LEAP 2025

Science

Practice Test

Grade 4

DEPARTMENT of EDUCATION

Louisiana Believes

Session 1 Directions

Directions:

Today, you will take Session 1 of the Grade 4 Science Practice Test.

Read each stimulus and question. Then, follow the directions to answer each question. Mark your answers by completely filling in the circles in your test booklet. Do not make any stray pencil marks outside of the circles. If you need to change an answer, be sure to erase your first answer completely. You may look back at the stimuli when needed.

Two of the questions will ask you to write a response. Write your response in the space provided in your test booklet. Only responses written within the provided space will be scored.

If you do not know the answer to a question, you may go on to the next question. If you finish early, you may review your answers and any questions you did not answer in this session **ONLY**. Do not go past the stop sign.

GO ON ▶

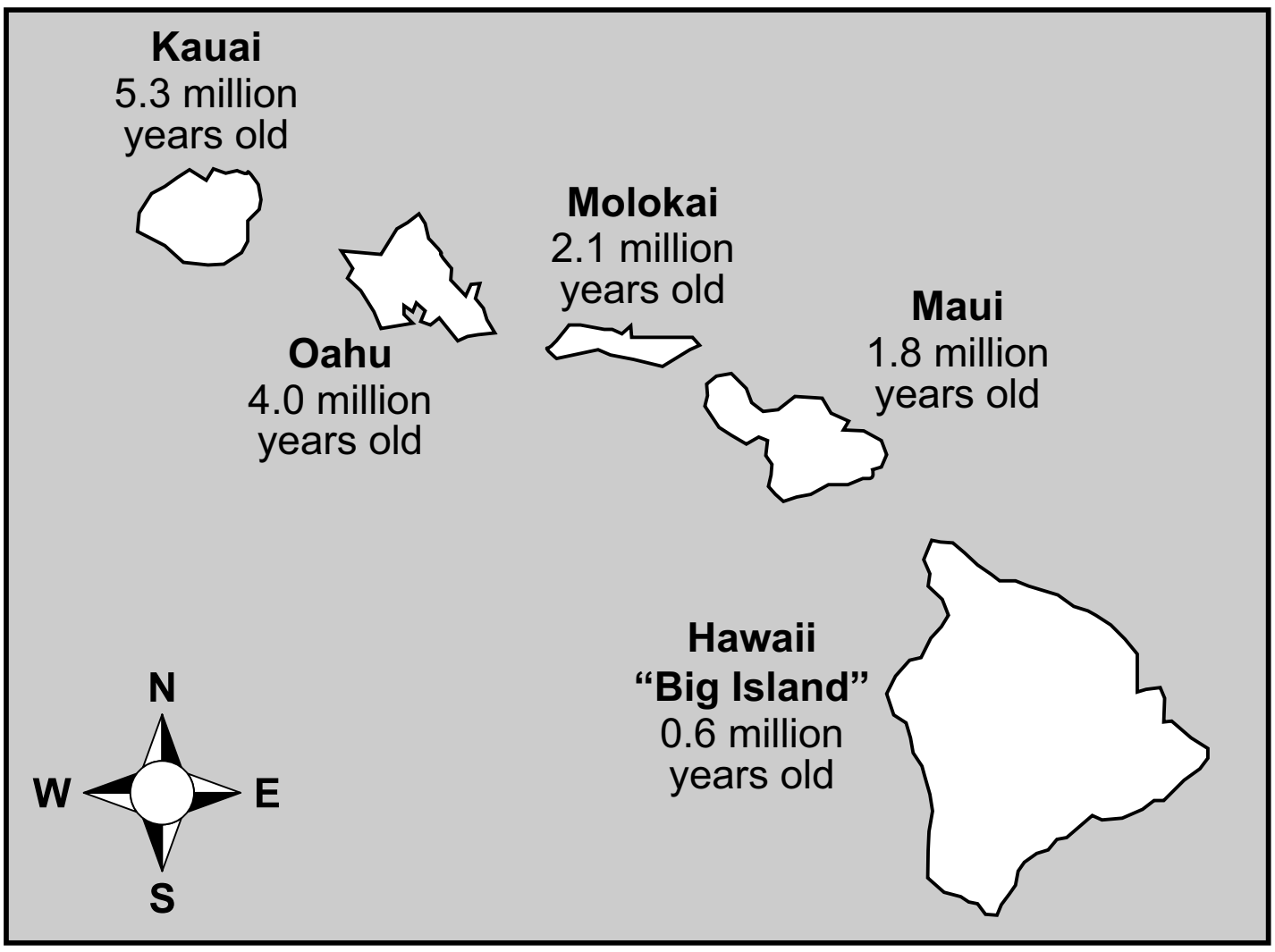
Use the information about Hawaiian volcanoes and your knowledge of science to answer questions 1–4.

Hawaiian Volcanoes

The Hawaiian Islands are found in the Pacific Ocean. They were formed by a group of volcanoes located on the ocean floor. The islands are different ages because of how they formed.

Map 1 shows the locations and ages of the biggest islands that make up the Hawaiian Islands.

Map 1. Hawaiian Islands



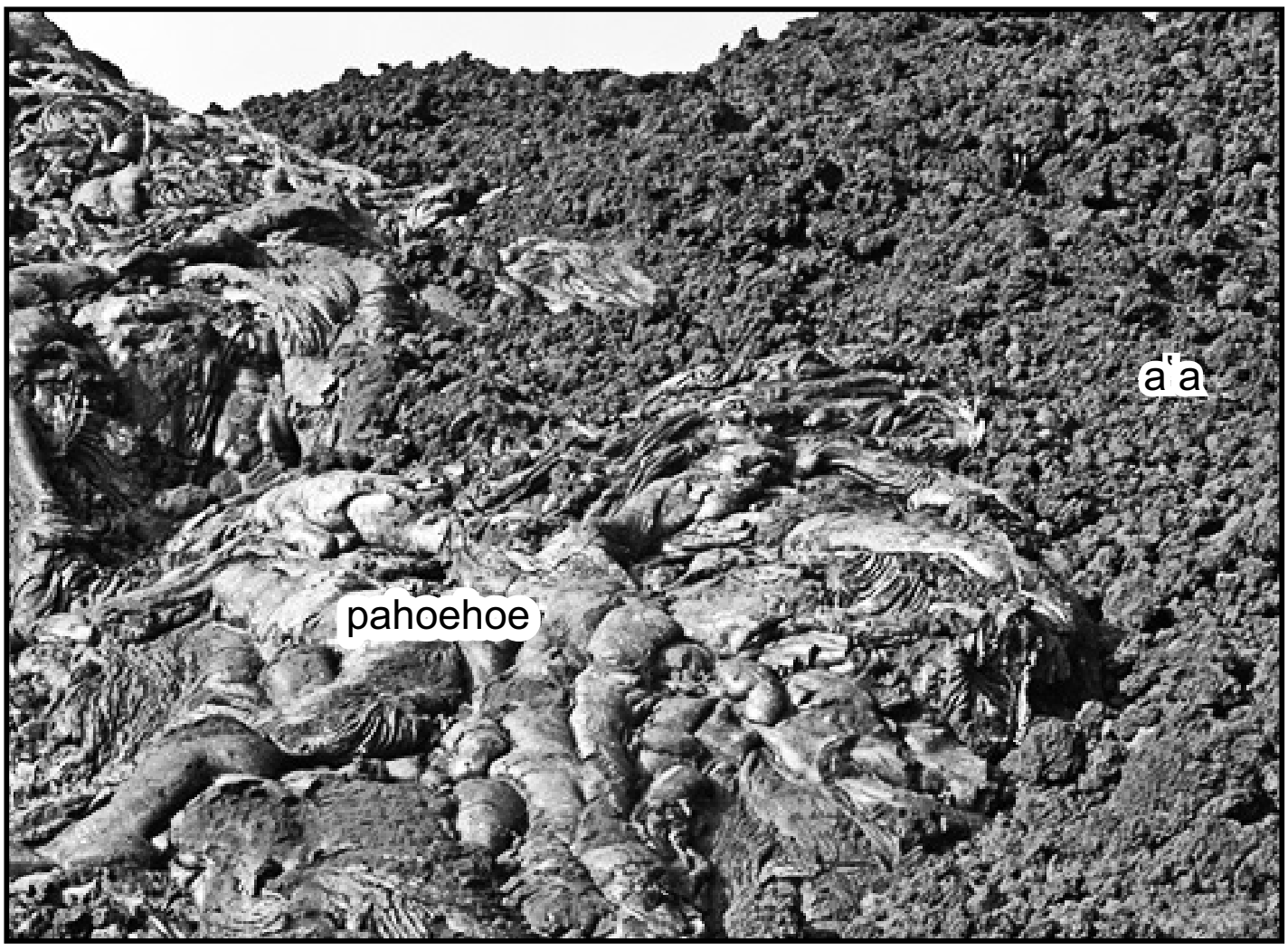
Kilauea is an active volcano on the island of Hawaii. It has been erupting since 1983.

