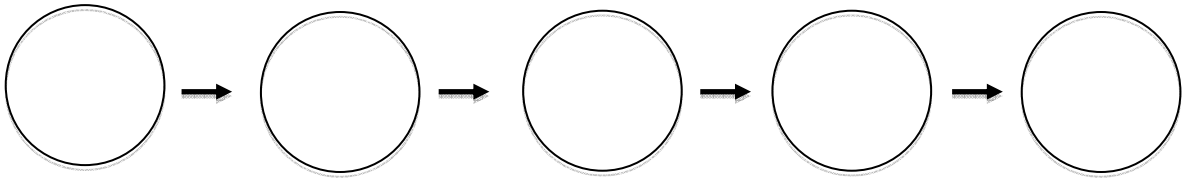
_____

_____

❸ Complete the cause-and-effect graphic organizer below.



❹ Shade to show how the appearance of the moon changes over a month.



Benchmark Assessment SC.4.E.5.1, SC.4.E.5.2, SC.4.E.5.3, SC.4.E.5.4

Fill in the letter of the best choice.

❶ How does Earth move around the sun?

Ⓐ rotation
Ⓑ revolution
Ⓒ apparent motion
Ⓓ circular orbit

❷ Which statement about star patterns is **true**?

Ⓕ Star patterns are visible all year.
Ⓖ Star patterns are only visible in the Southern Hemisphere.
Ⓗ Star patterns are only visible during certain seasons.
Ⓘ Star patterns are only visible during the day.

❸ Observe this picture.

Which moon phase do you predict will come next?

Ⓐ new moon
Ⓑ full moon
Ⓒ waning crescent
Ⓓ first quarter

❹ Why do the sun, moon, and stars appear to move across the sky?

Ⓕ They all revolve around Earth.
Ⓖ The moon and stars revolve around Earth.
Ⓗ Earth rotates around the moon.
Ⓘ Earth rotates on its axis and revolves around the sun.

❺ Observe this globe below.

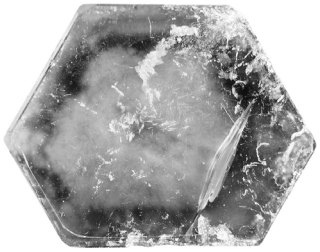
In which direction does the globe need to spin to simulate Earth's rotation?

Ⓐ to the left
Ⓑ to the right
Ⓒ to the top
Ⓓ to the bottom

SC.4.E.6.1 Identify the three categories of rocks: igneous, (formed from molten rock); sedimentary (pieces of other rocks and fossilized organisms); and metamorphic (formed from heat and pressure). **SC.4.E.6.2** Identify the physical properties of common earth-forming minerals, including hardness, color, luster, cleavage, and streak color, and recognize the role of minerals in the formation of rocks.

Rocks and Minerals

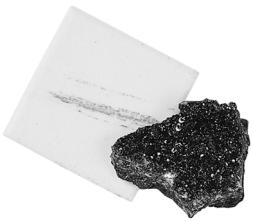
A **mineral** is a nonliving solid with a crystal form. Diamonds are minerals, and so is salt. Metals, such as copper, silver, and gold, are minerals. Minerals form in nature. They can be found under the ground, in caves, and in rocks. Earth has more than 4,700 minerals.



Not all minerals are shiny or clear or the same shape. Mineral crystals may have different shapes, but each kind of mineral always has the same crystal form because the particles in a crystal pattern are repeated. The repeated form is what determines a crystal. Salt crystals do not look like diamond crystals or pyrite crystals.

Physical Properties of Minerals

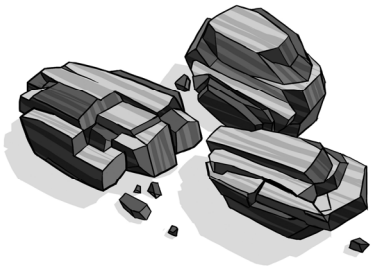
Minerals have many physical properties, such as color, hardness, streak color, cleavage, crystal structure, luster, and magnetism.



Hardness is one of the best properties to use to figure out what kind of mineral you are studying. Hardness is a mineral's ability to scratch another mineral. You can scratch talc easily, but you cannot scratch a diamond. Hardness is measured on the Mohs scale. The softest minerals, such as talc, score a 1. The hardest minerals, such as diamonds, score a 10.

Mohs' Hardness Scale	
1	Talc
2	Gypsum
3	Calcite
4	Fluorite
5	Apatite
6	Feldspar
7	Quartz
8	Topaz
9	Corundum
10	Diamond

Color is the color the mineral appears. Rubies are red, and quartz is usually white or pink. **Streak** color is the color of the line left when rubbing a mineral over a streak plate. Graphite, the mineral in pencil lead, leaves a black or gray streak. The streak color is not always the same as the mineral's color. **Luster** is how shiny a mineral is. Luster is the way a mineral reflects light. Gold is shiny even when it is only specks in a rock.



Cleavage describes minerals that break with sides that are smooth and straight. It also tells you the shape of the cleavage surfaces. These surfaces carry geometry names, such as square prism or hexagonal prism. Mica is a mineral that breaks in thin sheets or cleavage lines.

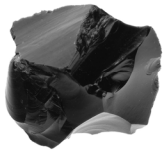
Rocks

Minerals combine to make up rocks. There are three types of rocks: igneous, metamorphic, and sedimentary. Each type of rock forms differently.

Igneous Rocks

Rock formed by a volcano is **igneous** rock. This type of rock begins as molten rock, called **magma**, deep inside Earth. Magma can move upward toward Earth's surface. Igneous rocks form when the magma cools and hardens.

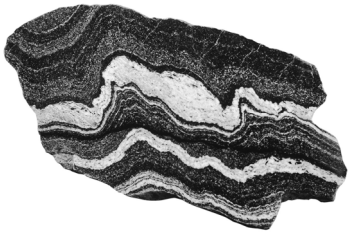
Volcanic lava cools and forms several kinds of igneous rock. Common igneous rocks include pegmatite and granite. Lava rocks include pumice and obsidian. Pumice is rough and is the only rock that floats. Obsidian is like glass. Long ago, humans broke off pieces of obsidian to use as spear tips and cutting tools.



Metamorphic Rocks

Metamorphic rocks are rocks that have been changed by high heat and pressure. High heat and pressure change the way a rock looks, and may change the minerals that make the rock into other minerals.

Both igneous rocks and sedimentary rocks can become metamorphic rocks. Shale is a common, gray sedimentary rock. Under heat and pressure it becomes slate. Add more heat and pressure, and slate becomes schist.



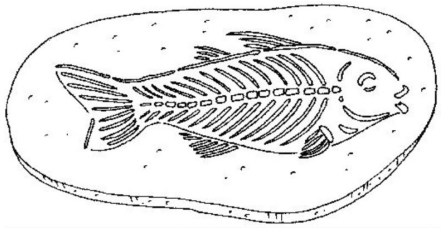
Marble is a metamorphic rock that began as limestone. It has the same color as limestone, but it is much harder.

Changes take place deep under Earth's surface to form metamorphic rocks. Mountains often contain metamorphic rock because they form when two large land masses push together. The land rises up, twists, and breaks. The pressure and heat make the metamorphic rock, and more pressure breaks the rock.

Sedimentary Rocks

About three-fourths of all rocks on Earth's surface are sedimentary rocks. Wind, water, ice, plants, and animals break down rock exposed on Earth's surface. The particles broken off rock are called sediment. Sediment collects in river and lake bottoms, and sea and ocean floors. Over time, pressure increases and particles become glued or cemented into rock.

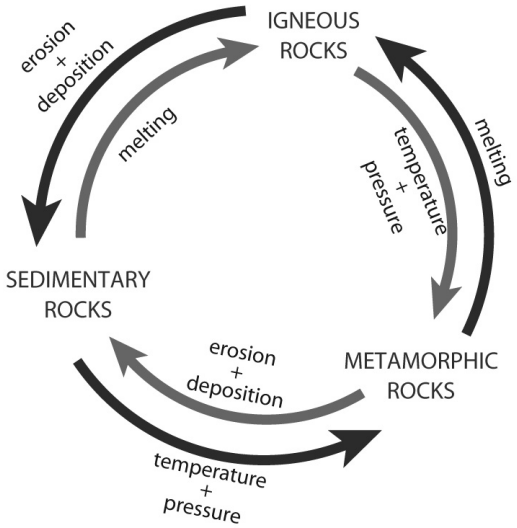
Common sedimentary rocks include limestone and shale. Because of the way sedimentary rock is formed, the remains of dead animals and plants may be found pressed into the rock. These remains, called **fossils**, are only found in sedimentary rock.



With sedimentary rock, the bottom or lower layers are usually older than the upper layers. If you look at a cliff and see several layers of rock, you will know two things. First, each layer represents a different period of time when sediment collected. Second, unless something unusual happened, the top layer is the newest layer. Every layer that you move down from the top is older than the one above it.

The Rock Cycle

Rock is continuously recycled. A volcano erupts and new igneous rock forms. Wind, water, and other agents break down the rock into particles. The particles are eroded and deposited elsewhere. The particles, over time, become sedimentary rock. Earth has an earthquake, or folding, of sedimentary rock. That rock goes deep under Earth's crust. There, under heat and pressure, it melts, and eventually becomes magma for either igneous rock or metamorphic rock. Once the changed rock reaches Earth's surface, the process of wearing the rock down, eroding it, and depositing it begins again.



Name _____ Date _____

Student-Response Activity

❶ Explain how each type of rock is formed.

Igneous rock _____

_____

Metamorphic rock _____

_____

Sedimentary rock _____

_____

❷ You have an unknown mineral. What are three ways you could test this sample to find out what mineral you have?

_____

_____

_____

❸ Feldspar is a mineral, and so is quartz. When they form together, they make a rock. How would you explain the difference between minerals and rocks?

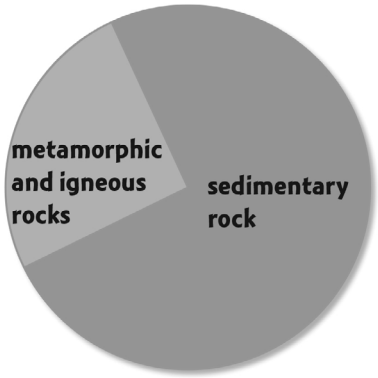
_____

_____

_____

_____

❹ Observe the circle graph. Why do you think there is so much more sedimentary rock on Earth's surface than metamorphic and igneous rocks?



_____

_____

_____

_____

_____

Benchmark Assessment SC.4.E.6.1, SC.4.E.6.2

Fill in the letter of the best choice.

❶ Which group contains only igneous rocks?

Ⓐ pumice and porphyry
Ⓑ slate and schist
Ⓒ sandstone and limestone
Ⓓ gold and copper

❷ René has a mineral sample that she runs a nail over as a test. Which property is she testing?

Ⓕ hardness
Ⓖ luster
Ⓗ streak
Ⓘ texture

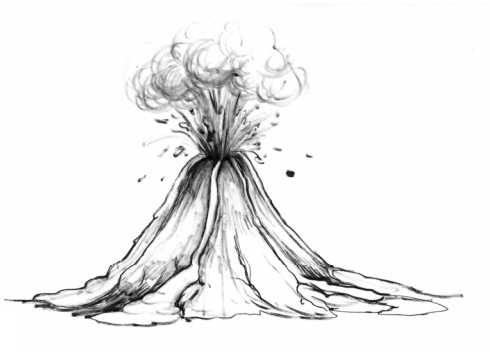
❸ A rock forms under pressure at the bottom of a shallow sea. What kind(s) of rocks form?

Ⓐ igneous and sedimentary rocks
Ⓑ metamorphic and igneous rock
Ⓒ metamorphic rock
Ⓓ sedimentary rock

❹ Sam gently strikes a mineral sample with a hammer. The sample breaks along a flat surface. Which physical property of minerals does this show?

Ⓕ cleavage
Ⓖ luster
Ⓗ magnetism
Ⓘ streak

❺ Observe the picture.



Which type of rock is being formed?

Ⓐ igneous rock
Ⓑ limestone rock
Ⓒ metamorphic rock
Ⓓ sedimentary rock

SC.4.E.6.3 Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable. **SC.4.E.6.6** Identify resources available in Florida (water, phosphate, oil, limestone, silicon, wind, and solar energy).

Natural Resources

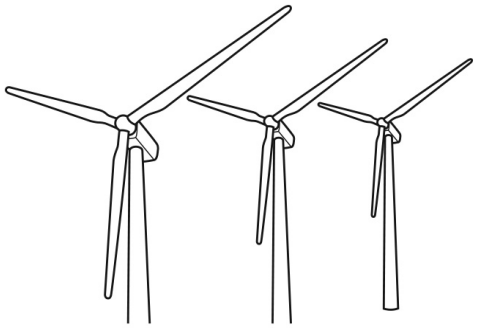
Earth provides you with many natural resources. Resources are the materials you use for building, growing crops, heating and lighting homes, making useful goods, and enjoying yourself. Resources may be renewable resources, such as wind, water, and sun. They may be nonrenewable, such as oil, natural gas, and stone.

You can use resources in their natural state, such as paving stones, coal, or natural gas. You can also make other things using resources. Shoes, plastic, pencils, and glass are made from resources. Shoes are made from plastic, rubber, and leather. Plastic is a petroleum product. Pencils are made from wood and graphite. Glass is made from silica, usually in the form of sand.

Renewable Resources

Renewable resources are resources that can be grown or replaced within a fairly short period of time. A forest is a renewable resource. Even if all trees are cut down, replanting will replace those trees within a human lifetime. Plants and animals are grown, used, and replaced.

Other renewable resources are part of the natural world. Sunlight, wind, water, and oxygen are renewable resources. For centuries, people used wind or water to power mills. Today, wind mills generate electricity.



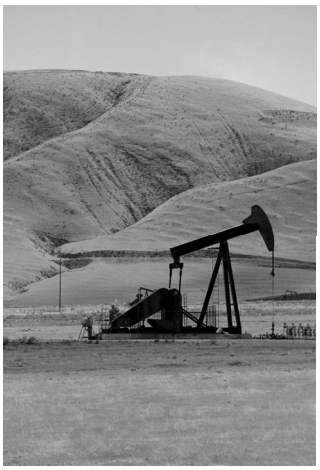
Moving water turns turbines in hydroelectric plants and also generates electricity. We use water for cleaning, drinking, preparing food, swimming, and other uses.

Sunlight powers all plant life, which, in turn, supports animal and human life. Today, people harness the sun's power to make electricity and provide heat.

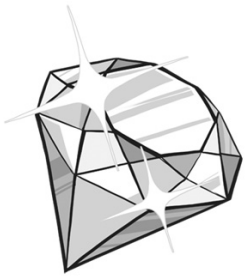
Some renewable resources can be recycled. Paper, a product made from wood, can be processed back into wood pulp and used to make new paper. Other renewable resources, such as rubber, cannot be recycled. Old tires cannot be used to make new tires. They can, however, be ground up and used in paving roads.

Nonrenewable Resources

Nonrenewable resources are natural resources that cannot be replaced within a reasonable amount of time.



Nonrenewable resources such as coal, natural gas, and petroleum cannot be replaced within a human lifetime. Called **fossil fuels**, these energy resources may take billions of years to be formed. Minerals and metals are also nonrenewable resources. Iron, aluminum, copper, gold, and silver are commonly used in manufacturing. Iron is a major part of making steel. Aluminum is found in everything from soda cans to light fixtures to automobiles. Gold, silver, and diamonds are used in industry, to make computers, and in jewelry.



While most metals can be recycled, they cannot be replaced. Humans can mine iron, but they cannot make iron.

Florida's Resources

Florida has an abundance of renewable and nonrenewable resources. Among the most important renewable resources are sunlight, water, and wind. The sun supports farming, fishing, generating power, and tourism.

Florida's nonrenewable resources include phosphate, oil, limestone, and silica. Phosphate, limestone, and silica are mined products. Phosphate is used in fertilizer. Limestone is a building material, and silica is used in making computer chips.

People in Florida use local resources to make a living. Florida's tourist industry makes use of the state's sandy beaches, ocean waters, and fishing opportunities. Many farmers take advantage of Florida's rich soil and warm climate to grow vegetables or manage groves that produce oranges and grapefruit. Florida limestone is a common stone in making cement and also as a building stone.

Wetlands and wilderness areas are among Florida's most valued natural resources. Thousands of people every year tour the Everglades to catch sight of cranes, egrets, and alligators.

Name _____ Date _____

Student-Response Activity

❶ Define these terms.

renewable resource _____

_____

nonrenewable resource _____

_____

❷ Sort these resources into renewable resources and nonrenewable resources.

oil	natural gas	limestone	timber	water
gold	coal	iron	sun	wind

Renewable Resources	Nonrenewable Resources

❸ Why would a wetland environment in Florida be considered a natural resource?

_____

_____

_____

❹ The use of resources can cause problems. What solutions can be used to save some of these natural resources? Fill in the blank spaces in this chart.

Possible Problems	Possible Solutions
1. Overfishing in Florida's waters	
2. Cutting trees down for timber	
3. Using too much limestone for building	

Benchmark Assessment SC.4.E.6.3, SC.4.E.6.6

Fill in the letter of the best choice.

❶ How do humans use wind as a resource?

Ⓐ for cooling homes and buildings
Ⓑ for heating their homes in winter
Ⓒ for making electric power
Ⓓ to run cars for going to work or school

❷ Which is one way to reduce the use of natural gas?

Ⓕ to use wind or solar power to produce electricity for homes
Ⓖ to limit the amount of natural gas people are allowed to use
Ⓗ to cut the amount people drive
Ⓘ to stop truck travel on highways

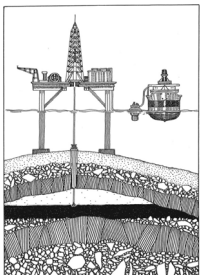
❸ A city in central Florida wants to change how it generates electric power for its citizens. The city currently uses coal, which is not expensive but causes air pollution. Which would be the **best** source to make electricity for the city?

Ⓐ oil because it is nonrenewable, it causes air pollution, and is cheap
Ⓑ water because Florida has plenty of water around it
Ⓒ biomass because Florida can always grow more forests if it needs to, although burning wood does cause air pollution
Ⓓ solar power because it is renewable, and it does not pollute the environment.

❹ Students were asked to choose a resource and explain how it is used. Which student did not follow the assignment?

Ⓕ Cara chose silicon, explained mining, and told that silicon is used in computer chips.
Ⓖ Chan compared the use of coal to natural gas in generating electricity and explained the costs of each.
Ⓗ Coco showed six soil samples and a list of fruits and vegetables grown in each type of soil.
Ⓘ Callie made a poster showing where limestone is mined in Florida and buildings made of limestone.

❺ This picture shows a drilling rig pumping oil from an oil reserve.



What problem might engineers face when collecting this resource?

Ⓐ The oil reserve is underground.
Ⓑ The reserve has too much oil to collect.
Ⓒ Oil pollution might occur from an oil spill at the drilling rig.
Ⓓ People no longer use oil, so collecting oil is a wasted effort.

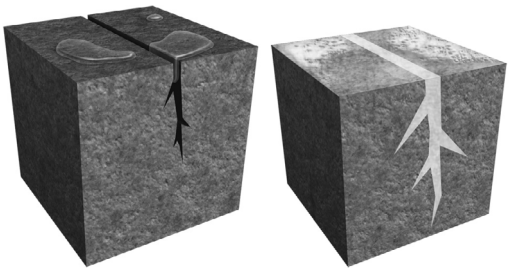
Name _____ Date _____

SC.4.E.6.4 Describe the basic differences between physical weathering (breaking down of rock by wind, water, ice, temperature change, and plants) and erosion (movement of rock by gravity, wind, water, and ice).

Weathering and Erosion

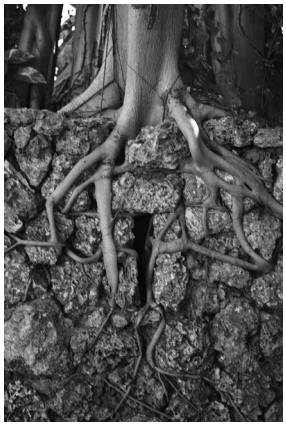
Rock on the surface of Earth is exposed to wear from climate, weather, and other activity. Humans, plants, and animals can cause rocks to wear away. Earth's rocks face a continuous process of building, weathering, erosion, and deposition.

Weathering



The process of breaking down rock is called **weathering**. The two most common ways to wear down, or weather, rock are wind and water. It might not seem like a raindrop can wear down a rock, but over time, millions of raindrops can carve into rock. Wind picks up particles of rock and strike solid rock. Every strike weakens the rock a very little bit, until the particles of rock break off.

Weathering can also take place by ice, gravity, plants, and animals. For example, when it rains, a crack in a rock fills with water. If the water freezes, the ice pushes against the rock and breaks off pieces of rock. If the crack is large enough, the ice may cause the boulder to crumble. Plant roots and digging animals can have the same effect.



Gravity works on mountains, cliffs, and hillsides. The force of gravity is always present. A clump of rocks rests on the hill. A storm, an animal, or even the rumble of a train causes the rocks to shift. Suddenly, they head downhill, knocking and breaking particles off more rocks.

Erosion

While weathering breaks particles off, **erosion** carries the particles away. Again, water and wind are the main agents of erosion. As particles break off rocks, wind and water carry them away. In this natural bridge, weathering by water weakened the rock, causing the arch to form. Erosion by water carried the sediment away.

Erosion by wind also carries sediment. When wind loses its power or strikes an object, it drops the sediment. This is how **sand dunes** on a beach or in a desert are formed. Wind can be a powerful source of energy for carrying sediment. Winds in the Sahara have carried particles of sand across the desert and all the way to North America.

Erosion can also happen very quickly. A strong hurricane pushes wind and water. The wind and water pick up massive amounts of sand and deposit it on roads or homes.

Erosion may also take millions of years. The Grand Canyon and this canyon in Flaming Gorge National Recreation area were carved over a very long time.

Deposition

Deposition happens when water or wind no longer carry the particles they picked up. They drop the particles and may create a new landform. A **delta** at the end of a river is formed by depositing sediment. Most **barrier islands** are formed the same way. In the picture, you can see an **alluvial fan**, which is particles carried off a mountain and dumped where a river or stream loses its strength.

Glaciers

Glaciers are like bulldozers. They push and scrape at rocks. They crush rocks under their weight, and they cause huge amounts of sediment to form. The sediment gets caught in the ice and may stay there for thousands of years. When the glacier finally melts, it deposits the material it carried. Sometimes that material is big enough to create an island. For example, Long Island, New York, was formed from the deposited sediment left by a glacier.

Student-Response Activity

❶ Describe each process.

Weathering _____

_____

_____

Erosion _____

_____

_____

Name _____ Date _____

❷ Observe this picture. Which processes cause changes to these canyon rocks?

_____

_____

_____

_____

_____

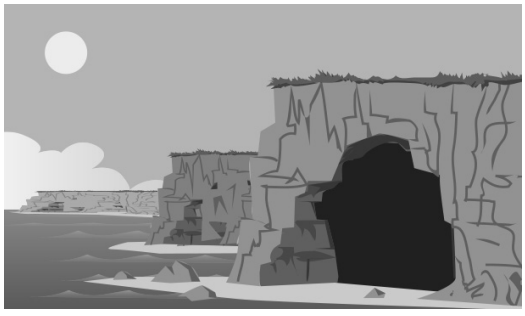
❸ How can a tree cause weathering to a rock?

_____

_____

_____

❹ Observe this picture. How did weathering, erosion, and deposition act on this rock cliff?



_____

_____

_____

_____

_____

Benchmark Assessment SC.4.E.6.4

Fill in the letter of the best choice.

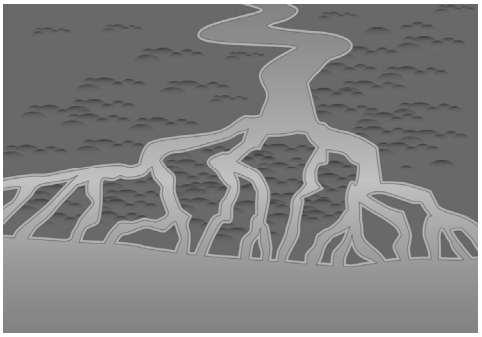
❶ Which is an example of erosion?

Ⓐ wind carving a rock cliff
Ⓑ sand and dirt collecting at the mouth of a river
Ⓒ ice filling a space in a rock and cracking bits of rock
Ⓓ floodwater carrying dirt downstream

❷ How do plants prevent soil erosion?

Ⓕ Plant roots hold soil in place.
Ⓖ Plants provide food for plant eaters.
Ⓗ Roots take in water from the soil.
Ⓘ Green leaves produce food for the plant.

❸ Which two processes worked together to cause this landform?

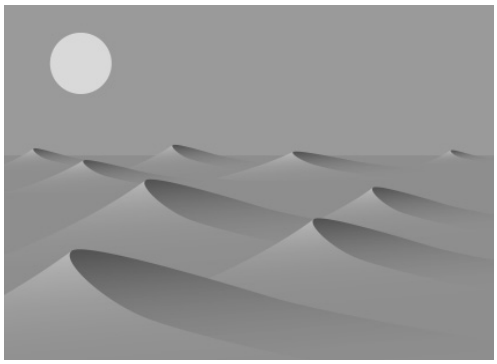


Ⓐ deposition and weathering
Ⓑ erosion and deposition
Ⓒ weathering and erosion
Ⓓ flooding and weathering

❹ Which is **not** a natural form of erosion?

Ⓕ a garden hose washing dirt down a driveway
Ⓖ rain falling on a grassy field
Ⓗ waves moving sand on a beach
Ⓘ a rock rolling down a hill

❺ What caused this landform?



Ⓐ gravity
Ⓑ ice
Ⓒ water
Ⓓ wind

SC.4.P.8.1 Measure and compare objects and materials based on their physical properties including: mass, shape, volume, color, hardness, texture, odor, taste, attraction to magnets.

Physical Properties of Matter

Matter is anything that has mass and takes up space. Matter has physical properties that you can observe with your five senses: sight, hearing, taste, touch, and smell. A **physical property** is a characteristic of matter that you can observe or measure directly. You can describe matter by listing the physical properties you observe. For example, you can describe an apple as red, crunchy, sweet, and smooth using properties you observe with your senses.

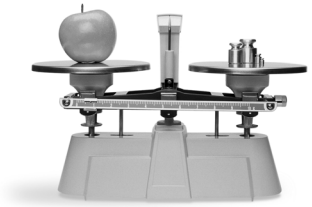
Using Your Senses

Shape, color, hardness, texture, odor, and taste are some of the physical properties you can observe using your senses. An object's color, taste, and odor can be observed using senses of sight, taste, and smell. Hardness is how easily an object's shape can be changed. Size is how big something is. Shape is the form an object has. Texture is the way the surface of an object feels to the touch. How would describe the texture, shape, and size of a kitten?

Mass

You can also use tools to measure some physical properties of matter. For example, you can measure the mass of the apple. Mass is the amount of matter an object contains. Mass is most commonly measured in grams (g) or kilograms (kg).

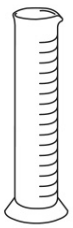
You can measure the mass of an object using a tool called a pan balance. Place the object to be measured on one side of the balance. Add known masses to the other side. Keep adding masses until the pans are level. Then add the known masses together to find the mass of the object.



You can also find the mass of a liquid. First, find the mass of the container. Then add the liquid, and find the total mass of the liquid in its container. Then, subtract the mass of the container from the total mass—the difference is the mass of the liquid inside the container.

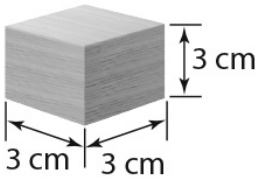
Volume

An object's **volume** is the amount of space it takes up. You can use a graduated cylinder to measure the volume of a liquid. The volume of a liquid is often measured in milliliters (mL) or liters (L).

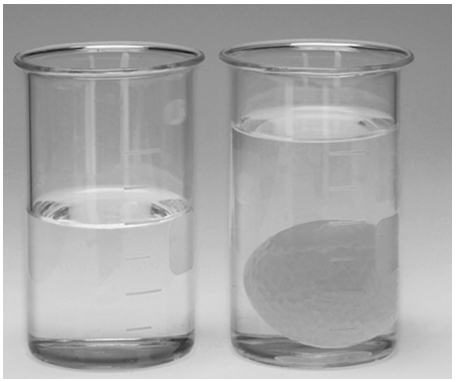


Name _____ Date _____

To calculate the volume of a cube or a rectangular solid, measure its length, width, and height. Then multiply these three numbers. The volume of a solid is often expressed in cubic centimeters or cubic meters.

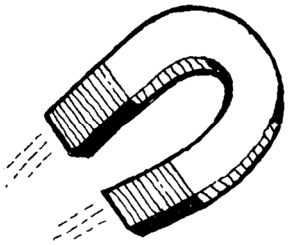


You can use a graduated cylinder or beaker to find the volume of an irregular solid, such as an egg. Read the level of the water in the graduated cylinder or beaker to find the volume of the water. Add the egg, and read the volume again. This is the total volume of the water and the egg. Subtract the volume of the water from the total volume. The difference is the volume of the egg. One milliliter equals 1 cubic centimeter, so change milliliters to cubic centimeters in your answer.



Attraction to Magnets

Some objects have unusual physical properties. For example, some metals are attracted to magnets. Objects that contain these metals are pulled toward a magnet. When you hold a magnet near a steel paperclip, which contains iron, the iron will be attracted, or pulled toward, the magnet.



Student-Response Activity

❶ Dessie has a container of paperclips—some that are steel and some that are aluminum. She wants to sort them by material. What is one method for sorting the paperclips?

_____

_____

_____

_____

_____

Name _____ Date _____

❷ This table shows data about two objects.

Object	Mass	Volume
A	50 g	36 cubic centimeters
B	55 g	56 cubic centimeters

Which object has the greater mass? Which object has the greater volume?

_____

_____

❸ Complete the chart with physical properties you can observe with each sense. Then give an example of what can be observed.

Sense	Properties	Example
Sight		
Hearing		
Smell		
Taste		
Touch		

Benchmark Assessment SC.4.P.8.1

Fill in the letter of the best choice.

The table shows data about two fruits. Use the table for questions 1–3.

Fruit	Mass	Volume	Taste	Color
A	75 g	105 cubic centimeters	sour	yellow
B	79 g	100 cubic centimeters	sweet	red

❶ Which is **true** about the masses of the fruits?

Ⓐ Fruit A has a greater mass than Fruit B.

Ⓑ Fruit B has a greater mass than Fruit A.

Ⓒ Fruit B has less mass than Fruit A.

Ⓓ Fruits B and A have the same mass.

❷ Which is **true** about the volume of the fruits?

Ⓕ Fruit A has more volume than Fruit B.

Ⓖ Fruit A has less volume than Fruit B.

Ⓗ Fruit B has more volume than Fruit A.

Ⓘ Fruits B and A have the same volume.

❸ Which is **most likely** true?

Ⓐ Fruit A is a lemon and Fruit B is an apple.

Ⓑ Fruit A is an orange and Fruit B is a banana.

Ⓒ Fruit A is an apple and Fruit B is a lime.

Ⓓ Fruit A is a banana and Fruit B is a lime.

❹ Which property can be observed with both sight and touch?

Ⓕ color

Ⓖ hardness

Ⓗ odor

Ⓘ shape

❺ Which properties could you use to sort a bin of fuzzy stuffed animals?

Ⓐ texture, size, magnetism

Ⓑ hardness, size, texture

Ⓒ color, size, shape

Ⓓ color, hardness, taste

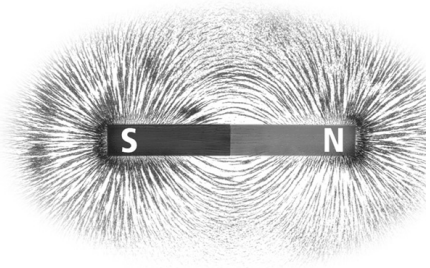
SC.4.P.8.4 Investigate and describe that magnets can attract magnetic materials and attract and repel other magnets.

Magnets

Magnetism is a physical property and a force that can act across a distance, without objects touching each other. A **magnet** is an object that attracts iron and a few other materials. When you hold a magnet near an object that contains iron, for example, the iron will be pulled toward the magnet.

Magnetic Fields

A **magnetic field** is the space around the magnet in which the magnetic force acts. Iron filings near a magnet arrange themselves in the shape of the magnetic field, as shown in the illustration. The magnetic field is strongest at the ends, or poles, of the magnet. The magnetic field is weakest in the center of the magnet. The magnetic force gets weaker farther away from the magnet.



Attract and Repel

Each magnet has two poles: a "south-seeking" pole, or S pole, and a "north-seeking" pole, or N pole. A **magnetic pole** is the part of the magnet where the force is the strongest. Unlike poles **attract** each other. If you bring unlike poles—one N pole and one S pole—of two magnets together, they will pull toward each other.