GO ON ▶

Kilauea releases two kinds of lava. Kilauea's quieter eruptions release a slow-moving lava called "pahoehoe." When it cools, pahoehoe forms smooth rocks. Kilauea's loud, explosive eruptions release a fast-moving lava called "a'a." When it cools, a'a forms rocks with sharp edges.

Picture 1 shows pahoehoe and a'a.

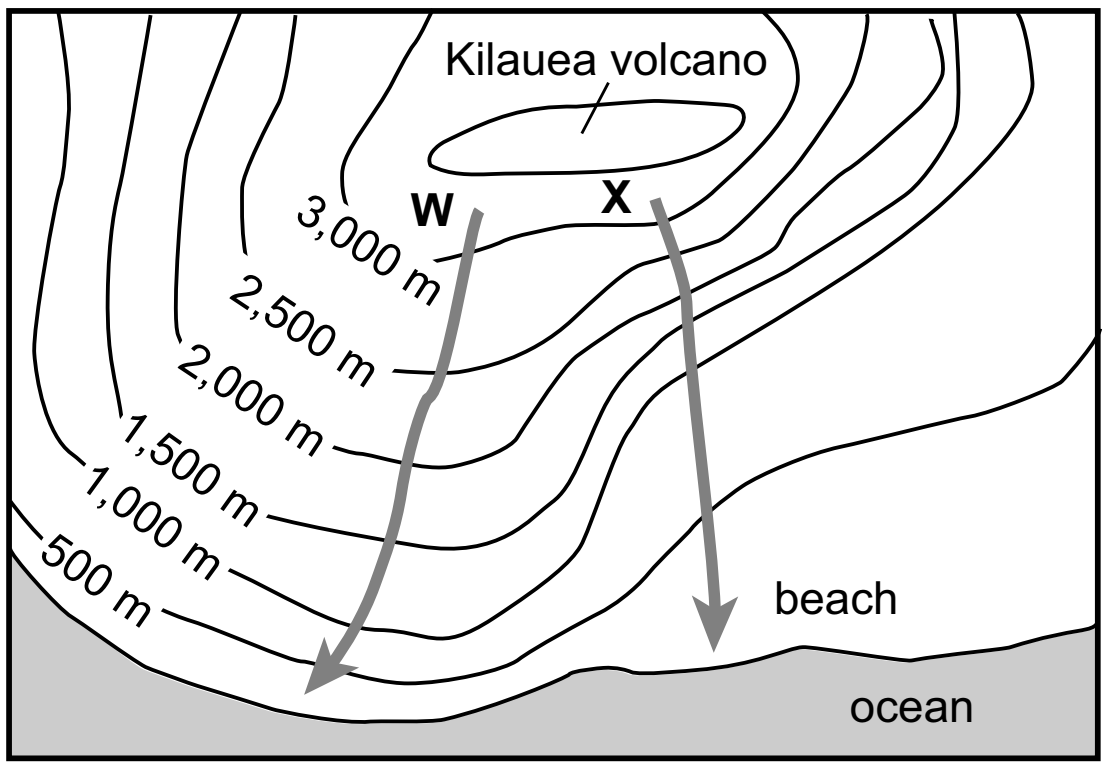
Picture 1. Types of Lava



Source: Donald B. MacGowan.

GO ON ▶

1. The pahoehoe lava flows down the side of the Kilauea volcano. Scientists want to predict which way the lava will flow next so that they can warn people and villages that may be in the way. The figure shows two paths that the lava could take.



Which statement **best** describes how the lava will flow?

Ⓐ The lava will flow down path W because it is a long path that can carry a lot of lava.

Ⓑ The lava will flow down path X because it is a steep path that lets the lava move quickly.

Ⓒ The lava will flow down path W because it is a flat path that provides space for the lava to spread out.

Ⓓ The lava will flow down path X because it is a short path that lets the lava get to the ocean before it cools down.

GO ON ▶

2. A student claims that Hawaiian volcanoes formed in an unusual location.

Which statement **best** supports the student's claim?

Ⓐ Volcanoes usually form in long chains, but the Hawaiian Islands have only a few volcanoes.

Ⓑ Volcanoes usually form near mountains, but the Hawaiian Islands are very far away from any mountains.

Ⓒ Volcanoes usually form at the edges of continents, but the Hawaiian Islands are in the middle of the ocean.

Ⓓ Volcanoes usually form over a short time period, but the Hawaiian Islands have taken millions of years to form.

3. Use the information in Map 1 to answer the questions.

Part A
Kahoolawe is a small island in the Hawaiian Islands that is not shown on Map 1. It is located south and west of Maui.

Based on the pattern shown in Map 1, which is the **most likely** age of Kahoolawe?

Ⓐ 1.0 million years old

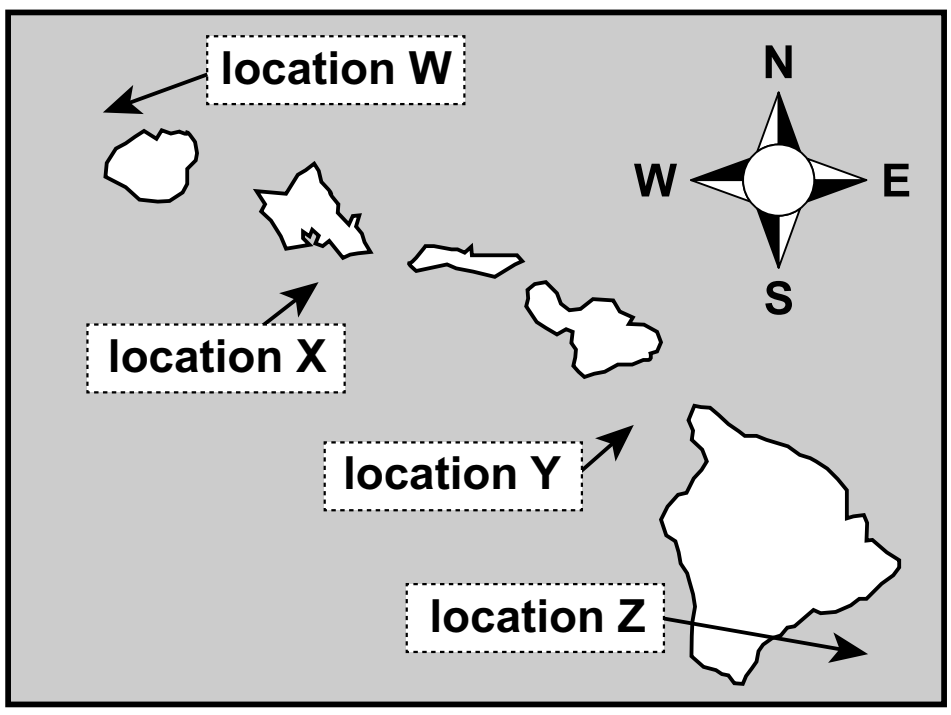
Ⓑ 2.5 million years old

Ⓒ 3.0 million years old

Ⓓ 4.5 million years old

Part B
This map shows four possible locations where the next island could form.

Map of Possible Island Locations



Based on the pattern shown in Map 1, in which location would the next island **most likely** form?

Ⓐ location W, because new islands form near the oldest island

Ⓑ location X, because new islands form south of older islands

Ⓒ location Y, because new islands form between older islands

Ⓓ location Z, because new islands form east of older islands

GO ON ▶

4. **Part A**

When lava is released from a volcano, it is very hot.

How is lava flowing from a volcano **most** dangerous to humans?

Ⓐ The lava can start fires, destroy buildings, and block roads.

Ⓑ The lava can heat up the ocean and kill all the fish that humans eat.

Ⓒ The lava can cover the land so that crops can no longer grow in that place.

Ⓓ The lava can cause lakes in its path to boil and make the lakes too hot for humans to swim in.

Part B

The people living in Hawaii have found that building walls to guide the lava does not work.

Which solution will **best** help people avoid harm to themselves and their structures?

Ⓐ building a ring of lakes around the volcano to catch and cool all the lava

Ⓑ digging deep trenches down the mountainside to guide the lava away from structures

Ⓒ sending the fire department out to spray the lava with a lot of water to stop it from moving

Ⓓ studying maps that show where the lava may flow after an eruption in order to avoid building in those areas

GO ON ▶

Use the information about heating with solar energy and your knowledge of science to answer questions 5–8.