Like poles repel, or push away from, each other. The S pole of one magnet will repel another S pole. The N pole of one magnet will repel another N pole.

Name _____ Date _____

Student-Response Activity: Magnets

❶ Test 10 objects with a magnet. Which are attracted to the magnet? Which are not? List or draw your results in the table.

Attracted to a Magnet	Not Attracted to a Magnet

❷ Look at the two pairs of magnets. Tell if they will attract or repel each other, and explain why.

Magnets	Attract or Repel? Why?
	
	

❸ What is a magnetic field? Where is it strongest? Where is it weakest?

_____

_____

_____

_____

Benchmark Assessment SC.4.P.8.4

Fill in the letter of the best choice.

❶ The S pole of a magnet is held near the N pole of another magnet. What will **most likely** happen?

Ⓐ The magnets will move apart.

Ⓑ The magnets will move together.

Ⓒ The magnets will not move at all.

Ⓓ The magnets will lose their magnetic pull.

❷ The S pole of a magnet is held near the S pole of another magnet. What will **most likely** happen?

Ⓕ The magnets will move apart.

Ⓖ The magnets will move together.

Ⓗ The magnets will not move at all.

Ⓘ The magnets will lose their magnetic pull.

❸ Two magnets are placed as shown.

Allie wants the magnets to repel each other. How should she move the magnets?

Ⓐ She should not move the magnets.

Ⓑ She should push the magnets toward each other.

Ⓒ She should pull the magnets farther away from each other.

Ⓓ She should rotate one of the magnets so its poles change places.

❹ James uses a magnet to pick up a paperclip. Which is **true**?

Ⓕ James must touch the paperclip with the magnet to attract it.

Ⓖ James does not need to touch the paperclip with the magnet to attract it.

Ⓗ James can only use the S pole of the magnet to attract the paperclip.

Ⓘ James can only use the N pole of the magnet to attract the paperclip.

❺ A magnet is held near a mixture of iron filings, sugar, and sawdust. What will happen?

Ⓐ All of the materials will be attracted to the magnet.

Ⓑ None of the materials will be attracted to the magnet.

Ⓒ The iron filings will be attracted to the magnet, but the other materials will not.

Ⓓ The iron filings and sugar will be attracted to the magnet, but the sawdust will not.

Name _____ Date _____

SC.4.P.9.1 Identify some familiar changes in materials that result in other materials with different characteristics, such as decaying animal or plant matter, burning, rusting, and cooking.

How Matter Changes

Physical Changes

Matter can undergo physical changes as well as chemical changes. A **physical change** is a change in which a new substance is not formed. You can sand a rough wooden board with sandpaper. The board has a new texture, but it is still wood. The dust produced is simply tiny pieces of wood. This change does not make a new substance. You can tear paper, paint a wall, or cut a piece of fruit. These are all physical changes.

Chemical Changes

A **chemical change** is a change in which one or more substances are changed into entirely new substances. There are certain clues that tell you a chemical change may have occurred. If a change results in an odor, the change may be a chemical change that gave off a gas. If the change results in a change in color, the change many be a chemical change. If energy, such as heat or light, is given off, the change may be chemical.

Burning, rusting, and decay are common types of chemical changes that you may notice in daily life. Some changes to food made during cooking or baking are also chemical changes.

Burning

Burning is a common, and very useful, chemical change. For example, when you place wood in a fire, the wood heats up and burns. Substances that make up the wood combine with oxygen in the air. New substances form: ash, smoke, and gas. Gasoline is burned in a car's engine to make the car move, and coal is burned in a power plant to produce electricity.

Cooking and Baking

Cooking and baking provide many examples of useful chemical changes. Cooking an egg causes chemical reactions that change the color and texture of the egg.

Heating bread dough causes it to form a golden crust, and changes its texture. Heat a slice of that bread in a toaster, and additional chemical changes turn it a darker brown. Cake batter, when heated in the oven, turns into cake. When vegetables or meat are grilled, browning on the surface shows that a chemical change took place. The cooked foods may give off a pleasant smell—another clue a chemical change took place!

Name _____ Date _____

Rusting

Have you ever noticed a reddish brown substance on an old can, nail, or car? This substance is rust. Rust forms when iron is in the presence of water. Iron reacts with oxygen in the water to form a new substance.

Decay

Decay, or rot, occurs when organic materials—remains of plants and animals—begin to break down, or decompose. Bacteria and fungi are tiny organisms that cause decay. In nature, many of these tiny organisms can be found in soil.

Most of the new substances that form when materials decay go back into the soil. They can be used to provide nutrients for new plants. As the decaying materials break down and form new substances, they release a gas. This gas has a strong odor. A compost pile is full of plant matter that is decaying. It may smell funny, but the compost is great for the garden!

You might have seen decay in your own kitchen. Have you ever seen blue, green, or white fuzzy mold on bread, cheese, fruits, or vegetables? Mold is a fungus that causes decay. Decaying foods often have a stinky odor. The fuzz you see and the gas you smell show that new substances are forming.

Student-Response Activity

❶ Describe how to cook a food you enjoy, such as hamburgers, pizza, or muffins. Identify one physical change that takes place as this food is prepared. Identify one chemical change that takes place as this food is prepared. Explain your answer.

_____

_____

_____

_____

_____

_____

Name _____ Date _____

❷ For each process identify an example of the chemical change that takes place.

Process	Example of Chemical Change
Burning	
Decay	
Rusting	
Cooking	

❸ What are some signs of decay? Is decay a physical or chemical change? Explain your answer.

_____

_____

_____

_____

❹ Explain the difference between a physical change and a chemical change. What are signs of each change?

_____

_____

_____

_____

_____

_____

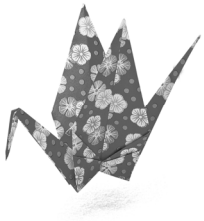
Benchmark Assessment SC.4.P.9.1

Fill in the letter of the best choice.

1. Which shows a chemical change?
   - Ⓐ cutting carrots into pieces
   - Ⓑ mixing sugar with water
   - Ⓒ baking cookies in the oven
   - Ⓓ freezing water into ice cubes

2. Which is a clue a chemical change has taken place?
   - Ⓕ change in shape
   - Ⓖ change in smell
   - Ⓗ change in mass
   - Ⓘ change in volume

3. Dina made this object.



Which is correct?

- Ⓐ This object is the result of a physical change, because a new substance was produced.
- Ⓑ This object is the result of a chemical change, because a new substance was produced.
- Ⓒ This object is the result of a physical change, because a new substance was not produced.
- Ⓓ This object is the result of a chemical change, because a new substance was not produced.

4. Which chemical change takes place in a pile of dead plant matter?
   - Ⓕ burning
   - Ⓖ cooking
   - Ⓗ decaying
   - Ⓘ rusting

5. Which substance is produced when a metal object turns orange-brown?
   - Ⓐ iron
   - Ⓑ oxygen
   - Ⓒ rust
   - Ⓓ water

SC.4.P.10.1 Observe and describe some basic forms of energy, including light, heat, sound, electrical, and the energy of motion. **SC.4.P.10.3** Investigate and explain that sound is produced by vibrating objects and that pitch depends on how fast or slow the object vibrates.

Forms of Energy

Kinetic and Potential Energy

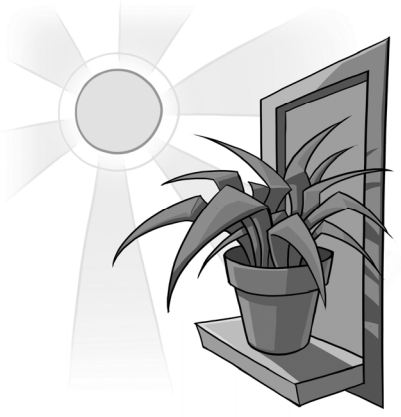
Energy is the ability to cause change in matter. **Kinetic energy** is the energy of motion. Any object that is in motion has kinetic energy. **Potential energy** is the energy something has because of its position or condition. For example, a roller coaster car at the top of a hill has potential energy because of its position and the force of gravity pulling on it. When the car moves down the hill, potential energy will change to kinetic energy. Potential energy can also be stored in objects by stretching or compressing them. A pogo stick has potential energy when the spring is pushed down. When the spring expands again, the potential energy changes to kinetic energy.

Mechanical energy is the total kinetic energy and potential energy of an object. As the roller coaster car rolls downhill, its potential energy decreases and its kinetic energy increases. However, its mechanical energy stays the same.

Light Energy

Light is a form of energy that can travel through empty space. It does not need particles of matter to travel. Light allows us to see with our sense of sight. Plants use light from the sun to make food.

Light energy travel away from a source, such as the sun, in all directions. Light follows a straight path unless it strikes a surface or enters a new material. Then it can be blocked, change speed, or change direction.



Chemical Energy

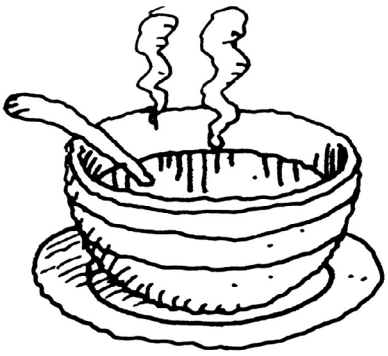
Chemical energy is energy stored within matter that can be released by a chemical change. For example, chemical reactions in your body release the chemical energy in food. You use that energy to live, move, and grow. Burning fuel, such as wood or gasoline, releases the chemical energy found in that fuel.

Electrical Energy

Electrical energy is energy that comes from electric current. Wires carry electric current to your home and school. These wires are connected to electrical outlets. When you plug an electrical device into the outlet, that device can use the electrical energy. Electricity is generated in power plants. Some power plants use the chemical energy released by burning fossil fuels such as coal and natural gas. Some power plants use the energy of flowing water to generate electricity. Wind turbines and solar panels can also produce electricity.

Heat

Temperature is the measure of how hot or cold something is. **Heat energy** moves from an object with a higher temperature to one with a lower temperature. When a cooler object, such as a room-temperature spoon, comes into contact with a warmer object or substance, such as a bowl of hot soup, heat energy flows from the soup to the spoon. The spoon's temperature will rise.



Sound Energy

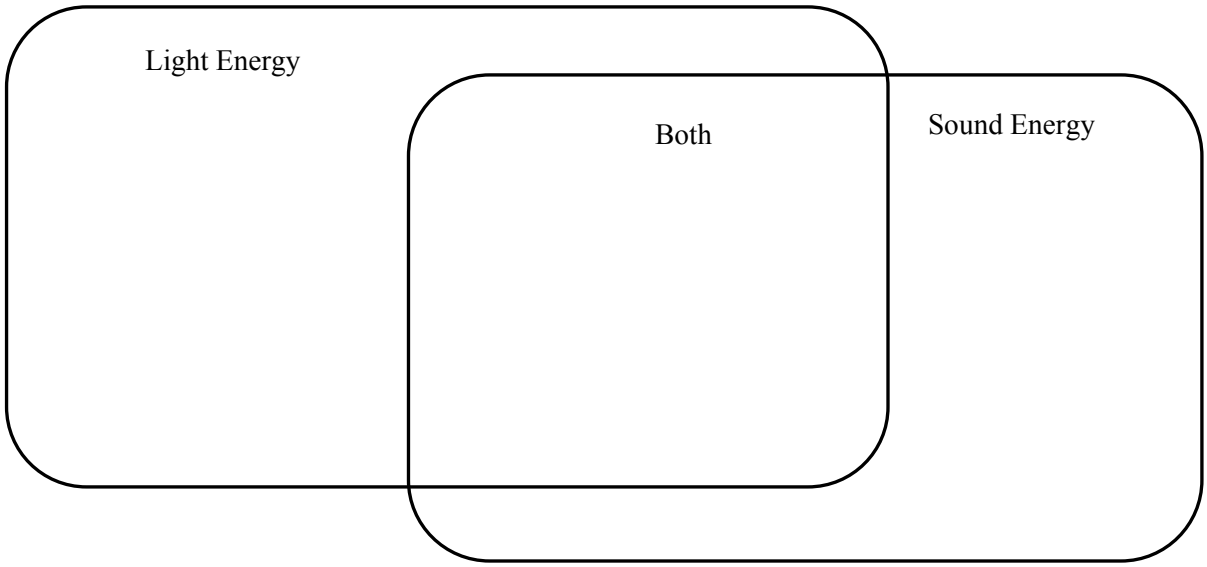
Sound is a form of energy we hear. It cannot move through empty space, but requires a material such as air or water to move. Sound is produced when something moves back and forth. This back-and-forth motion is called vibration. For example, when a violinist pulls the bow across the instrument's strings, the strings and the wood of the violin vibrate. This vibration travels through the air to your ear.

Pitch and volume are two properties of sound. Pitch is how high or low a sound is. A high-pitched sound, like a cat's meow, is produced by fast vibrations. A low-pitched sound, like a cow's moo, is produced by slower vibrations.

The **volume** of a sound is how loud or quiet the sound is. Volume is related to the amount of energy the sound has. Loud sounds have more energy than quiet sounds. Tap on a drum softly, and the drum will make a quiet sound. Bang on the drum with more energy, and it will make a louder sound.

Student-Response Activity

❶ Complete the Venn diagram below to compare and contrast light energy and sound energy.



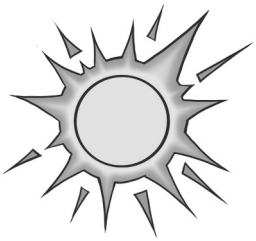
❷ Identify objects that produce each form of energy.

Form of Energy	Object
Sound	
Heat	
Electricity	
Light	

Benchmark Assessment SC.4.P.10.1, SC.4.P.10.3

Fill in the letter of the best choice.

❶ Which forms of energy are produced by the sun?



Ⓐ heat and sound
Ⓑ light and electricity
Ⓒ heat and light
Ⓓ chemical and heat

❷ Which energy change takes place when an electric hair dryer is used?

Ⓕ electricity to light energy
Ⓖ electricity to sound energy
Ⓗ electricity to heat and sound energy
Ⓘ electricity to heat and chemical energy

❸ Which object has potential energy but not kinetic energy?

Ⓐ a roller coaster car on the way up a hill
Ⓑ a roller coaster car stopped on the top of a hill
Ⓒ a roller coaster halfway down a hill
Ⓓ a roller coaster nearly all the way down a hill

❹ Which form of energy is stored in this container?

Ⓕ chemical energy
Ⓖ electrical energy
Ⓗ kinetic energy
Ⓘ sound energy

❺ How could you increase the pitch of a sound produced by an object?

Ⓐ Make the object vibrate faster.
Ⓑ Make the object vibrate slower.
Ⓒ Make the object vibrate louder.
Ⓓ Make the object vibrate quieter.

Name _____ Date _____

SC.4.P.10.2 Investigate and describe that energy has the ability to cause motion or create change. **SC.4.P.10.4** Describe how moving water and air are sources of energy and can be used to move things.

Changes From Energy

Energy is the ability to cause change in matter. Lifting boxes, making muffins, running a race, and riding a bicycle all take energy.

Motion

Position is the location of an object. If you change the position of the object, you have put the object in motion. Kinetic energy is the energy of motion, so it can cause change in position. For example, the kinetic energy of a person's foot causes it to move a soccer ball. When the ball is kicked, its kinetic energy causes it to move, changing its position. Kinetic energy causes a bat to swing and the ball it hits to change speed and direction.

Electricity

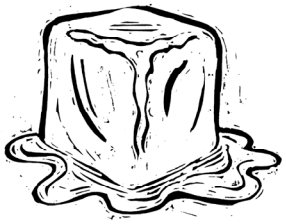
Electrical energy flowing through wires can also cause change. Electricity causes a light bulb to light up and a computer to power on. Electricity allows you to call your friends, do research on the Internet, and see in the dark.

Temperature

Temperature is a measure of how hot or cool something is. It takes energy to raise the temperature of objects and substances. Think of sitting by a campfire, toasting a marshmallow on a stick. Heat energy given off by the fire will cause changes in the marshmallow. It will change from spongy and white to gooey and brown.

Light energy from the sun can also cause temperature to rise. When light from the sun reaches Earth, it warms up the land and water. Have you ever been to the beach on a sunny day? The sand can become very hot in the sunlight!