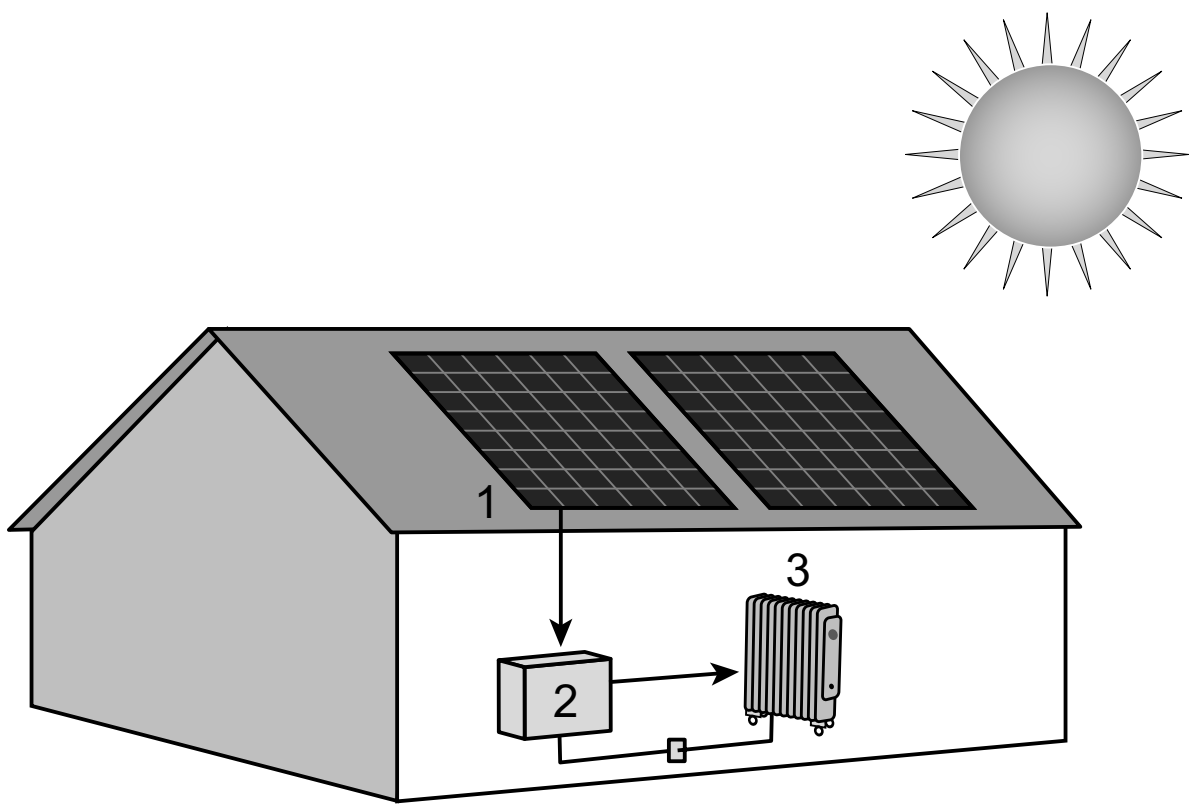
Heating with Solar Energy

Many homes are heated by using electricity. Electricity is usually produced in a power plant. The electricity is then delivered to homes through wires.

Other homes are heated by burning fuels such as natural gas. These fuels must be transported to homes through pipes.

Some homes are heated by using solar energy. Energy from the Sun can also be used to heat water. Figure 1 and Figure 2 show two methods of heating a home in different parts of the country. The steps for each method are also shown.

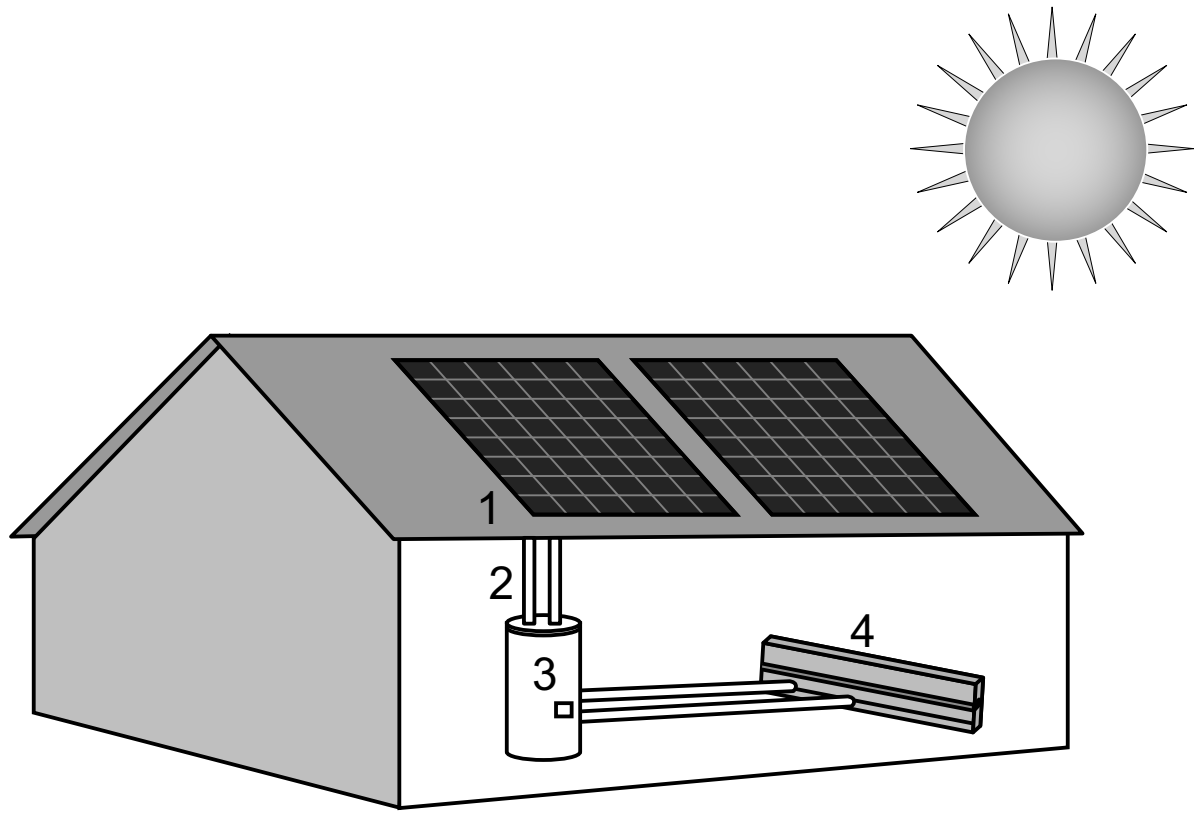
Figure 1. Heating with Electricity from Solar Energy



Step 1. Panels collect energy from the Sun. Cells in the panels transform the energy into electricity.
Step 2. The electricity from the cells is changed into a form of electricity that can be used in the home.
Step 3. The electricity is used to power an electric heater.

GO ON ▶

Figure 2. Heating with Water Warmed by Solar Energy



Step 1. Panels collect energy from the Sun.
Step 2. A liquid that resists freezing is pumped through the panels. The liquid becomes hot.
Step 3. The liquid is pumped through closed pipes into the water heater.
Step 4. Water that is heated by the liquid in the pipes is pumped out of the water heater. The water moves into room heaters in the home. A room heater will heat only one room at a time.

GO ON ▶

Solar energy is a renewable source of energy with little impact on the environment. Table 1 shows how energy is produced from different sources. It also shows the impact each source has on the environment.

Table 1. Energy Sources

Energy Source	Renewable or Nonrenewable?	Energy Is Produced When . . .	Impact on Environment
biofuels	renewable	fuel is burned	-produces air pollutants -possible toxic waste -loss of habitat
coal	nonrenewable	fuel is burned	produces air, water, and solid waste pollutants
natural gas	nonrenewable	fuel is burned	produces fewer air, water, and solid waste pollutants than oil and coal
oil	nonrenewable	fuel is burned	produces air, water, and solid waste pollutants
solar	renewable	Sun shines	large land use
wind	renewable	wind blows	-large land use -noise pollution

GO ON ▶

5. Use the information in Figure 1 to answer the question.

Which energy conversion happens in Step 1?

Ⓐ Solar energy is converted to light energy.

Ⓑ Heat energy is converted to solar energy.

Ⓒ Electrical energy is converted to heat energy.