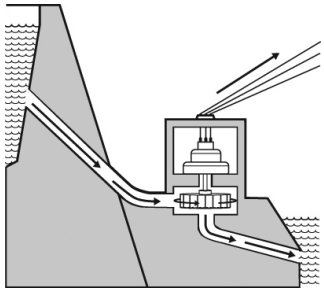
A temperature change can cause a change in state. Place an ice cube in a sunny spot, and it will melt—changing from a solid to a liquid. Adding heat energy to liquid water can cause it to boil or evaporate. Melting, boiling, and evaporating are all changes that are caused by energy.



Water Energy

A surfer rides the ocean waves as they move toward the beach. The kinetic energy of the ocean's waves can move people and objects. Water energy can carry away sand from a beach or soil and rock from the banks of a river. People have long used water's energy to move people and things. Before boats had engines, they could use the motion of flowing rivers to help carry people and goods from place to place.

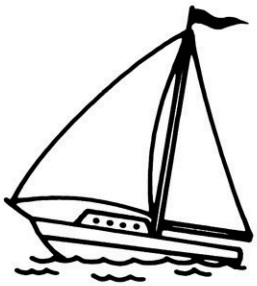
At a hydroelectric station, the energy of moving water can be changed into electrical energy. The flowing water rotates a generator, which produces electricity.



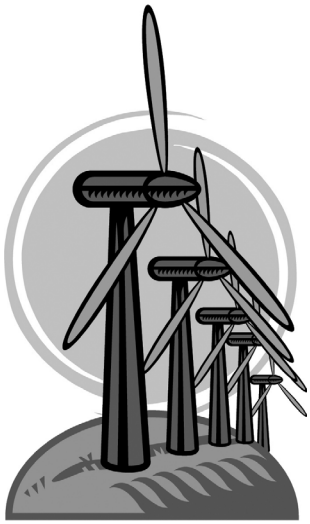
Hydroelectric stations can also use the motion of the tides to produce electricity. Tides are the regular rise and fall of ocean levels. Tidal power plants use this motion to generate electricity.

Wind Energy

Wind energy is energy produced by moving air. Like water, wind can cause erosion when it blows sand or soil from place to place. Like flowing water, wind can move a boat. It can push against the sails of a sailboat to move it across the surface of a lake.



Like a hydroelectric station, a wind turbine changes kinetic energy to electrical energy. This time, the kinetic energy is the energy of moving air. The wind's kinetic energy causes the turbine's blades to rotate. A generator changes this energy of motion into electrical energy.



Student-Response Activity

❶ Complete the cause-and-effect graphic organizer to show how energy causes change.

Cause	Effect
You push a bowling ball.	

Cause	Effect
You plug in an electric fan.	

Cause	Effect
You place toast in the toaster.	

❷ Identify a way each form of energy causes motion or change.

Form of Energy	Change It Causes
Light	
Heat	
Wind Energy	
Water Energy	

Benchmark Assessment SC.4.P.10.2, SC.4.P.10.4

Fill in the letter of the best choice.

❶ Which is **not** an example of energy causing a change in motion?

Ⓐ A child pulls a wagon full of packages.
Ⓑ A car burns gasoline so it can move.
Ⓒ A library book rests on a high bookshelf.
Ⓓ A student uses a pencil to write a letter.

❷ How does light from the sun cause change on Earth?

Ⓕ It causes Earth to spin.
Ⓖ It causes Earth to warm.
Ⓗ It causes Earth to stay in orbit.
Ⓘ It causes Earth to make its own light.

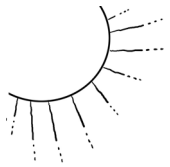
❸ Which tool can you use to measure the changes heat energy makes?

Ⓐ barometer
Ⓑ pan balance
Ⓒ scale
Ⓓ thermometer

❹ Which form of energy does a river use to move a raft?

Ⓕ heat
Ⓖ kinetic
Ⓗ potential
Ⓘ sound

❺ Which prediction can you make about how energy from the sun will change the puddle?



Ⓐ The sun's energy will cause the puddle to grow.
Ⓑ The sun's energy will cause the puddle to shrink.
Ⓒ The sun's energy will cause the puddle to boil.
Ⓓ The sun's energy will cause the puddle to freeze.

SC.4.P.11.1 Recognize that heat flows from a hot object to a cold object and that heat flow may cause materials to change temperature. **SC.4.P.11.2** Identify common materials that conduct heat well or poorly.

Heat

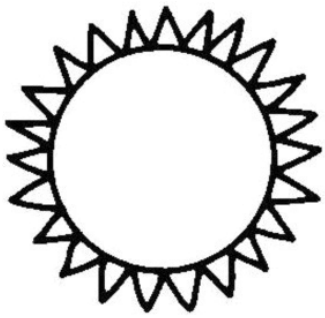
Heat is energy that moves between objects at different temperatures. Temperature is the measure of how hot or cold something is. A substance with a higher temperature is warmer than a substance with a lower temperature. Heat always moves from an object with a higher temperature to one with a lower temperature.

What happens when objects of different temperatures touch? Heat will flow from the warmer object to the cooler one. Suppose a cold spoon is placed on a warm counter. Heat will flow from the counter to the spoon. Now suppose a hot spoon is placed on a cool counter. Heat will flow from the spoon to the counter. Heat will continue to flow until the two objects are the same temperature.

Conduction is the movement of heat between two objects that are touching. Food frying in a frying pan becomes hot because it touches the pan. Conduction can also take place within an object. Your feet and hands stay warm because heat moves all around your body.

Convection is the transfer of heat within a liquid or a gas. Think about water heated in a pot on a stove. The water at the bottom of the pan becomes hot. The heated water rises. Cooler water sinks beneath it and is heated up in turn.

Radiation is the transfer of heat without matter to carry it. Heat flow by conduction or convection needs particles of matter to carry energy. Radiation can take place through an empty space where there is no matter. It is the way energy from the sun reaches Earth.



Conductors and Insulators

Conductors allow heat to move through them easily. **Insulators** do not allow heat to easily move through them. Think of pouring hot tea into two cups—a metal cup and a foam cup. The metal cup will feel warm almost immediately. The foam cup will take longer to feel warm. Heat flowed easily through the metal cup, but not as easily through the foam one.

Metals, such as silver and copper, are conductors. Rubber, glass, wood, and plastic are all good insulators. The fabric of a coat is a good insulator. In cold weather, layers of clothing trap your body heat near you. There's air between the layers of clothing. Along with the clothing, the air insulates your body. Insulators can be used to slow down the movement of heat.

Name _____ Date _____

Have you ever noticed that many cooking pans are metal with plastic handles? That's because the metal pan allows heat to flow easily from the stove to the food, but not into the handle.

For the most part, solids are better conductors of heat than liquids or gases are. That's because the particles that make up a solid are packed closely together. They vibrate but don't move apart much. Heat can move quickly from one particle to another. Many heat conductors also conduct electricity well.

Gases can be good insulators. A thin layer of trapped air is an excellent insulator. While metal wires conduct electricity and heat, most wires are covered in rubber to insulate them and keep people safe from the electricity and heat.

Student-Response Activity

❶ You hold a hot cup of tea in your hands on a cold day. Which way will the heat energy flow?

_____

_____

_____

_____

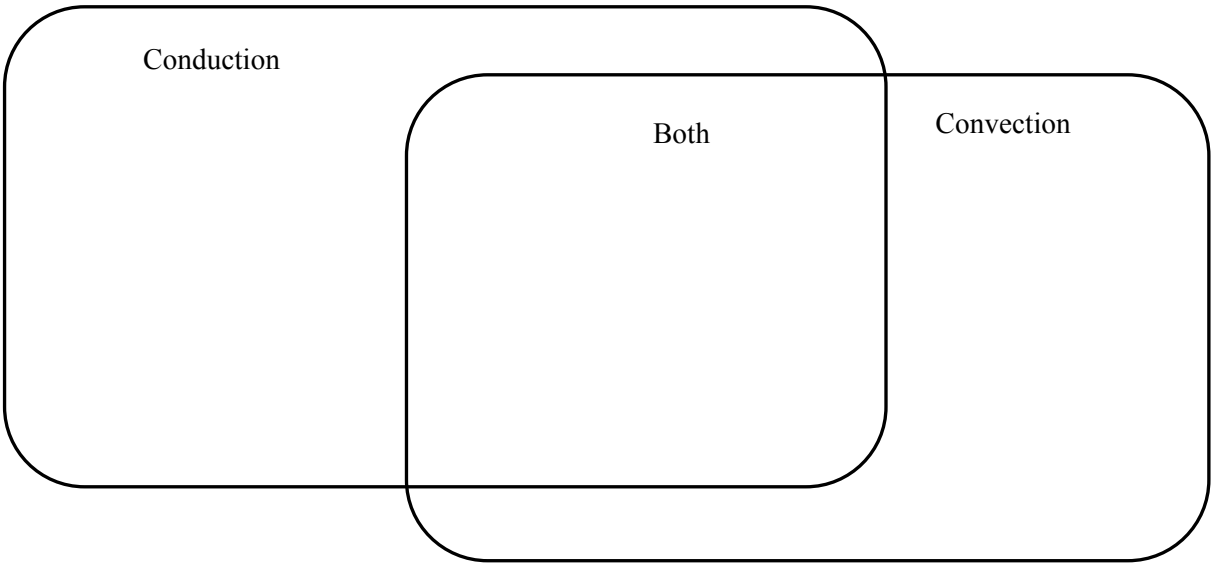
_____

Name _____ Date _____

❷ Identify examples of conductors and insulators in your home or school.

Conductors	Insulators

❸ Complete the Venn diagram below to compare and contrast conduction and convection.



❹ Explain how insulated bottles prevent heat transfer by radiation.

_____

_____

_____

Benchmark Assessment SC.4.P.11.1, SC.4.P.11.2

Fill in the letter of the best choice.

❶ Sam placed an ice cube in a cup of warm water. Which is correct?

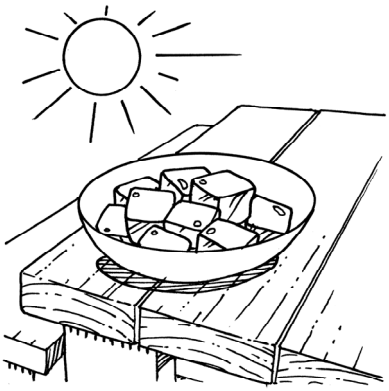
Ⓐ Cold flows from the water to the ice.

Ⓑ Cold flows from the ice to the water.

Ⓒ Heat flows from the water to the ice.

Ⓓ Heat flows from the ice to the water.

❷ How will energy from the sun melt the ice?



Ⓕ conduction

Ⓖ convection

Ⓗ evaporation

Ⓘ radiation

❸ Jude leaves a cold spoon in a hot bowl of soup. Which prediction is correct?

Ⓐ The temperature of the soup will increase.

Ⓑ The temperature of the spoon will increase.

Ⓒ The temperature of the spoon will decrease.

Ⓓ The temperature of the soup will not change.

❹ When does heat stop flowing between two objects?

Ⓕ when both reach a low temperature

Ⓖ when both reach a high temperature

Ⓗ when both reach the same temperature

Ⓘ when both reach the temperature of the surrounding air

❺ Why is electrical wire usually made from copper?

Ⓐ Copper is hard.

Ⓑ Copper is expensive.

Ⓒ Copper is a conductor.

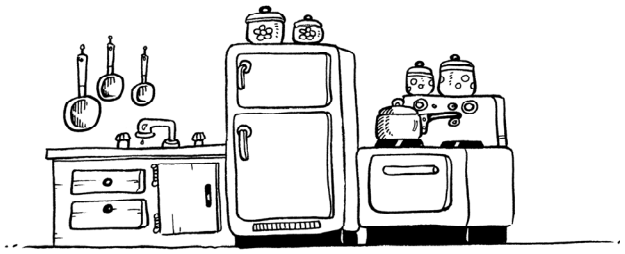
Ⓓ Copper is an insulator.

SC.4.P.12.1 Recognize that an object in motion always changes its position and may change its direction. **SC.4.P.12.2** Investigate and describe that the speed of an object is determined by the distance it travels in a unit of time and that objects can move at different speeds.

Motion and Speed

Position

A friend asks you to explain your location at a baseball game. You might say, "I'll be on the field to the right of first base" or "I'll be on the bleachers next to the hot dog stand. "Words such as *on, to the right of*, and *next to* describe your location. **Position** is the location of an object in relation to a nearby object or place. The second object or place is called the reference point. All objects have a position. Can you use position words to describe where each item is in this kitchen?

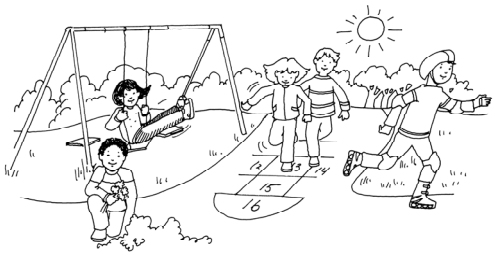


Motion

Suppose you want your pencil in a different place on your desk. You will need to move it. **Motion** happens whenever an object moves or is moved from one position to another. You can move a pencil from the desk to your school bag. You can move yourself from one part of a room to another. If you are changing position, you are in motion.

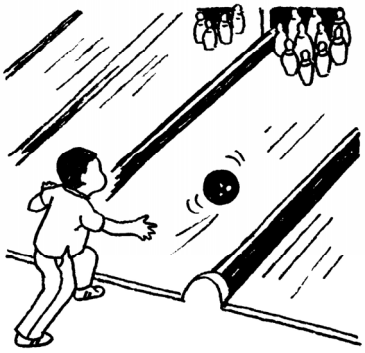
Forces

You are asked to put a book away. How would you move the book? Pick it up? Push it across the desk? Any change in motion needs a **force**, or a push or pull. When you pick up a book, you pull it. When you throw a ball, you push it. When you push a swing, a force called gravity pulls the swing back down toward Earth. Which objects are in motion at the playground?



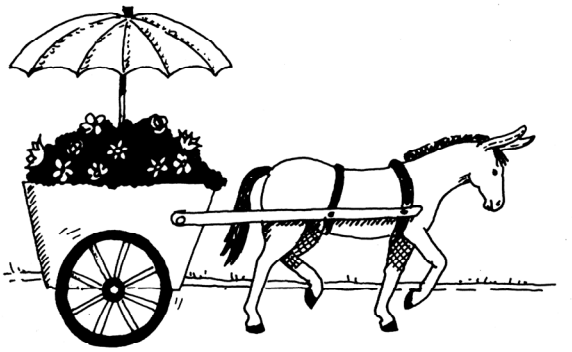
Changing Motion

Forces can cause changes in motion. A bowling ball will not move until a force moves it. The ball will keep moving in the same direction until a force changes its motion. The boy gives the ball a push to put it in motion. Predict how the bowling pins will change motion.



Name _____ Date _____

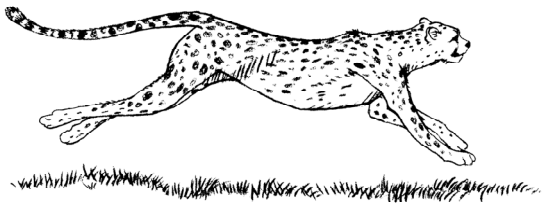
A mule pulls a cart. The position of the mule and the cart both change. How do forces change the cart's motion? First, the mule pushes off the ground to start motion. When the mule moves, it pulls the cart. The cart's wheels push against the ground to start motion.



Distance, Direction, and Speed

How far can you throw a ball? You can describe motion by its distance, or the length it travels. You throw a ball 3 meters. You ride a bicycle 3 kilometers. You can find **distance** by measuring the length between where you stand and where the ball lands after throwing it. Which way will the ball move? What about a flying disc?

Direction is the path an object follows while it is in motion. When you rode the bicycle, you went 2 kilometers in a northerly direction and 1 kilometer to the east. **Speed** tells you how the position of an object changes during a certain amount of time. A hummingbird's wings move so fast, it is hard to see them. You can't see a plant grow but you know it has grown because it looks taller or has changed position. To calculate speed, divide distance by time. The cheetah can run up to 27 meters (91 feet) in one second!



Sometime you need to describe the speed and direction of an object in motion. This is an object's **velocity**. For example, if the speed of the cheetah is 27 m/sec, and it is traveling north, then its velocity is 27 m/sec, north.

Student-Response Activity

❶ How is position related to an object's motion?

_____

_____

_____

_____

_____

2 Use the information in the chart to answer the questions.

Object	Time	Distance	Direction
A	10 seconds	10 meters	north
B	20 seconds	20 meters	west

What is the speed of object A?

_____

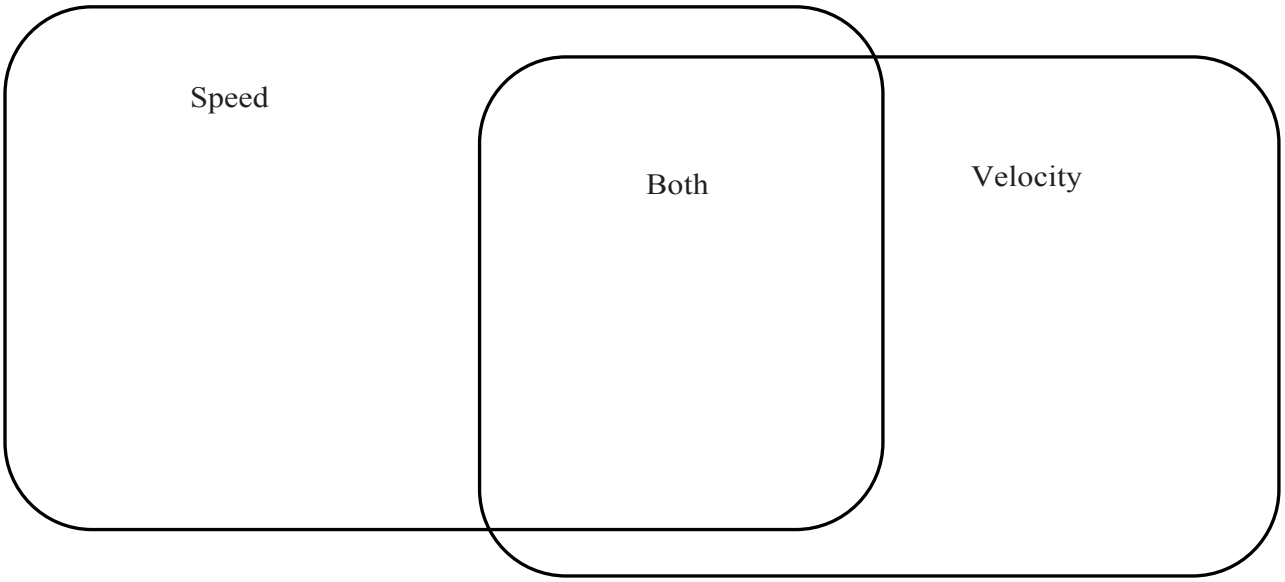
How do the speeds and velocities of objects A and B compare?

_____

What is the velocity of object B?

_____

3 Complete the Venn diagram below to compare and contrast speed and velocity.



4 A soccer ball is resting on the field. What must happen for the ball to change position? Explain your answer.

_____

_____

_____

Benchmark Assessment SC.4.P.12.1, SC.4.P.12.2

Fill in the letter of the best choice.

❶ Abby marked the starting and ending positions of an object. Then she measured the distance between to find out the distance the object traveled. What else does she need to know to find the speed of the object?

Ⓐ its mass
Ⓑ its volume
Ⓒ the direction the object moved
Ⓓ the time it took to move the distance

❷ Abe and Kess biked from the library to the school. They left the library at the same time. Abe arrived 5 minutes after Kess. Which is **true**?

Ⓕ They biked at the same speed.
Ⓖ Kess biked at a slower speed than Abe.
Ⓗ Kess biked at a faster speed than Abe.
Ⓘ Abe biked at a slower speed than Kess.

❸ Which is **true** of an object in motion?

Ⓐ Its position changes.
Ⓑ Its direction changes.
Ⓒ Its velocity changes.
Ⓓ Its speed changes.

❹ What do you need to know about an object's motion to express its velocity?

Ⓕ speed of travel and direction
Ⓖ original position and new position
Ⓗ distance traveled and original position
Ⓘ distance traveled and time it took to travel the distance

❺ Jen pushed four toy cars for one meter, and recorded the time it took them to travel the entire meter.

Car	Time	Distance
A	19 seconds	1 meter
B	20 seconds	1 meter
C	15 seconds	1 meter
D	23 seconds	1 meter

Which car had the fastest speed?

Ⓐ A
Ⓑ B
Ⓒ C
Ⓓ D

Name_____Date _____

SC.3.L.14.1 Describe structures in plants and their roles in food production, support, water and nutrient transport, and reproduction. **SC.3.L.14.2** Investigate and describe how plants respond to stimuli (heat, light, gravity), such as the way plant stems grow toward light and their roots grow downward in response to gravity**.**

Plants

What Are Plant Structures?

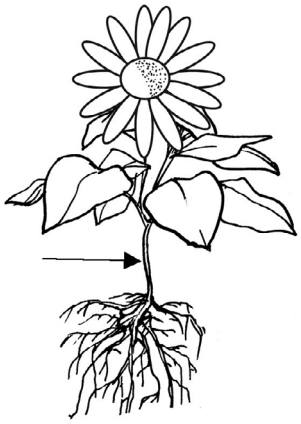
Plants have structures that carry out different functions, like all living things. These structures include stems, leaves, roots, flowers, seeds, and fruit. These structures all have different roles in a plant.

Roots

Roots are usually found under the ground. One function of roots is to anchor the plant and hold it in the ground. Roots also absorb water from the ground. Many roots are covered in tiny root hairs that allow more water to be absorbed. Another function of roots is to store food produced in the plant's leaves.

Stems

You might be familiar with the stems of flowers. Trees also have stems; they are often called trunks. Stems are structures that support plants. They hold plants upright.



Stems also play an important role in the transport of water and nutrients through the plant. Water absorbed by the roots travels to other plant parts through the stem. Food, or sugars, that are made in the plant's leaves also move to other plant parts through the stem.

Leaves

The function of leaves is to produce the food used by the plant. Leaves come in a variety of shapes and sizes. Some leaves are flat, but others, often called needles, are thin and round. Leaves capture light energy from the sun. They use that energy, along with water and air, to make food.

Flowers

Many kinds of plants produce flowers. Some kinds of flowers, such as roses and daisies, are very familiar. Flowers play an important role in plant reproduction. Flowers may have male parts, female parts, or both parts. The cells produced by the male and female parts combine to form a new plant.

Seeds and Fruits

Seeds and fruits are also important to plant reproduction. Flowers are the plant part in which male and female cells combine to produce seeds. Seeds are structures that contain a tiny new plant and a food supply. Seeds have an outer covering that protects the tiny plant inside.

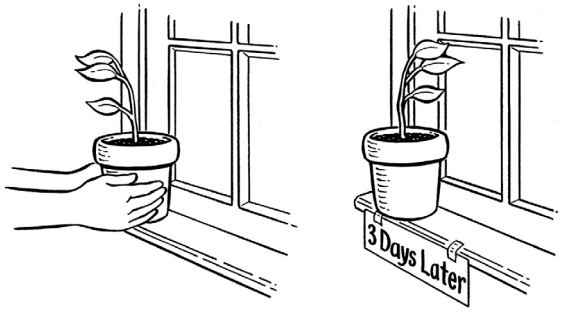
Fruits are plant parts that surround seeds to protect them. Some fruits attract animals, which help spread seeds to new places.

What Are Plant Responses?

Plants respond to many factors in their environments, including light, gravity, and heat. For example, plants droop and wilt if they don't get enough water.

Light

Remember that plants need light to make food. Plant stems and leaves respond to light by growing toward its sources.



Gravity

Plants also respond to gravity. Gravity is a force that pulls objects towards the center of Earth. Roots respond to gravity by growing in the same direction that gravity pulls. They grow down into the soil. Stems respond to gravity by growing up, in the opposite direction that gravity pulls.

Heat

Plants respond to heat, too. Changes in the temperature of an environment can cause different responses. For example, many trees and other plants enter a resting period in the fall and winter when temperatures are low. Some lose their leaves. When temperatures warm up in spring, new leaves grow.

Name_____Date _____

Student-Response Activity

❶ Describe the function, or role, of each plant part listed below.

stem _____

_____

root _____

_____

leaf _____

_____

flower _____

_____

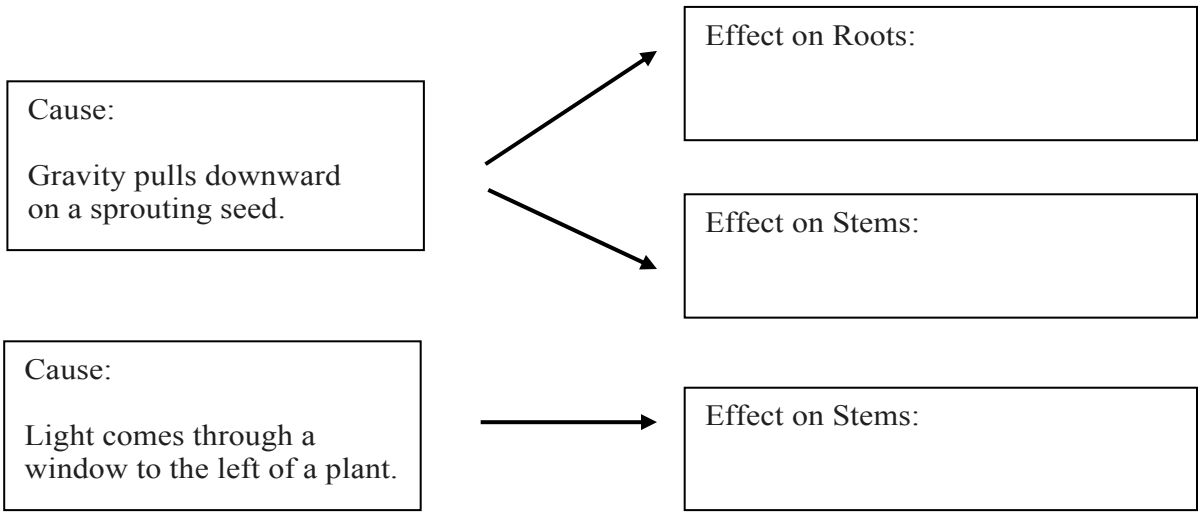
fruit _____

_____

seed _____

_____

❷ Complete the cause-and-effect graphic organizers below.



Benchmark Assessment SC.3.L.14.1, SC.3.L.14.2

Fill in the letter of the best choice.

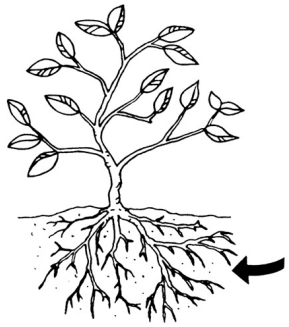
❶ Which plant part gathers sunlight and produces food?

Ⓐ flower
Ⓑ seed
Ⓒ root
Ⓓ leaf

❷ How does a plant stem respond to light?

Ⓕ They grow much slower.
Ⓖ They grow toward the light.
Ⓗ They grow downward.
Ⓘ They enter a resting period.

❸ Observe this drawing.



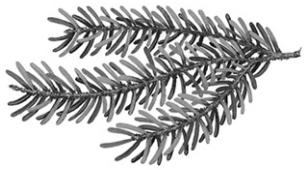
The arrow points at a plant part. Which is the role of this plant part?

Ⓐ food production
Ⓑ reproduction
Ⓒ seed protection
Ⓓ water absorption

❹ Which is correct?

Ⓕ Plants respond to their environments.
Ⓖ Roots grow upward because of gravity.
Ⓗ Plants respond to sunlight and gravity in exactly the same way.
Ⓘ Plants have stems that grow downward due to gravity.

❺ Observe this drawing.



Which plant part is shown in the picture?

Ⓐ leaves
Ⓑ flowers
Ⓒ roots
Ⓓ fruit

SC.4.L.16.1 Identify processes of sexual reproduction in flowering plants, including pollination, fertilization (seed production), seed dispersal, and germination.

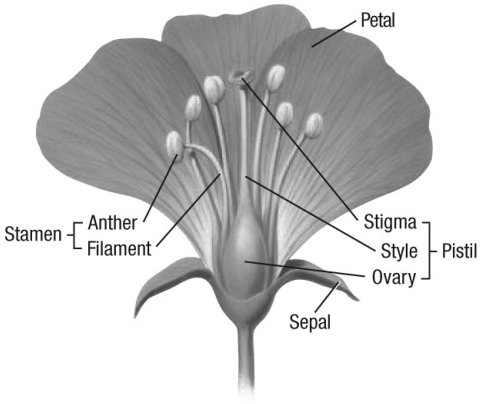
How Plants Reproduce

Plant Reproduction

Like all living things, plants reproduce to make new plants. Plants carry out sexual reproduction when a male cell and a female cell join together. Flowering plants have structures that are important for reproduction.

Parts of a Flower

Flowers play an important role in plant reproduction. Flowers have male parts, female parts, or both. The cells produced by the male and female parts combine, forming a seed that can grow into a new plant.



The **stamen** is the male part in the flower. It makes the male cells, which are called **sperm**. Sperm are found in **pollen**. The **pistil** is the female plant part. It makes the female cells, which are called **eggs**. The rounded part of the pistil stores the eggs. Some types of plants have flowers with both male and female parts. Others have some flowers with male parts and other flowers with female parts.

Pollination

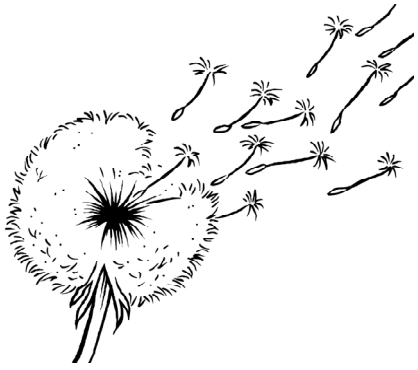
For flowering plants to reproduce, the pollen must move from one plant to another, or from one plant part to another. This process is called **pollination**. Wind sometimes carries pollen. Birds and insects also carry pollen. Bees are an important pollinator. They move pollen when they eat the nectar from flowers. Flower petals are often very brightly colored. This is to help attract the animals that pollinate plants.

Fertilization

Once the pollen moves to the female part of a plant, the sperm and the egg cell have to join together. This process is called **fertilization**. The fertilized egg will grow into a new plant inside a seed.

Seed Dispersal

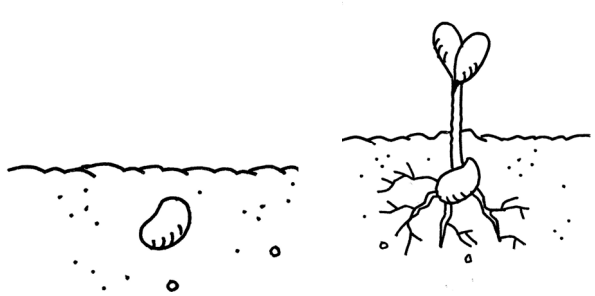
Once the seeds are formed, they need to move away from the parent plant to have room to grow. Seeds are spread around, or dispersed, in several ways. Some seeds, like dandelion seeds, are very light and fluffy. Wind can disperse these types of seeds.



Other types of seeds are prickly or sticky. These types of seeds catch on surfaces, like animal fur. They can be carried to new places in this way. Still other seeds, like coconuts, float on water away from the parent plant. Some seeds are found inside fruit. Animals that eat the fruit carry the seeds in their bodies for a while. Then the seeds pass through the animal's body and land in a new place.

Germination

Once a seed has been formed, moved, and landed on the ground, it might start to grow if its needs are met. **Germination** is the process of a seed starting to grow. First, the covering of the seed cracks or splits. A root comes out of this opening. Then a shoot, or little stem, starts to grow. Finally, leaves appear on the stem.



If the tiny plant's needs continue to be met, it will keep growing. When it finally becomes an adult, it can reproduce and make seeds, starting the cycle again.

Student-Response Activity

❶ Which happens first—fertilization or pollination? Explain.