Ⓓ Solar energy is converted to electrical energy.

6. Use the information in Table 1 to answer the question.

Which statement describes two ways that wind power and solar power are **most** alike?

Ⓐ Both are limited in when they are available, and both are nonrenewable.

Ⓑ Both are available at all times, and both are nonrenewable.

Ⓒ Both are limited in when they are available, and both are renewable.

Ⓓ Both are available at all times, and both are renewable.

7. Use the information in Figure 2 to answer the questions.

Part A
Which evidence shows that energy is transferred from place to place by light?

Ⓐ The liquid that resists freezing is moved by the pump to where light is shining.

Ⓑ Energy from the hot water is used to heat up the room heaters.

Ⓒ The liquid that resists freezing is used to heat up the water in the water heater.

Ⓓ Energy from the Sun is used to heat up the liquid that resists freezing.

Part B
Which energy conversion happens in the answer to Part A?

Ⓐ Heat energy is converted to light energy.

Ⓑ Light energy is converted to heat energy.

Ⓒ Electrical energy is converted to light energy.

Ⓓ Light energy is converted to electrical energy.

GO ON ▶

8. Use the information in Table 1 to answer the question.

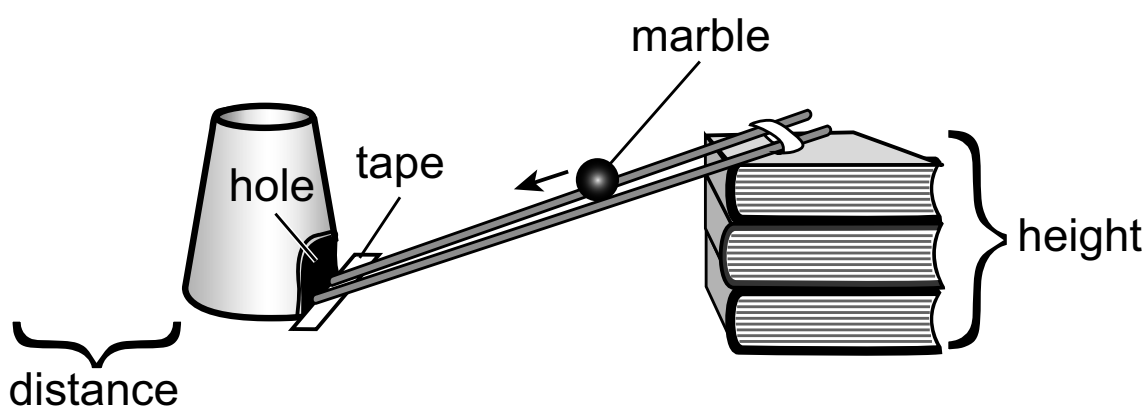
A family wants to use a renewable source of energy for heat in the winter. The family lives on a ranch in a windy area with very few hours of sunlight in the winter and a lot of sunlight in the summer. Identify which energy source would work **best** for the family and explain your selection.

Use the information about a marble experiment and your knowledge of science to answer questions 9–12.

Marble Experiment

Savannah sets up an experiment with a marble, a foam cup, and a ramp. The cup has a hole on the side. The marble rolls down the ramp and pushes the cup. Savannah's experiment setup is shown in Figure 1.

Figure 1. Marble Experiment Setup



Savannah measures the distance that the cup moves when the marble pushes it. Next she changes the height of the ramp and repeats the experiment. She completes three trials. Her observations are shown in Table 1.

Table 1. Experimental Data

Experiment	Ramp Height (centimeters)	Time (seconds)	Distance the Cup Moves (centimeters)
1	10	1.8	2.5
2	20	1.5	3.0
3	30	1.3	5.0

GO ON ▶

9. Use the information in Table 1 to answer the question.

Savannah concludes that in each experiment, the marble hit the cup with a different amount of energy.

Which evidence **best** supports her conclusion?

Ⓐ the height of the ramp in each experiment

Ⓑ the time the marble took to reach the cup in each experiment

Ⓒ the mass of the marble used in the experiments

Ⓓ the distance that the cup moved in each experiment

10. Use the information in Table 1 to answer the question.

Which statement **best** explains why the marble had a different amount of energy in each experiment?

Ⓐ The marble started with different speeds.

Ⓑ The times it took for the marble to hit the cup were different.

Ⓒ The marble had a different speed each time it hit the cup.

Ⓓ The cup moved a different distance each time the marble hit it.

11. **Part A**

Which question was Savannah **most likely** trying to answer by completing this experiment?

Ⓐ How does the height of the ramp affect the mass of the marble?

Ⓑ How does the height of the ramp affect the energy of the marble?

Ⓒ How does the height of the ramp affect the time the marble rolls before stopping?

Ⓓ How does the height of the ramp affect the distance the marble rolls before stopping?

Part B

Which statement correctly predicts the answer to Savannah's question in Part A?

Ⓐ When the height of the ramp is decreased, the time the marble will roll before stopping increases.

Ⓑ When the height of the ramp is increased, the marble will not roll as far before stopping.

Ⓒ When the height of the ramp is increased, the speed of the marble will increase.

Ⓓ When the height of the ramp is decreased, the mass of the marble will decrease.

GO ON ▶

12. Describe the changes in energy that occur when the marble hits the cup. Be sure to use evidence from the experiment in your explanation.

GO ON ▶

13. Use your knowledge of science to answer the question.

Which statement **best** explains how the nose and the brain work together?

Ⓐ The nose sends oxygen to the brain.

Ⓑ The nose sends signals to the brain about scent information.

Ⓒ The brain sends signals to the nose to breathe out carbon dioxide.

Ⓓ The brain sends signals to the nose about scents of objects.

14. Use the information and your knowledge of science to answer the question.

In the early 1900s, farmers plowed large areas of land to plant crops. This removed the natural grasses and trees. These plants had deep roots that kept the soil in place. In the 1930s, there was a long drought, so crops would not grow. This exposed large areas of bare soil. The wind picked up a large amount of soil and blew it away, as shown in the picture.

Clouds of Soil Blowing in the Wind in the 1930s

Source: United States Department of Agriculture.

After the drought ended, the U.S. government encouraged farmers to change their farming practices to prevent this from happening again.

Which practice would **best** help the soil stay in place?

Ⓐ planting only natural grasses and corn in the fields

Ⓑ planting soybeans and corn in fields next to fields with cattle

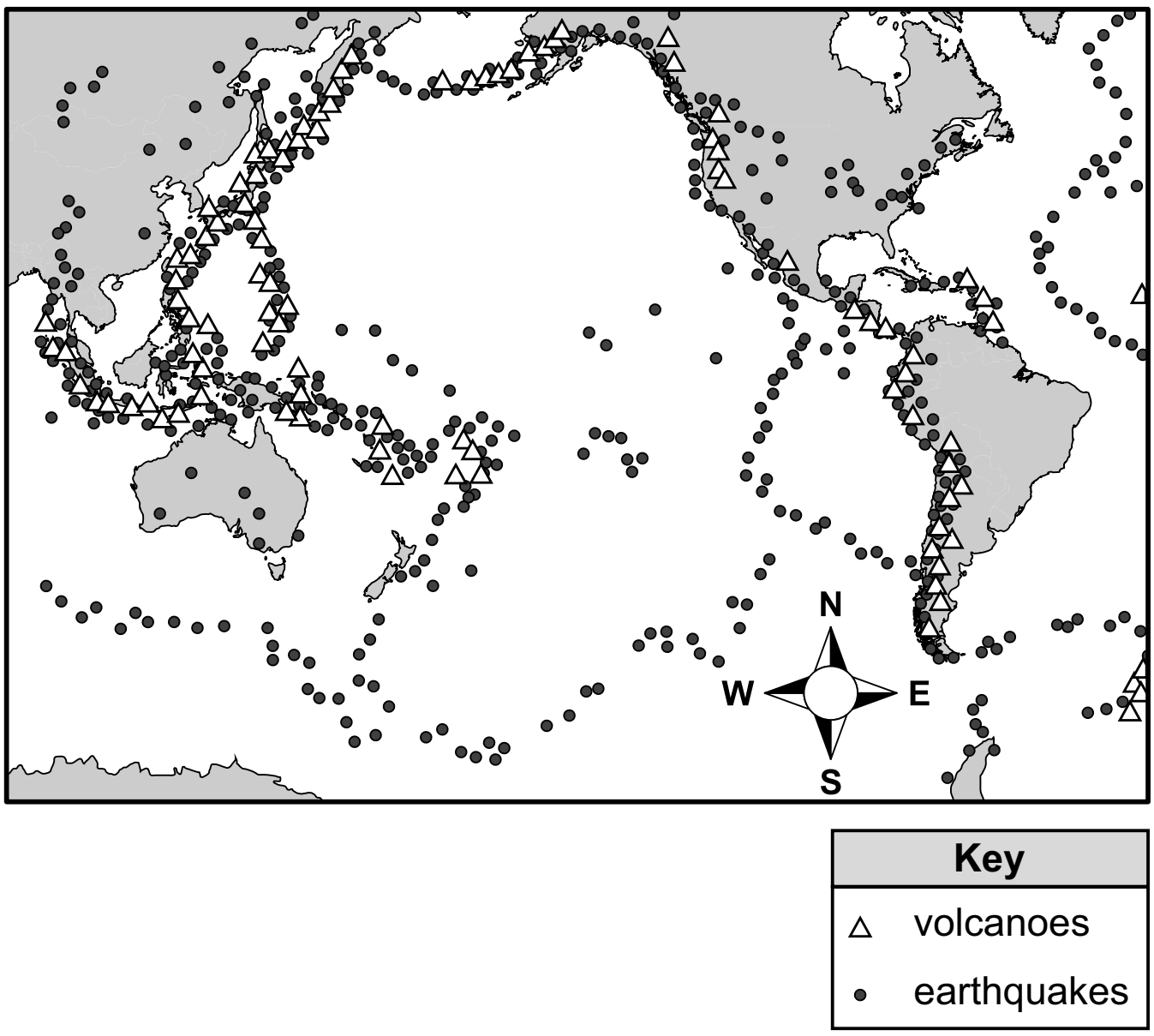
Ⓒ planting trees and grasses in areas between fields with crops