_____

_____

_____

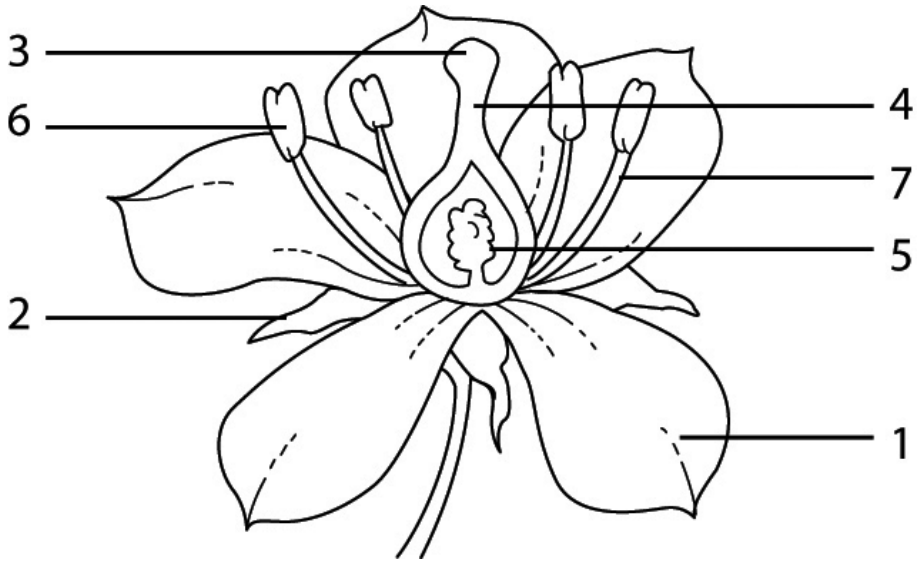
_____

_____

_____

Name _____ Date _____

❷ Use this picture of a flower to complete the statements below.



The flower part labeled 5 is the _____. _____ are stored there.

The flower part 1 is often brightly colored. It is the _____ .

The flower parts 3, 4, and 5 together make up the _____ .

Together the flower parts 6 and 7 make up the _____ .

Benchmark Assessment SC.4.L.16.1

Fill in the letter of the best choice.

❶ Why are flower petals often brightly colored?

Ⓐ to make seeds germinate quickly
Ⓑ to attract pollinators
Ⓒ to produce the egg and sperm cells
Ⓓ to carry the pollen to the egg

❷ Which process forms a seed?

Ⓕ adaptation
Ⓖ fertilization
Ⓗ germination
Ⓘ pollination

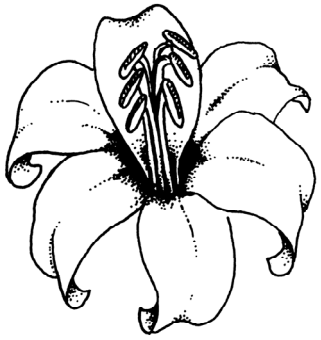
❸ What happens after a seed coat splits open during germination?

Ⓐ leaves grow
Ⓑ a root grows downward
Ⓒ fruits form
Ⓓ a stem grows upward

❹ Which would describe a seed that can be distributed by wind?

Ⓕ very light and fluffy
Ⓖ found in sweet fruit
Ⓗ able to float
Ⓘ very prickly on the surface

❺ Observe this image.



What is this **entire** structure called?

Ⓐ flower
Ⓑ fruit
Ⓒ petal
Ⓓ seed

Name _____ Date _____

SC.4.L.16.2 Explain that although characteristics of plants and animals are inherited, some characteristics can be affected by the environment. **SC.4.L.16.3** Recognize that animal behaviors may be shaped by heredity and learning. **SC.4.L.17.1** Compare the seasonal changes in Florida plants and animals to those in other regions of the country. **SC.4.L.17.4** Recognize ways plants and animals, including humans, can impact the environment.

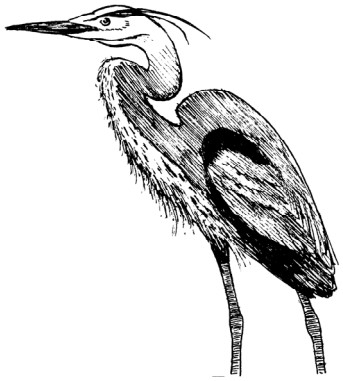
Changes with Plants and Animals

Characteristics of Plants and Animals

All living things have characteristics, or **traits**. Characteristics of plants include flower color and leaf shape. Characteristics of animals include fur color and size. Some characteristics of living things are inherited. Others are affected by the environment.

Inherited Characteristics

Inherited traits are those that are passed from parent to offspring. Physical traits are often inherited.



Observe this heron. It inherits its physical characteristics, such as its beak shape and its long legs, from its parents.

Physical characteristics are not the only traits that can be inherited. Behaviors can be inherited too. **Instincts** are behaviors an animal is born knowing how to do. The animal does not have to learn these behaviors. For example, a spider is born knowing how to spin a web. A human is born knowing how to cry and blink. Many animals are born knowing how to migrate from place to place.

Traits Affected by the Environment

Some traits are affected by the environment. If a tree loses all of its upper branches in a storm, the environment affected its appearance. In animals, a scar from an injury is an example of how the environment can affect an animal. These traits are the result of interactions with the environment.

Plant height is an example of a trait that is both inherited and affected by the environment. Think about a palm tree. It inherits the potential to grow to a height similar to its parent plants. But its actual height might be affected by lack of rain or sunlight.

A **learned behavior** is one type of environmental trait. There are many examples of learned behaviors. Animals learn to hunt and avoid danger as they interact with their environment. People are not born knowing how to walk, read, or write. These are all learned behaviors. Environmental traits, including learned behaviors, are not passed from parent to offspring.

Name _____ Date _____

Environments

The traits of living things are also affected by their environments. Have you ever been on a camping trip? If so, you know to bring food, a tent, water, and the right kind of clothes for your new environment. An **environment** is all the living and nonliving things that are around and affect a living thing. Different environments can have different climates or weather. Some are hot and dry. Others are warm and wet. Environments shape the characteristics of living things.

Seasonal Changes in Environments

Many environments have changing conditions called seasons. In many places the seasons are very different from one another. The seasons might include a hot summer, cool fall, cold winter, and warmer spring.

Florida's seasons do not include the very cold winter conditions found in other environments. For that reason, some animals migrate to Florida and other warm areas.

Migration is the movement of an animal from one place to another in a repeating pattern. Animals that move to warmer areas in the fall or winter usually move back to their original place in the spring or summer. Monarch butterflies are an example of an animal that migrates. Some monarchs spend the winter in Mexico, and others spend the winter in Florida.

Hibernation

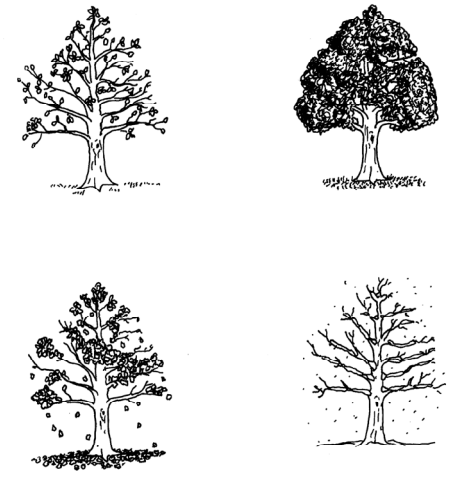
Other animals hibernate in order to survive when it is cold. **Hibernation** is a decrease in activity. An animal that is hibernating spends most of its time sleeping. It does not need as much food energy. Squirrels, brown bears, and some snakes are animals that hibernate. Hibernation is a way animals change with the seasons. In Florida, the winters are not very cold, so not many animals hibernate in Florida.

Dormancy

Dormancy is similar to hibernation—it is a decrease in activity. Animals that are dormant are more active than those that are hibernating. Alligators and some turtles are examples of Florida animals that are dormant in the winter.

Seasonal Changes in Plants

Many plants in colder areas and some plants in Florida have changes due to the seasons as shown in the picture.



This type of tree, and many others, becomes dormant in the winter. It does not make food. It does not grow.

Name _____ Date _____

Other Changes in Environments

Environments change when the seasons change. But there are many other causes of environmental change. Plants and animals, including humans, can cause changes in their environments.

Plants Change Environments

Plants can change environments in a number of ways. Roots can break apart rocks and soil. Plants also change environments when they use water and materials in the soil. Large plants can block sunlight, causing the areas under the plants to experience lower temperatures than other areas in the same environment.

Animals Change Environments

Animals also change environments. Animals make changes as they find shelter. Many animals dig in the soil to make homes. This can lead to an increase in erosion. Animals called beavers cut down trees using their teeth. They use the trees to build structures in ponds and rivers. Not only to they remove plants from the environment, they also change the flow of water.

Animals also make changes as they get the food they need to survive. Many animals eat plants. This can lead to soil erosion.

People Change Environments

People change the environment in many ways. They change the environment when they build homes, roads, and businesses. People also change the environment when they uses resources, such as coal and oil, and produce waste, such as trash.

Sometimes people move other living things from one environment to another. An introduced species is one that has been placed in a new environment. Introduced species can cause the living things in their new environment to die or move away.

Student-Response Activity

❶ Identify each trait as *inherited* or *affected by the environment*.

- A fox has a scar from an injury. _____
- A tree has green leaves. _____
- A woman has arm muscles. _____
- A plant has wilted due to lack of water. _____
- A man has very large arm muscles due to exercise. _____
- A deer has four legs. _____

❷ Explain the difference between an instinct and a learned behavior, and give an example of each.

_____

_____

_____

_____

Name _____ Date _____

Benchmark Review
SC.4.L.16.2, SC.4.L.16.3, SC.4.L.17.1, SC.4.L.17.4

❸ Observe this picture.

Identify two ways this beaver is changing its environment.

_____

_____

_____

Identify one way the trees on the other side of the river are changing their environment.

_____

_____

_____

❹ Would a Florida animal be more likely to hibernate, migrate, or be dormant? Explain your answer.

_____

_____

_____

_____

Name _____ Date _____

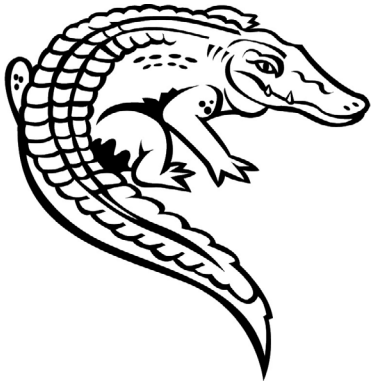
Benchmark Assessment SC.4.L.16.2, SC.4.L.16.3, SC.4.L.17.1, SC.4.L.17.4

Fill in the letter of the best choice.

1. Which is a learned behavior?
   - Ⓐ a bird migrating
   - Ⓑ a baby crying
   - Ⓒ a person blinking
   - Ⓓ a person jumping rope

2. Which animal migrates to warm areas, such as Florida, in the winter?
   - Ⓕ beaver
   - Ⓖ brown bear
   - Ⓗ monarch butterfly
   - Ⓘ turtle

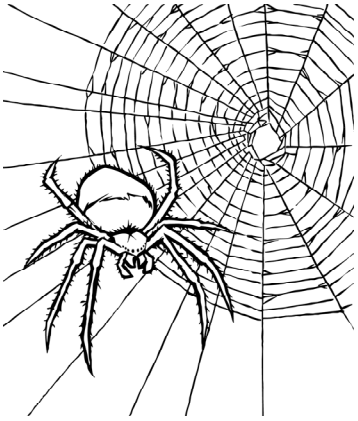
3. Observe this animal.



How does this animal survive in winter?
   - Ⓐ dormancy
   - Ⓑ hibernation
   - Ⓒ migration
   - Ⓓ traits

4. What do plants do when they use water and make shade?
   - Ⓕ Plants change their environment.
   - Ⓖ Plants change due to the seasons.
   - Ⓗ Plants pass on traits to offspring.
   - Ⓘ Plants' behaviors change by learning.

5. Observe the drawing.



Which **best** describes a spider spinning a web?
   - Ⓐ acquired trait
   - Ⓑ instinct
   - Ⓒ learned behavior
   - Ⓓ physical characteristic

SC.4.L.16.4 Compare and contrast the major stages in the life cycles of Florida plants and animals, such as those that undergo incomplete and complete metamorphosis, and flowering and nonflowering seed-bearing plants.

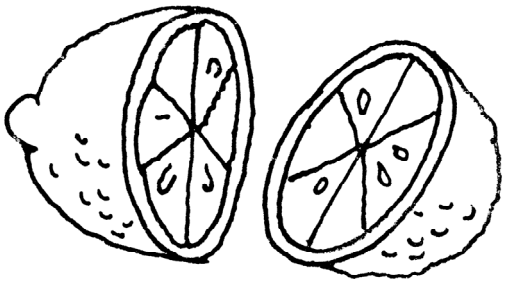
Plant and Animal Life Cycles

Life Cycles

Plants and animals have life cycles. A **life cycle** is a series of changes a living thing goes through in its life. When a living thing becomes an adult, it can reproduce, or make new living things of the same kind.

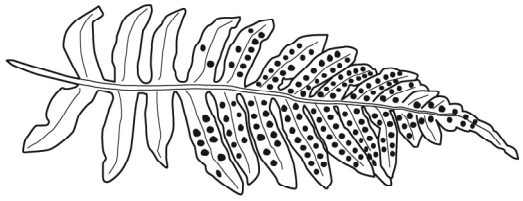
Plant Growth

You have probably seen seeds in oranges and lemons. Many kinds of plants grow from seeds. A **seed** is a structure that contains a tiny plant that grows to be an adult plant. When a plant is grown, it produces seeds. Seeds form inside the fruit of flowering plants like oranges and lemons.



Conifers are nonflowering plants. Seeds form in the cones of conifers. Loblolly pines, cycads, and bald cypress are examples of conifers.

Other types of nonflowering plants do not make seeds at all. They grow from tiny cells called **spores**. Spores are very tiny. Spores are like seeds in some ways. For example, they have an outer covering, or case. The cases might grow on the underside of leaves or other places. Spores can be moved by wind, water, or animals. Ferns are an example of a plant that reproduces using spores.



Life Cycle of a Flowering Plant

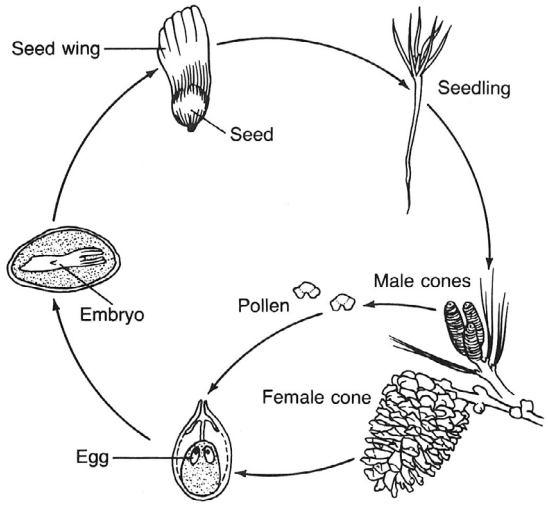
A seed is the first stage of a flowering plant's life cycle. When a seed gets the air, water, and warmth it needs, it **germinates**, or sprouts. A new plant is called a **seedling**.

Soon a seedling grows more roots and leaves. It becomes an adult plant. Its stem grows taller and flowers form. Flowers are the parts of a plant that make seeds.

A powdery material called **pollen** is needed to make seeds. Pollen is carried from flower to flower by insects, animals, or the wind. In plants like tomatoes, fruit develops from the flowers and seeds form inside the fruit. In time, these seeds might sprout and grow into new tomato plants.

Life Cycle of a Nonflowering Plant

A conifer seedling grows into a young sapling, then an adult tree. Instead of flowers, the adult tree forms cones. Pollen is moved from the male cone to the female cone. Seeds grow inside the cone.



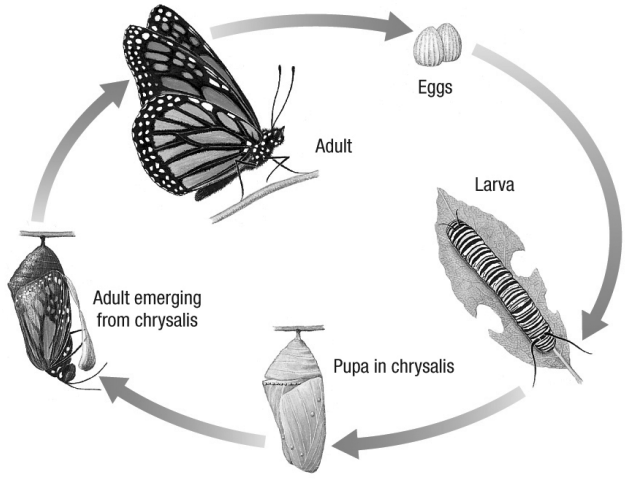
Animal Life Cycles

Some animals look like their parents when they are born. A puppy will grow to look like an adult dog. A chick will grow to look like a chicken. Most animals have life cycles that begin with a young animal being born or hatched. Animals grow, reproduce, and then die.

Other animals look very different from their parents when they are born. As these young animals grow, their bodies go through a series of changes called **metamorphosis**. During metamorphosis, new body parts form as an animal develops into an adult.