Ⓓ building pipelines to carry large amounts of water to use in sprinklers in the fields

GO ON ▶

15. Use the information and your knowledge of science to answer the questions.

The map shows places on Earth where volcanoes are found and earthquakes occur.



Part A
Which statement **best** describes the pattern of where volcanoes are found and earthquakes occur?

Ⓐ Most volcanoes are found on land, and most earthquakes occur in the ocean.

Ⓑ Most volcanoes are found on the edges of continents and most earthquakes occur on the edges of continents.

Ⓒ Most volcanoes are found on islands near continents and most earthquakes occur on islands near continents.

Ⓓ Most volcanoes are found far from the edges of continents, and most earthquakes occur at the edges of continents.

Part B
How can scientists **best** use the pattern identified in Part A?

Ⓐ to prevent future earthquakes

Ⓑ to predict where volcanoes will erupt

Ⓒ to stop damage from volcanic eruptions

Ⓓ to design homes that will survive earthquakes

STOP

You have come to the end of Session 1 of the test.

- **Review your answers from Session 1 only.**
- **Then, close your test booklet and sit quietly or read silently.**

STOP

NO TEST MATERIALS

Session 2 Directions

Directions:

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GO ON ▶

Use the information about beavers and your knowledge of science to answer questions 16–20.

Beavers

Beavers are mammals that are found in most of North America. Beavers have several body structures that help them live.

- A large, flat tail helps the beaver stand upright on land and steer when swimming. The beaver also slaps the water with its tail to warn when danger is near.
- Thick fur keeps the beaver warm and protects it in the water.
- Webbed back feet make it easier for the beaver to swim.

Picture 1 shows a beaver.

Picture 1. Beaver

Source: Michaela Walch/Getty Images, Inc.

GO ON ▶

The beaver also has long front teeth that grow throughout its life. The front teeth have a sharp edge. A beaver's teeth are shown in Picture 2.

Picture 2. Beaver Teeth

Source: mauritius images GmbH/Alamy Stock Photo.

The beaver uses its sharp teeth to cut down trees.

- The beaver eats the inner bark of the trees.
- The beaver uses the trees to build a lodge, in which it lives.

GO ON ▶

The beaver also uses the trees to make a dam across a stream, which changes the environment, as shown in Picture 3.

- The dam slows the water flow to form a pond.
- Wooded areas or meadows are changed into wetlands.
- Some plants die when the area floods.
- Other plants are able to grow better because of the water.
- The pond forms a home for water plants and animals.
- Dead trees give homes to insects and birds.

Picture 3. Beaver Dam

Source: United States Department of Agriculture.

GO ON ▶

16. **Part A**

A student wants to investigate how the beaver is different from most other mammals in the wild.

Which question should the student investigate?

Ⓐ How many other mammals eat trees or other plants to survive?

Ⓑ How many other mammals live in an environment that includes water?

Ⓒ Do most other mammals have body structures adapted to the places where they live?

Ⓓ Do most other mammals change the environment to meet their survival needs?

Part B

Which information would **best** support the answer to Part A?

Select the **two** correct answers.

Ⓐ The beaver cuts down trees for food.

Ⓑ The beaver builds dams to form ponds.

Ⓒ The beaver has thick fur to keep warm.

Ⓓ The beaver uses its tail to steer in the water.

Ⓔ The beaver has special teeth for chewing through wood.

17. **Part A**
Which claim **best** explains how one body structure helps the beaver survive?

Ⓐ The beaver's tail helps the beaver build a home.

Ⓑ The beaver's feet can be used to fight off predators.

Ⓒ The beaver's fur helps it hide during winter weather.

Ⓓ The beaver's teeth can be used to eat a special kind of food.

Part B
Which evidence **best** supports the answer to Part A?

Ⓐ The beaver has thick, warm fur.

Ⓑ The beaver's back feet are webbed.

Ⓒ The beaver's front teeth keep growing.

Ⓓ The beaver slaps the water with its tail.

18. In which ways do two body structures of the beaver work together to help the beaver survive?

Select the **two** correct answers.

Ⓐ The tail helps steer while the webbed feet help the beaver swim.

Ⓑ The tail sounds a warning while the teeth are used to fight predators.

Ⓒ The tail helps the beaver stand upright while the teeth are used to cut trees down.

Ⓓ The feet are used for walking while the tail keeps the beaver balanced when walking on all four feet.

Ⓔ The fur keeps the beaver warm while the teeth are used to clean the fur.

GO ON ▶

19. Which statement **best** describes a way that a beaver causes a change to its environment?

Ⓐ Habitat for other animals in the area is greatly reduced.

Ⓑ Faster water flow past a dam helps clean the water.

Ⓒ A dam increases downstream flooding during times of heavy rainfall.

Ⓓ Higher water levels provide more water for trees during dry periods.

20. Beavers make changes that harm farmland.

Make a claim about a problem that beavers may cause for a farmer. In your response, be sure to:

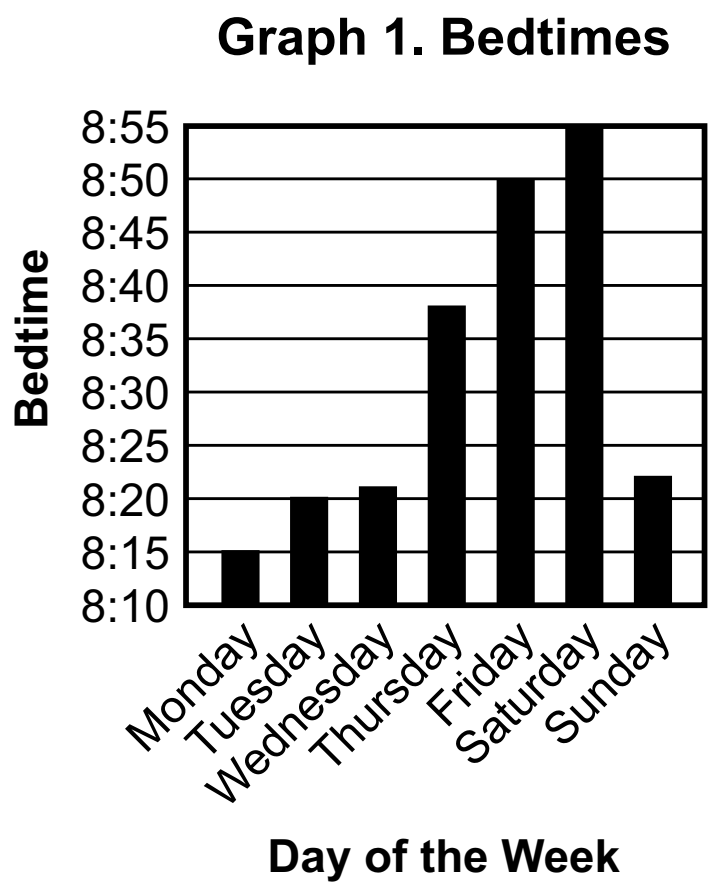
- use evidence to support your claim
- explain at least two ways that the problem can be solved

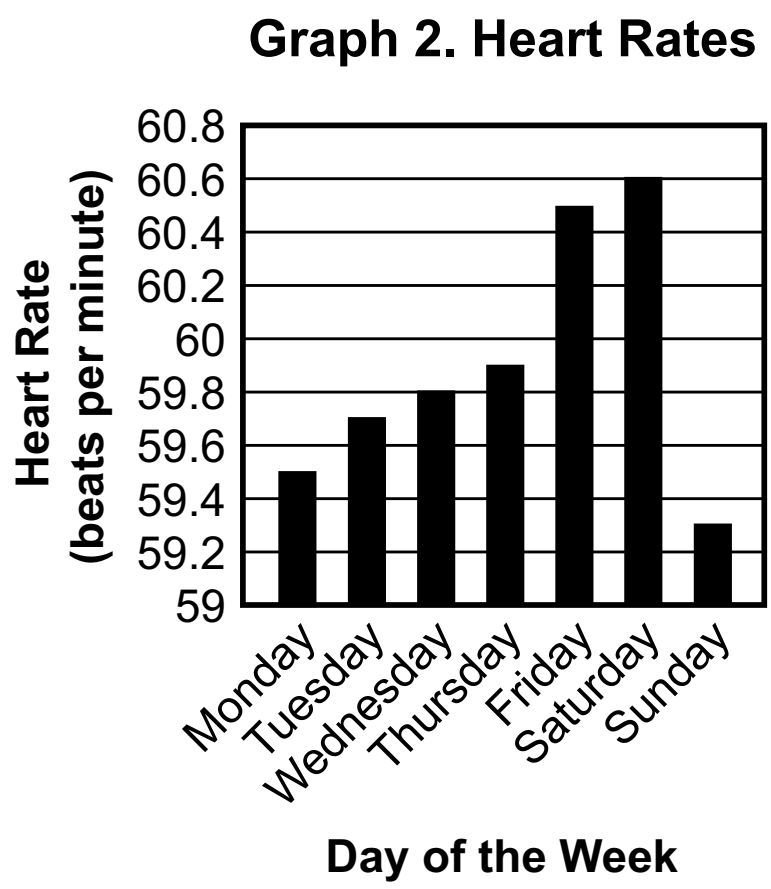
GO ON ▶

20. (continued)

21. Use the information and your knowledge of science to answer the question.

Simon learned that sleep can affect the heart. He found data on the effect that sleep has on heart rate. These data are shown in Graph 1 and Graph 2.





The person in the study has a usual bedtime of 8:20 P.M. and wakes up at the same time every day.

Which argument is **best** supported by the data in the graphs?

Ⓐ Getting more sleep causes a faster heart rate.

Ⓑ Getting less sleep causes a slower heart rate.

Ⓒ A person who stays up later than usual will have a faster heart rate.

Ⓓ A person who stays up later than usual will have a slower heart rate.

GO ON ▶

22. Use your knowledge of science to answer the question.

Which pair of devices provides evidence that electrical energy can be converted to light energy and sound energy when the devices are connected to a source of electricity?

Ⓐ lamp and doorbell

Ⓑ fan and lamp

Ⓒ lamp and toaster

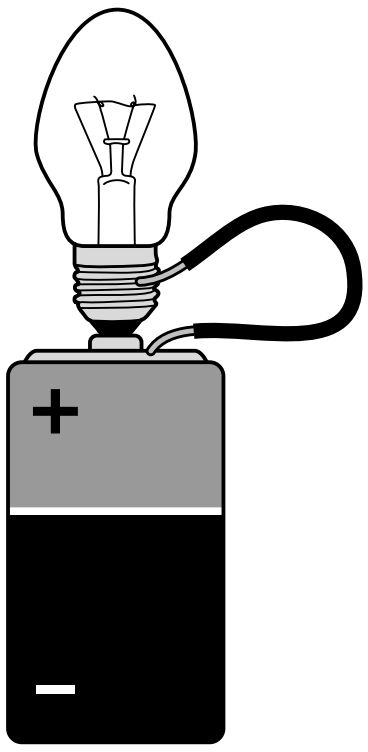
Ⓓ doorbell and toaster

23. Use the information and your knowledge of science to answer the questions.

Nick and Terri are designing a battery-powered lamp using a copper wire, a battery, and a lightbulb.

Part A
In which design will the bulb light?

Ⓐ



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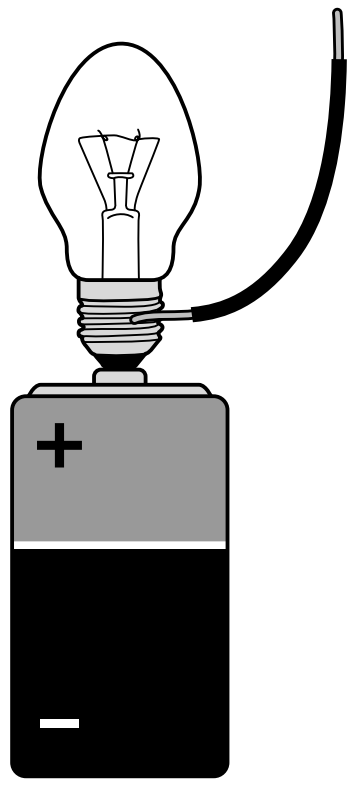

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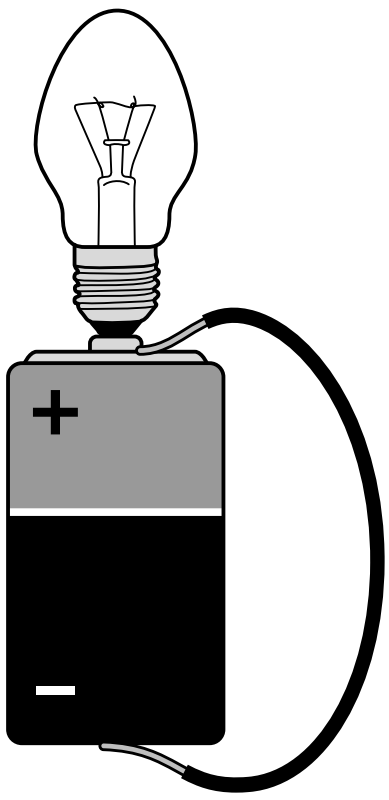
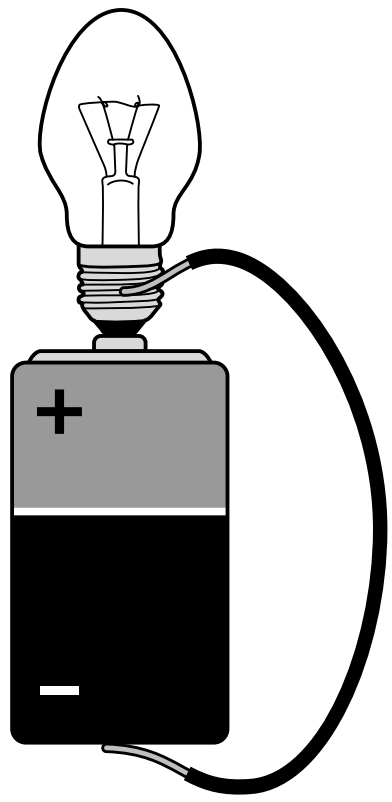


Ⓓ



GO ON ▶

Part B

Why is the correct answer to Part A the only design where the bulb will light?

Ⓐ It is the only design that has a wire touching the battery and the bulb.

Ⓑ It is the only design that connects wires to both ends of the battery.

Ⓒ It is the only design that makes a complete circuit with the battery and the bulb.

Ⓓ It is the only design that is able to connect the bulb to another part of the lamp.

You have come to the end of Session 2 of the test.

- **Review your answers from Session 2 only.**
- **Then, close your test booklet and sit quietly or read silently.**

STOP

NO TEST MATERIALS

Session 3 Directions

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GO ON ▶

Use the information about predator and prey senses and your knowledge of science to answer questions 24–27.