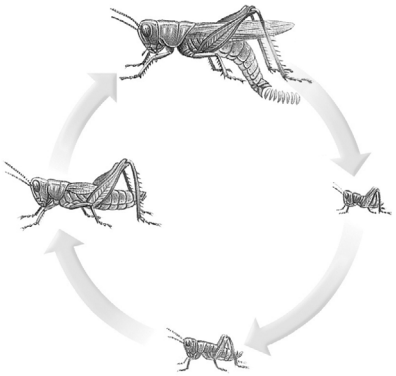
Complete Metamorphosis

In **complete metamorphosis** an animal goes through four different stages in its life cycle. A butterfly is an example. An adult monarch butterfly lays eggs. The egg hatches into a larva, which looks like a worm. The larva develops into a pupa. In the pupa stage, the caterpillar forms a case called a chrysalis and begins to change form. An adult butterfly comes out of the chrysalis.



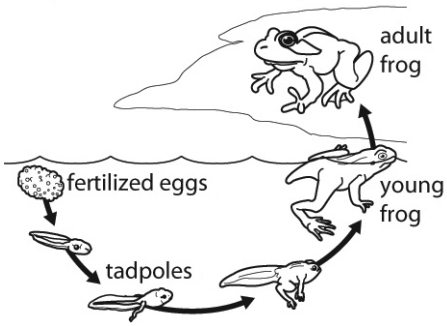
Incomplete Metamorphosis

Other animals go through **incomplete metamorphosis**, which has three different stages. Look at the life cycle of the grasshopper. The adult grasshopper lays eggs. A **nymph** hatches from the eggs. A nymph looks like a very small adult. The nymph grows until it becomes an adult.



Frog Life Cycle

A frog is another animal that undergoes big changes during its life. An adult frog lays eggs. A tadpole emerges from the eggs. The tadpole lives in water. Tadpoles have long tails and gills to breathe with. As metamorphosis happens, the tadpole grows lungs, legs, and arms. Its tail becomes shorter. When it is an adult, it breathes air with lungs and lives on land.



Snakes, Birds, and Fishes

Most snakes, such as rattlesnakes and cottonmouths, have a life cycle that includes young hatching from eggs. Birds, such as herons, and fishes also hatch from eggs. When the young hatch from the egg, they begin to grow. When they become adults, they can reproduce.

Mammals

Mammals, such as panthers, manatees, and marsh rabbits, do not lay eggs. Instead, the tiny animal, or embryo, develops inside the mother's body. Mammals give birth to live young, or infants. As the infants grow, they pass through stages called childhood and adolescence, and then become adults.

Student-Response Activity

❶ Describe the human life cycle. Identify what stage you are in.

_____

_____

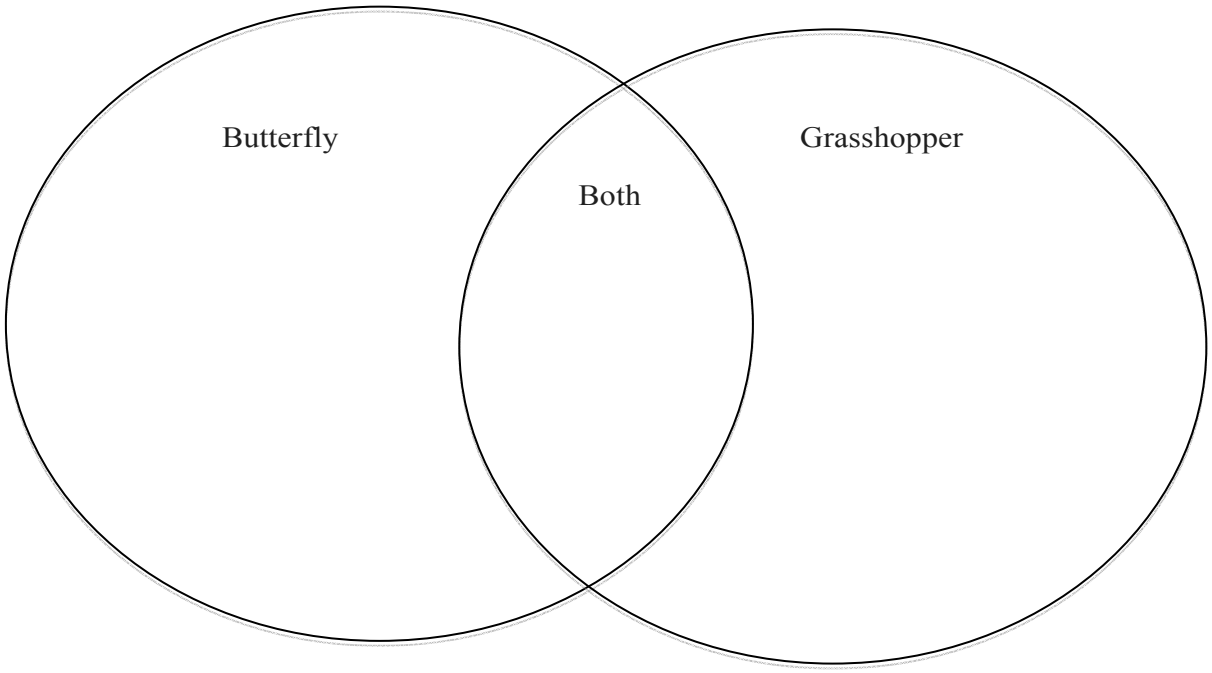
_____

_____

Name _____ Date _____

❷ Use the terms in the box to complete the Venn diagram to compare and contrast the life cycle stages of a grasshopper and butterfly.

egg	larva	adult	pupa
nymph			



❸ Parker is hiking on a trail in Florida. He comments that there are many nonflowering, seed-bearing trees. What has he observed? How is the life cycle of these trees different than flowering plants?

Benchmark Assessment SC.4.L.16.4

Fill in the letter of the best choice.

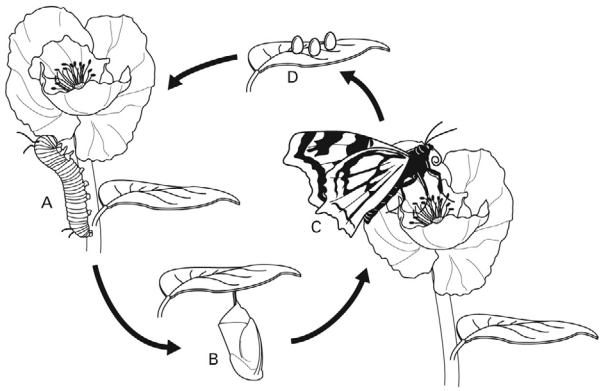
1. Where does pollination take place for an orange tree?
   - Ⓐ flowers
   - Ⓑ leaves
   - Ⓒ roots
   - Ⓓ trunk

2. Which stage comes right after a seed germinates?
   - Ⓕ adult
   - Ⓖ larva
   - Ⓗ seedling
   - Ⓘ spore

3. Which Florida animal gives birth to live young, rather than laying eggs?
   - Ⓐ cottonmouth
   - Ⓑ frog
   - Ⓒ heron
   - Ⓓ manatee

4. Which of the following is correct?
   - Ⓕ All living things have a life cycle.
   - Ⓖ Every life cycle starts with spores.
   - Ⓗ All life cycles include a larva stage.
   - Ⓘ Every life cycle has the same stages.

5. Observe this diagram.



Which stage is the larva?
- Ⓐ A
- Ⓑ B
- Ⓒ C
- Ⓓ D

SC.4.L.17.3 Trace the flow of energy from the Sun as it is transferred along the food chain through the producers to the consumers.

Food Chains

Living Things and Energy

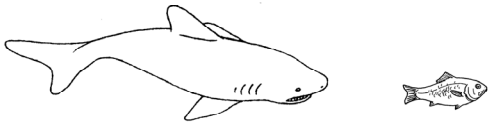
All living things need energy to carry out their life processes. For example, your body needs energy for walking, reading, and even sleeping. You could not survive if your body did not take in energy. The energy your body needs is found in food. Whenever you eat a meal or snack, your body takes in energy. Many living things are like people. They need to eat to get the energy they need. But plants and some other living things can make their own food!

Producers

Plants and some other living things use the sun's energy to make food. This process, called **photosynthesis**, uses air and water and energy from the sun. It produces food and oxygen. Living things that carry out photosynthesis get the energy they need by making their own food. They are called **producers**.

Consumers

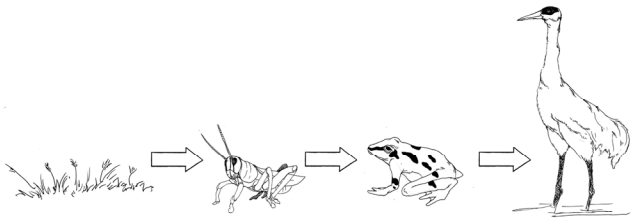
Other living things are called **consumers**. They need to eat plants or other animals to get the energy they need. Animals are consumers. When an animal eats plants or other animals, the energy stored in the food source is passed to them. For example, this shark will get energy when it eats the small fish.



Consumers can be sorted into smaller groups. **Carnivores** are consumers that get energy by eating only other animals. **Herbivores** are consumers that eat only plants. **Omnivores** are consumers that eat both plants and animals.

Food Chains

A **food chain** is a model that shows how the energy from the sun is moved from one living thing to another. In the food chain below, the grass makes food using the sun's energy. That energy is passed to the grasshopper when it eats the grass. The energy in the grasshopper is then transferred to the frog. When the bird eats the frog, the energy in the frog is passed to the bird.



Remember that a food chain is a model. In a food chain, the arrows show the flow of energy. The arrows always point to the living thing that gets the energy.

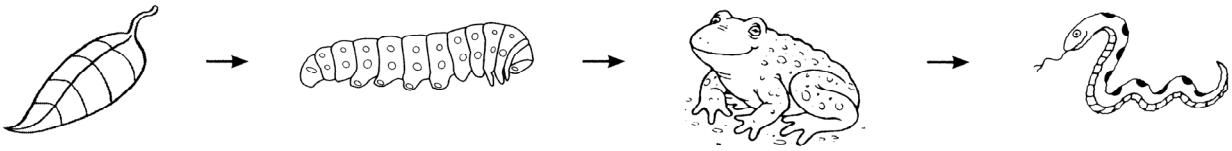
Producers are always the first living things in a food chain. The next step is a herbivore or omnivore. The next steps are carnivores or omnivores.

Name _____ Date _____

Benchmark Review
SC.4.L.17.3

Student-Response Activity

❶ Use the food chain to answer the questions.



Where did the energy in the plant leaf come from originally? _____

What do the arrows in this food chain show? _____

How does the caterpillar get energy? _____

❷ What do plants use to make food?

_____

_____

_____

❸ Think about the flow of energy. Complete the cause-and-effect graphic organizer.

Cause:

An animal eats a plant.

→

Effect:

Benchmark Assessment SC.4.L.17.3

Fill in the letter of the best choice.

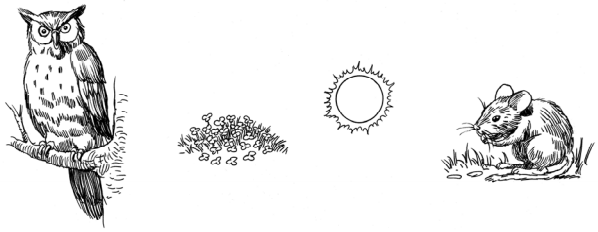
❶ Which living thing is a producer?

Ⓐ bird
Ⓑ fish
Ⓒ grass
Ⓓ grasshopper

❷ Which animal eats only other animals?

Ⓕ carnivore
Ⓖ herbivore
Ⓗ omnivore
Ⓘ producer

❸ Observe the drawing. It shows different parts of a food chain. The parts are **not** in order.



Which picture would come first in the food chain?

Ⓐ mouse
Ⓑ owl
Ⓒ plants
Ⓓ sun

❹ Which is correct?

Ⓕ Energy in animals is passed to plants.
Ⓖ Animals can make the energy they need.
Ⓗ Energy flows from producers to consumers.
Ⓘ Some food chains have only consumers.

❺ Which describes the arrows in a food chain?

Ⓐ They always point toward the larger living thing.
Ⓑ They always point toward plants.
Ⓒ They always point in the direction energy moves.
Ⓓ They always point back toward the sun.

Name_____ Date _____

FSSA Practice Test—Form A

Instructions—Form A

The following pages contain a practice test. Do not look at the test until your teacher tells you to begin.

Use the answer sheet on page 85 to mark your answers.

Read each question carefully. Restate the question in your own words.

Watch for key words such as *not*, *most*, and *least*.

A question might include one or more tables, graphs, diagrams, or pictures. Study these carefully before choosing an answer.

For questions 1–40, find the best answer. Fill in the answer bubble for that answer. Do not make any stray marks around answer spaces.

Name_____ Date _____

FSSA Practice Test—Form A

DIRECTIONS

Read each question carefully. Determine the best answer to the question from the answer choices provided. Then fill in the answer on your answer sheet.

1 Idi left a metal spoon outside in the hot sun. What happens when he picks it up?

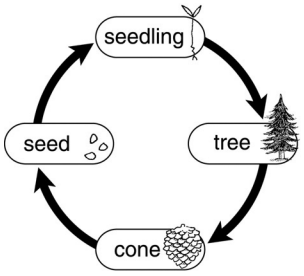
A There is no flow of heat because his hand is not metal.

B His hand, which is cooler, cools the spoon.

C The heat in the spoon flows into his hand, which is cooler.

D The heat in the spoon stays in the spoon.

2 The picture below shows the life cycle of a nonflowering plant.



Which stage of this plant carries seeds?

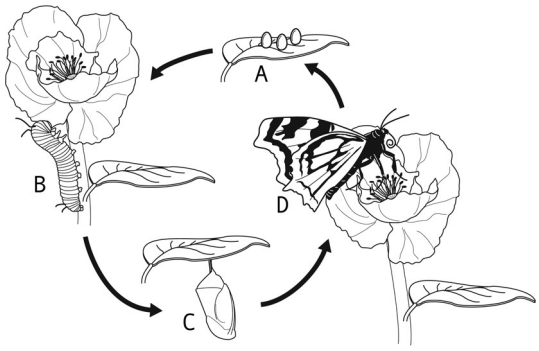
F cone

G seed

H seedling

I tree

3 This diagram shows the life cycle of a butterfly.



Which Florida animal has the same life cycle?

A cricket

B earthworm

C grasshopper

D ladybug

4 Which is a renewable resource found in Florida?

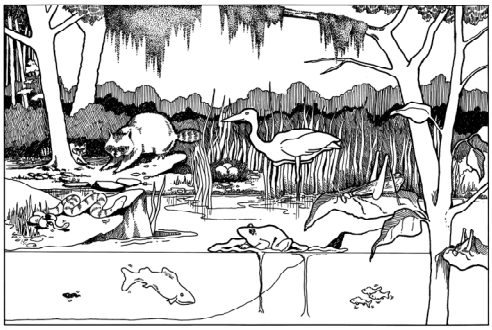
F limestone

G oil

H silicon

I solar energy

5 Observe this picture.



What is one way that animals affect this pond environment?

A Reeds grow along the banks of the pond.

B A pond supports a variety of fish, reptiles, and birds.

C Heron and egrets eat fish, which means that fish populations do not become too big for the pond to support.

D Earthworms, snails, and insects live in pond environments.

6 Which is an example of physical weathering of rocks?

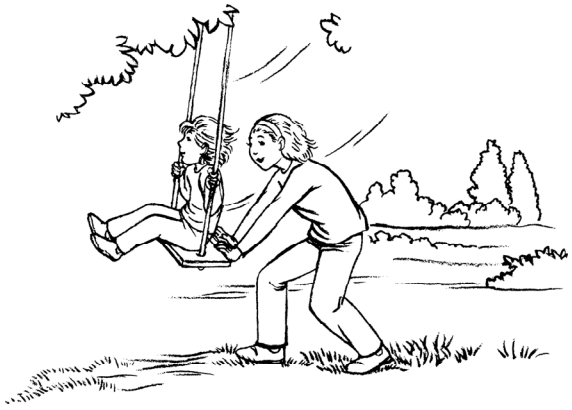
F Run off from a rain storm moves soil down a hill.

G A rushing river carries silt and sand down a stream.

H Wind picks up bits of sand and carries it away to form a sand dune.

I Water trickles into a crack in a rock. It freezes, and the ice breaks down pieces of the rock.

7 Lucia gives her sister, Jenna, a push on a swing. Jenna moves 1.2 meters away from Lucia.



What happens after the swing reaches its farthest point?

A The swing's position continues forward.