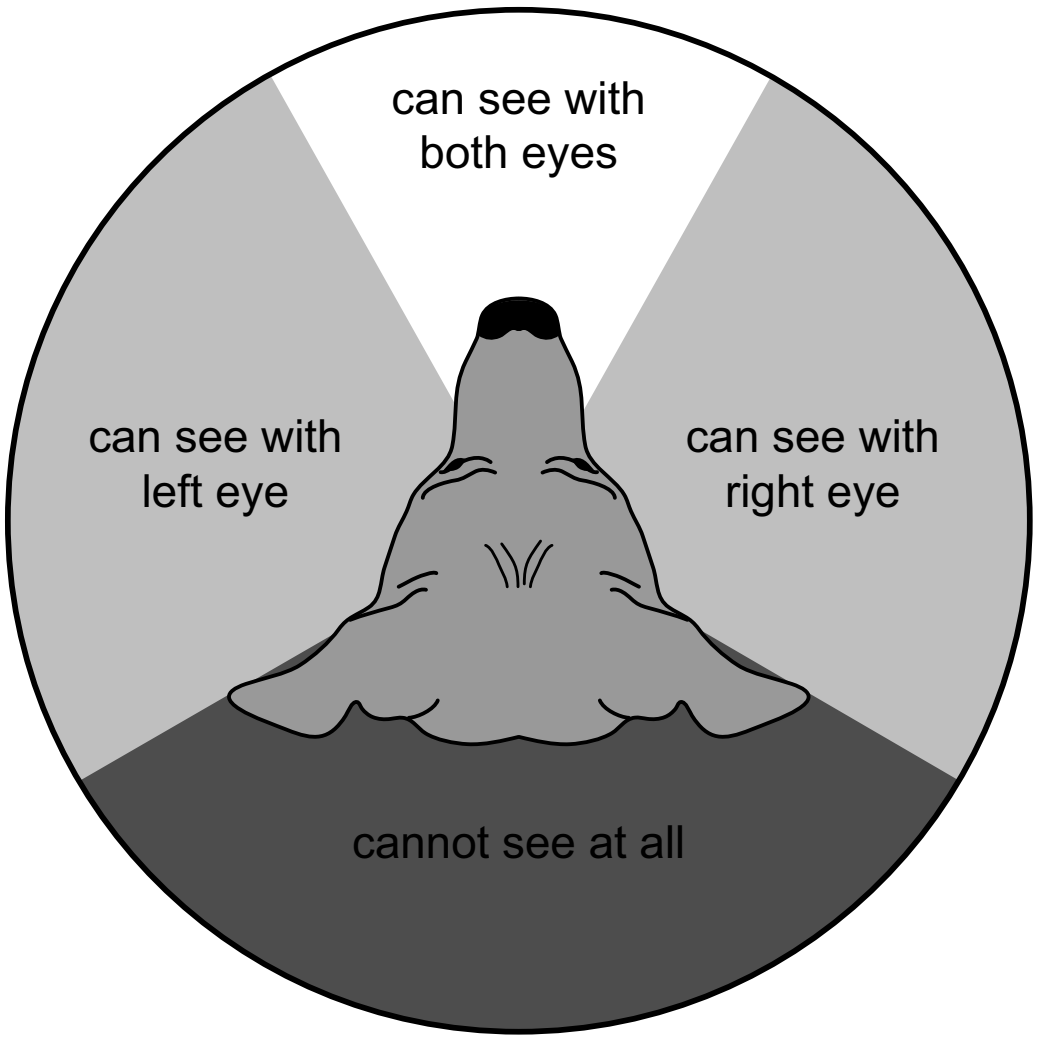
Predator and Prey Senses

Animals have several senses that allow them to survive. The senses of predators and prey are different.

Dogs and other predators have eyes facing forward. They can see a large area with both of their eyes at the same time. This helps them see things far away. This also helps them see things to the right and left without turning their heads. Many predators have good night vision.

Figure 1 shows the field of vision for a dog.

Figure 1. Dog Vision

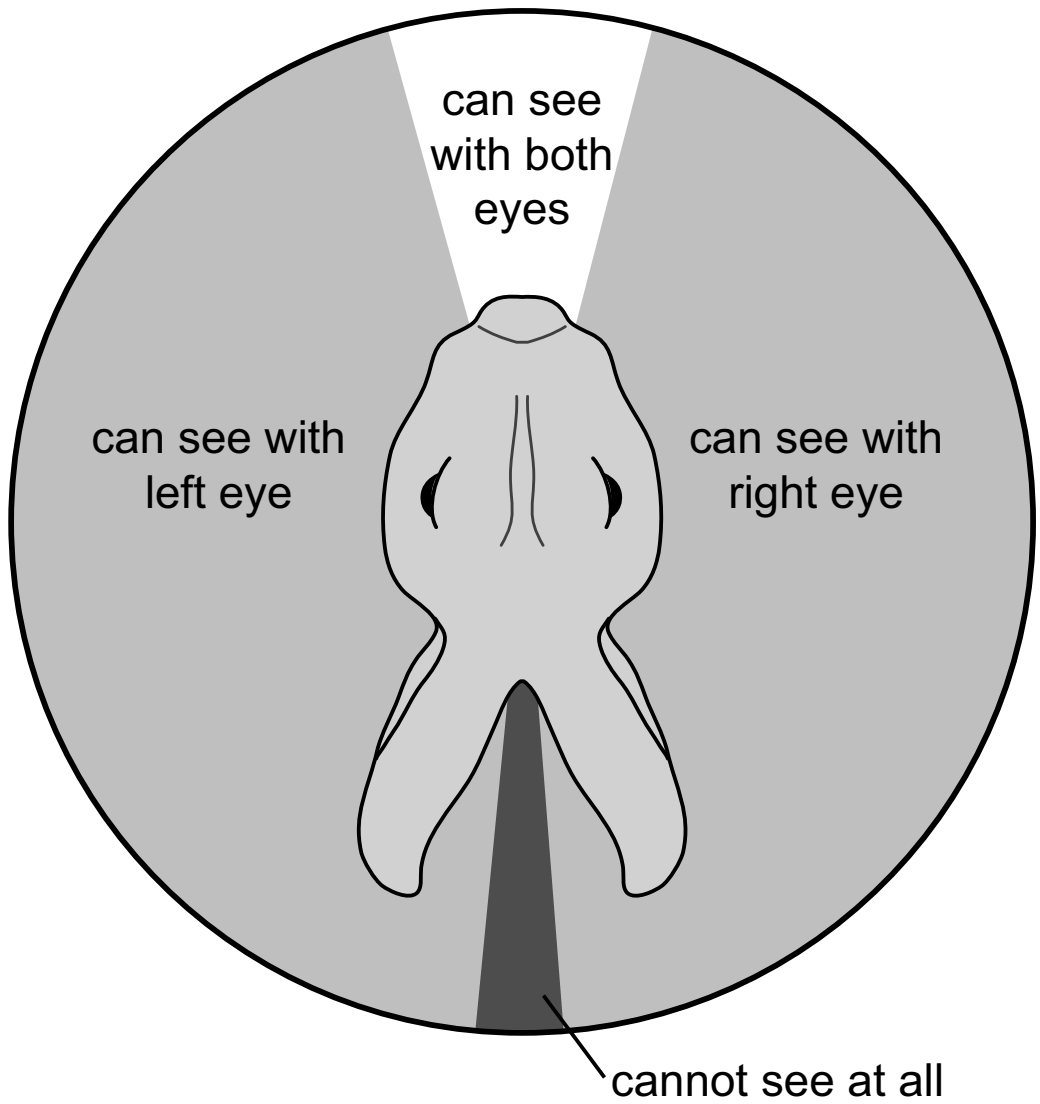


Rabbits and other prey animals have eyes on the sides of their heads. They can see a larger area than most predators. However, the area that they can see with both eyes is small. This means that rabbit vision is not very clear. Rabbits also cannot see well at night.

GO ON ▶

Figure 2 shows the field of vision for a rabbit.

Figure 2. Rabbit Vision



Rabbits cannot see clearly enough to identify the animals they see. Rabbits rely on their senses of smell and hearing to identify what is in their environment. Rabbits have many more smell receptors than humans. These smell receptors allow rabbits to notice and identify predators from a distance.

Table 1 compares the number of smell receptors in humans and other animals.

Table 1. Number of Smell Receptors in Humans and Other Animals

Animal	Number of Smell Receptors (in millions)
humans	6
rabbits	100
most dogs	1,000
bloodhound dogs	4,000

GO ON ▶

24. Use the information in Table 1 to answer the question.

Which statement **best** explains why a dog's brain can process more information about smell than a rabbit's brain can?

Ⓐ Dogs take in different kinds of information with their smell receptors than rabbits do.