B Jenna's position will change. She will swing back toward Lucia.

C Jenna will move farther away from Lucia.

D Lucia will be at her closest position to Jenna.

8 Malik uses steel wool to clean paint off an old bike. He leaves the wet steel wool on the picnic table. Two weeks later, Malik finds that the steel wool has changed. What happened to the steel wool?

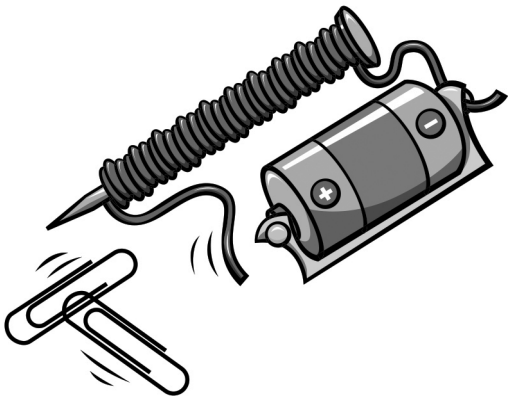
F It melted in the sun.

G It burned from the sun's heat.

H It rotted like dead plants.

I It rusted in the air.

9 Leo makes this tool in class.



What is a **likely** use for this tool?

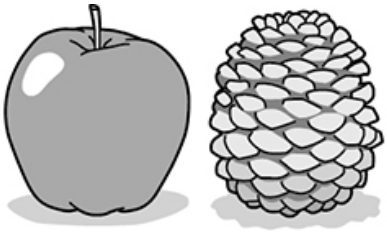
A to power a light bulb

B to test if a material is magnetic

C to attach one piece of wood to another

D to sort rocks from soil

10 What is the function of these plant parts?



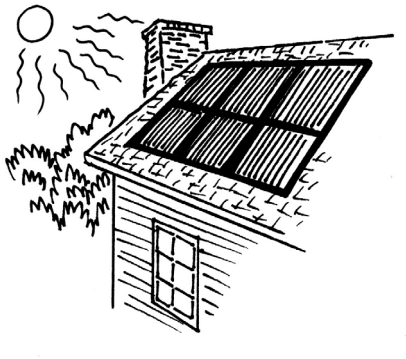
A They contain water which the plants use.

B They carry seeds so the plants can have offspring.

C They keep parent plants upright.

D They make food the plants need to live.

11 Observe this picture.



How does the equipment produce energy?

A It collects light from the sun and changes it into solar-powered electricity.

B Heat from the sun turns a machine to make electricity.

C Wind moves the arms in the windmill, which produces electricity.

D The sun's heat and light are cooling a home.

12 Hurricane Jack strikes Ocean City, Florida. It makes huge waves nearly 14 feet high and floods the town with nearly 16 cm of rain. After the hurricane is over, 11 miles of road lie under 1.4 meters of sand. What is **most likely** the cause of this sand deposit?

F the powerful winds

G the huge waves

H heavy rainfall

I high tides

13 Which Florida plants depend on spores to produce young?

A palm trees and mushrooms

B mosses and ferns

C date palms and irises

D milkweed and lilies

14 Vika has three rocks that were formed by heat below Earth's surface. Which types of rock might these be?

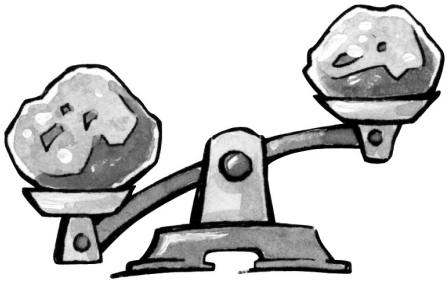
F metamorphic or sedimentary

G sedimentary or igneous

H igneous or metamorphic

I only sedimentary

15 Nico compares properties of these two rocks.



Which property of matter does he measure with this tool?

A mass

B shape

C texture

D volume

16 In a soccer game, a player puts the ball on the field. Xavi kicks the ball to Zach. Zach takes the pass and kicks it toward the goal. Rico plays goalie and catches Zach's shot. Rico holds the ball while he sees where his teammates are on the field.

Which action shows the ball being in motion and changing direction of motion?

F the ball being placed on the field

G Xavi kicking the ball to Zach

H Zach kicking the ball toward the goal

I Rico catching the ball

17 Which is an explanation based on evidence?

A This year's corn crop is better than last year's crop.

B After looking at the dinosaur's bones, the scientist thought the fossil was of a plant eater.

C Wegener came up with the idea that continents were made up of moving plates.

D After years of testing and 3,600 trials with humans, the scientist proved the vaccine worked against malaria.

18 Jaquan investigates how long it takes for a bicycler to travel 100 m. He asks his friends to help him by riding a bike the measured distance. Here are Jaquan's results:

Rider	Ali	Mari	Li	Ty
Time in seconds	14	16	15	18

What do Jaquan's results show?

F The speed at which a bike travels changes as the distance changes.

G The speed of an object is determined by the distance it travels in a specific time.

H The speed of travel depends on which bike the riders use.

I It is difficult to measure the speed, even though Jaquan uses a stopwatch.

19 Which is a positive way humans can affect an environment?

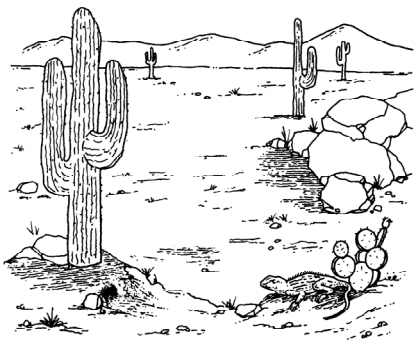
A setting aside nature preserves

B filling in marshes for building

C using a lot of fertilizer

D burning coal to produce electricity

20 Observe this desert environment.



Which living thing is a producer?

F cactus

G kangaroo rat

H rattlesnake

I tortoise

21 Jane Goodall observed families of chimpanzees for many years. Based on her observations, she developed ideas about chimpanzee behavior and diet. She also showed how much humans and chimpanzees are alike. What kind of science is Goodall's work?

A Goodall's work proves theories about monkeys and apes.

B Goodall's work is not real science because she did not do laboratory experiments.

C Goodall's work is an investigation without an experiment.

D Goodall did not write a hypothesis, so people question her results.

22 Which is **true** about star patterns?

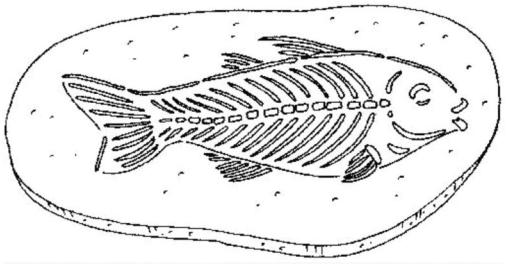
F Most stars that appear in the night sky are actually planets, such as Mars and Venus.

G All stars in a constellation are close together in space.

H Over one year, the constellation Orion will appear to move because of Earth's revolution around the sun.

I Every night, the North Star appears in a different position in the sky.

23 This fossil is found in a rock cliff near a river bed.



In which type of rock is this fossil **most likely** found?

A igneous rock

B metamorphic rock

C sedimentary rock

D sedimentary or igneous rock

24 Yuki studies the climate of places in the United States. He records this data:

City	Average High Temperature, Annually
Death Valley, California	33 °C
Fairbanks, Alaska	3 °C
Hana, Hawaii	27 °C
Hutchinson, Kansas	19 °C

Which is an observation based on his data?

F Death Valley temperatures are high both day and night.

G Yuki's data would be better if she used the Fahrenheit temperature scale.

H It will always be warmer in Death Valley than in Hana.

I During an average year, it is 8 °C warmer in Hana than in Hutchinson.

25 Which results from erosion?

A A plant grows in a crack in a rock, and its roots eventually break the rock in two.

B A delta forms at the mouth of a river from silt and sand carried down the river.

C Over a million years, a river wears away rock to form a canyon.

D Strong winds slowly wear away the rock of a cliff.

26 Alicia, Ron, Ari, and Kelly measure the volumes of two liquids. They record their results in the table.

Student	Alicia	Ron	Ari	Kelly
Vol.1	247 ml	246 ml	250 ml	247 ml
Vol. 2	312 ml	312 ml	310 ml	311 ml

Which **best** explains the differences in measurements?

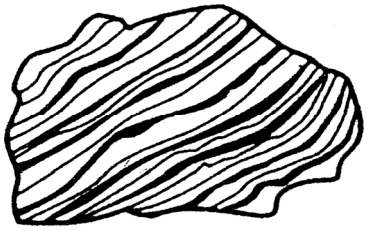
F Kelly and Alicia worked together and got the same results.

G Ron and Ari made mistakes when pouring the liquids into the graduated cylinders.

H The students used different graduated cylinders.

I Ari rounded up his readings to the nearest 10 ml.

27 Rahim finds this rock while hiking in North Carolina. He sees that the rock is made up of many flaky layers. Which physical property of minerals does he see?



A cleavage

B hardness

C luster

D streak color

28 Seri is studying the physical characteristics of Indian elephants. Which information is not helpful to her study?

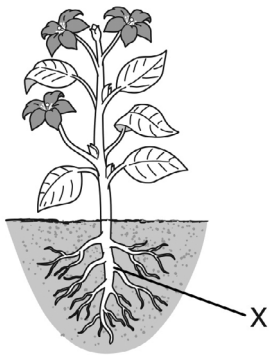
F the areas of India where the elephants live

G the shape of the elephant's ear

H the height of male elephants compared to female elephants

I the muscles in an elephant's trunk

29 What is the function of these plant flowers?



A They deliver water and nutrients to the leaves.

B They make food for the plant.

C They produce seeds to make the plant's offspring.

D They take in water from the soil.

30 Which inherited characteristic of birds has been affected by the environment?

F Wood storks build their nests in trees.

G A crow finds a box of dried corn. It cannot reach the corn through the hole in the top of the box, so it pokes a hole through the side to get the food.

H Blue herons have long wings and a slow flight pattern.

I A species of finch develops a shorter, more pointed beak for picking up seeds.

31 How long does it take for Earth to make one complete rotation on its axis?

A 1 hour

B 1 day

C 1 month

D 1 year

32 Ephraim is making a grill for the family's barbecue pit. Which material would be **best** to use for it?

F copper

G glass

H plastic

I rubber

33 How does a violin make music?

A The pegs hold the strings in place on the violin.

B Violin strings play the basic notes E, A, D, and G.

C A horsehair bow needs rosin before it runs over the strings.

D The strings vibrate, producing sound.

34 Elena grows two plants. She uses the same soil in both pots and the same amount of water. She puts the plants in direct sun every afternoon. She only brings the plant on the right in at night.

What might have happened to the plant on the left?

F Plants do not make food at night because they need sunlight.

G The night temperature dropped below freezing, and the leaves and buds were damaged.

H The plant did not get enough water to live.

I The seeds Elena used were old, so the plants did not live.

35 Mrs. Oliver asks her class to measure wood blocks. The results are shown in this table.

	Mass	Volume	Size
Group A	127 g	48 cm^3	4 cm x 6 cm x 2 cm
Group B	120 g	42 cm^3	3.8 cm x 5.5 cm x 2 cm
Group C	130 g	60 cm^3	4 cm x 6 cm x 2.5 cm

What is the **most likely** reason for the different answers?

A The metric rulers used were old, and some lines could not be read.

B Students in Group A are not very good at math.

C The wood blocks are not the exact same size.

D The balances used are not accurate.

36 Which are renewable resources that humans depend on?

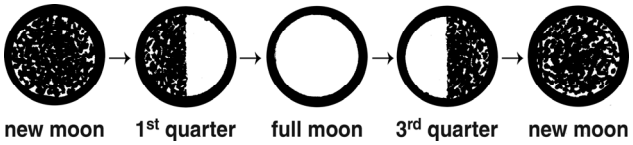
F biomass fuels, water, and trees

G fish, sand, and granite

H aluminum, sun, and lumber

I paper, leather, and natural gas

37 This picture shows the phases of the moon.

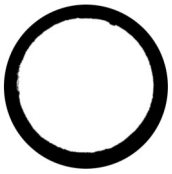


Which phase of the moon would be the next you would expect to see?

A


B


C


D


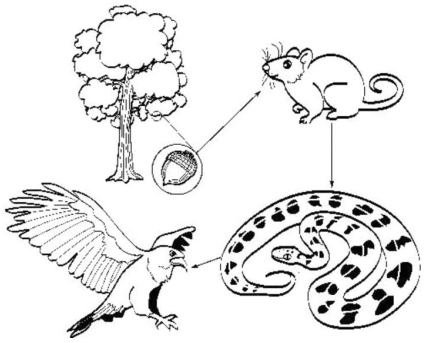
38 Which is equal to one revolution of Earth around the sun?

F day
G month
H season
I year

39 Some animals and plants in other regions react to changing seasons the same way as plants and animals in Florida. Which shows this is **true**?

A Aspen trees in Colorado change leaf color and drop their leaves in the fall like Florida palm trees.
B Martins in Texas migrate north in the spring, just like sparrows and warblers in Florida.
C Brown bears in Alaska and black bears in Florida feed on salmon in the summer to get ready to hibernate in the winter.
D In the winter, deer in New York and Key deer in Florida eat tree bark because plants from their summer diets are hard to find.

40 Observe the food chain below.



Which is a direct flow of energy from a producer to a consumer?

F the snake to the hawk
G the tree to the hawk
H the acorn to the mouse
I the mouse to the snake

Name_____ Date _____

Practice Test Form A

PLEASE NOTE
• Use only a no. 2 pencil.
• Example: ◯●◯◯
• Erase changes COMPLETELY.

FSSA Practice Test Form A

Mark one answer for each question.

1	Ⓐ	Ⓑ	Ⓒ	Ⓓ	**21**	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2	Ⓕ	Ⓖ	Ⓗ	Ⓘ	**22**	Ⓕ	Ⓖ	Ⓗ	Ⓘ
3	Ⓐ	Ⓑ	Ⓒ	Ⓓ	**23**	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4	Ⓕ	Ⓖ	Ⓗ	Ⓘ	**24**	Ⓕ	Ⓖ	Ⓗ	Ⓘ
5	Ⓐ	Ⓑ	Ⓒ	Ⓓ	**25**	Ⓐ	Ⓑ	Ⓒ	Ⓓ
6	Ⓕ	Ⓖ	Ⓗ	Ⓘ	**26**	Ⓕ	Ⓖ	Ⓗ	Ⓘ
7	Ⓐ	Ⓑ	Ⓒ	Ⓓ	**27**	Ⓐ	Ⓑ	Ⓒ	Ⓓ
8	Ⓕ	Ⓖ	Ⓗ	Ⓘ	**28**	Ⓕ	Ⓖ	Ⓗ	Ⓘ
9	Ⓐ	Ⓑ	Ⓒ	Ⓓ	**29**	Ⓐ	Ⓑ	Ⓒ	Ⓓ
10	Ⓕ	Ⓖ	Ⓗ	Ⓘ	**30**	Ⓕ	Ⓖ	Ⓗ	Ⓘ
11	Ⓐ	Ⓑ	Ⓒ	Ⓓ	**31**	Ⓐ	Ⓑ	Ⓒ	Ⓓ
12	Ⓕ	Ⓖ	Ⓗ	Ⓘ	**32**	Ⓕ	Ⓖ	Ⓗ	Ⓘ
13	Ⓐ	Ⓑ	Ⓒ	Ⓓ	**33**	Ⓐ	Ⓑ	Ⓒ	Ⓓ
14	Ⓕ	Ⓖ	Ⓗ	Ⓘ	**34**	Ⓕ	Ⓖ	Ⓗ	Ⓘ
15	Ⓐ	Ⓑ	Ⓒ	Ⓓ	**35**	Ⓐ	Ⓑ	Ⓒ	Ⓓ
16	Ⓕ	Ⓖ	Ⓗ	Ⓘ	**36**	Ⓕ	Ⓖ	Ⓗ	Ⓘ
17	Ⓐ	Ⓑ	Ⓒ	Ⓓ	**37**	Ⓐ	Ⓑ	Ⓒ	Ⓓ
18	Ⓕ	Ⓖ	Ⓗ	Ⓘ	**38**	Ⓕ	Ⓖ	Ⓗ	Ⓘ
19	Ⓐ	Ⓑ	Ⓒ	Ⓓ	**39**	Ⓐ	Ⓑ	Ⓒ	Ⓓ
20	Ⓕ	Ⓖ	Ⓗ	Ⓘ	**40**	Ⓕ	Ⓖ	Ⓗ	Ⓘ