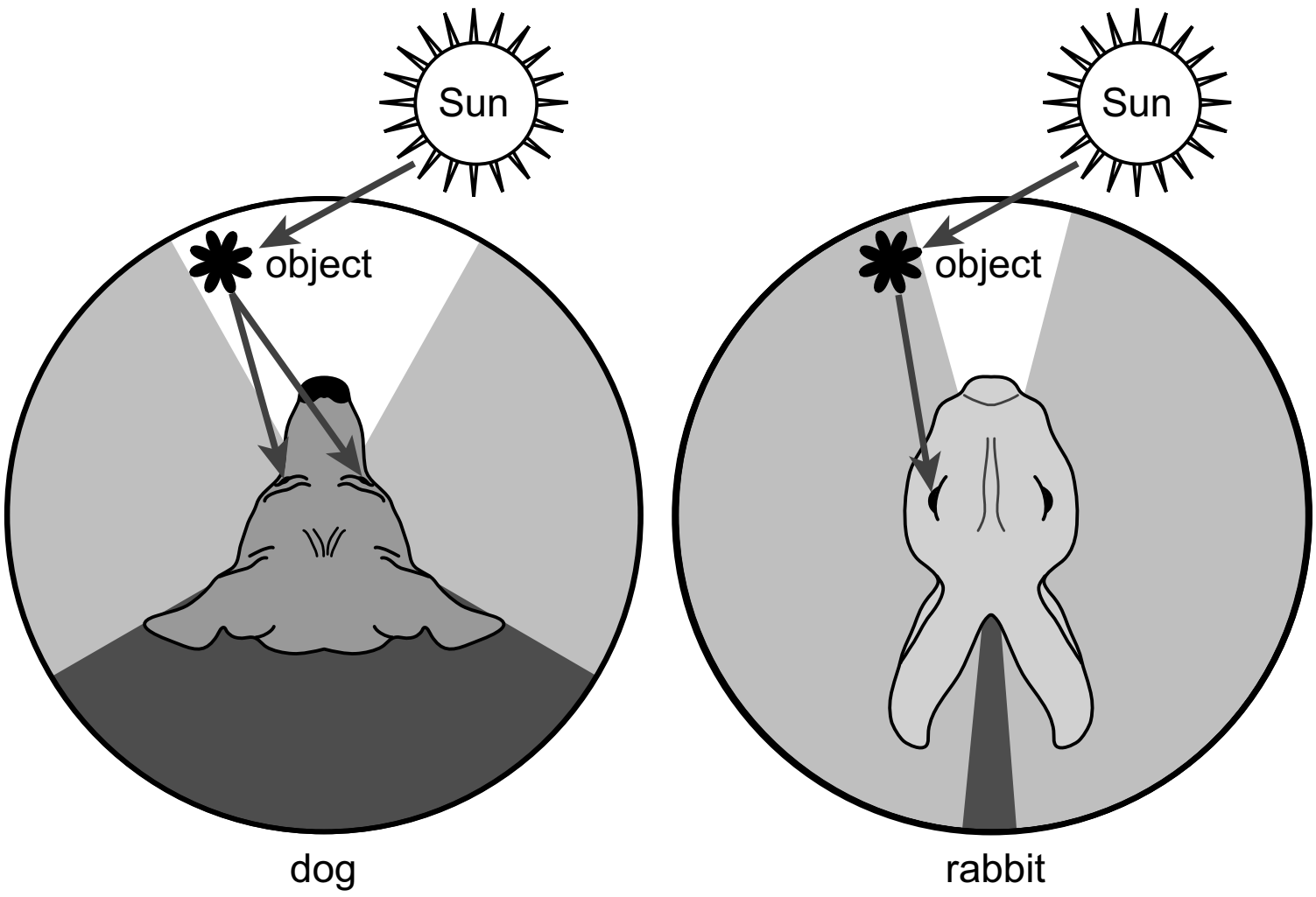
Ⓑ Dogs process information from their noses and tongues to learn about their surroundings.

Ⓒ Dogs have a smaller range of vision than rabbits do and learn to rely on their memories about smells.

Ⓓ Dogs take in more information because they have at least 10 times as many smell receptors as rabbits have.

25. Use the information in Figure 1 and Figure 2 to answer the question.

Light that reflects off an object will go into the eyes of dogs and rabbits differently, as shown in this figure.



Which statements **best** explain why the dog is able to see the object more clearly than the rabbit can?

Select the **two** correct answers.

Ⓐ The image of the object is visible from both of the dog's eyes.

Ⓑ The image of the object is visible from both of the rabbit's eyes.

Ⓒ The image of the object is visible from only one of the dog's eyes.

Ⓓ The image of the object is visible from only one of the rabbit's eyes.

Ⓔ The image of the object is visible from both of the dog's eyes but neither of the rabbit's eyes.

GO ON ▶

26. **Part A**

Which statement **best** describes how a rabbit processes information that is taken in by the rabbit's eyes?

Ⓐ A rabbit's eyes send images to its brain so that the rabbit can see a place to hide.

Ⓑ A rabbit's eyes send signals to its muscles so that the rabbit can run from danger.

Ⓒ A rabbit's eyes send signals to its brain so that the rabbit can decide how to respond.

Ⓓ A rabbit's eyes send images to its ears and nose so that the rabbit can take in more information.

Part B

Which statement **best** describes how a rabbit knows whether it is in danger?

Ⓐ The rabbit's eyes recognize the shape of a predator.

Ⓑ The rabbit's brain compares memories to information from the environment.

Ⓒ The rabbit's ears and nose remember what a predator sounds and smells like.

Ⓓ The rabbit's brain combines visual, scent, and sound information into a complete image.

GO ON ▶

27. Use the information in Figure 1 and Figure 2 to answer the question.

Some dog breeds hunt rabbits by sight. The rabbits see the dogs before the dogs get close to them. When the rabbits realize there is danger, they start running. The dogs chase after the moving rabbits.

Explain why dogs are able to hunt by sight. In your response, be sure to explain:

- why the rabbits see the dogs before the dogs get close to the rabbits
- why the dogs can easily see and follow the moving rabbits

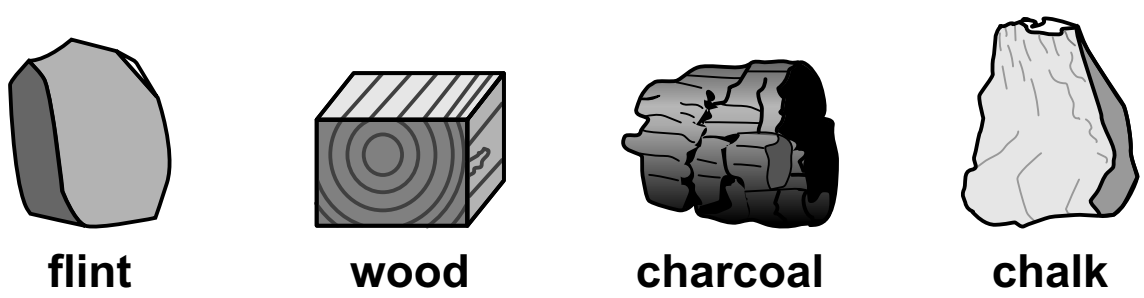
GO ON ▶

Use the information about striking flint and your knowledge of science to answer questions 28–31.

Striking Flint

Ana and Jon struck different materials with a steel rod to see which materials would create a spark. The materials they used for striking are shown in Figure 1.

Figure 1. Materials Used for Striking



Ana and Jon recorded their observations in Table 1.

Table 1. Result after Striking with a Steel Rod

Material	Creates a Spark	Does Not Create a Spark
flint	X	
wood		X
charcoal		X
chalk		X

GO ON ▶

28. Ana strikes the flint hard with the steel rod and then strikes the same flint more gently. Jon notices that one strike is louder than the other.

Which statement **best** explains why Jon hears a difference between the volume of the hard strike and the volume of the soft strike?

Ⓐ More energy is transferred from the objects to the air when two objects collide at a higher speed.

Ⓑ The flint transfers all the energy to the air in the hard strike.

Ⓒ The flint absorbs all the energy in the soft strike, so no energy is transferred to the air.

Ⓓ More energy is produced when a spark is created, causing more energy to be transferred to the air.

29. **Part A**
Ana strikes the flint hard with the steel rod.

Which claim is **best** supported by the observation that a spark is produced when the flint is struck hard?

Ⓐ Energy is transferred to the flint.

Ⓑ Heat is transferred from the flint.

Ⓒ Matter is transferred to the flint.

Ⓓ Energy is transferred to Ana.

Part B
Which evidence **best** supports the answer to Part A?

Ⓐ The flint gains mass.

Ⓑ Ana’s hand develops a bruise.

Ⓒ Heat and light are created.

Ⓓ The flint is colder after it is struck.

GO ON ▶

30. Jon measured the air temperature around a rock before and after he struck it many times with the steel rod. The temperature before striking was 18°C, and the temperature after striking was 19°C.

Which statement **best** explains why the temperature of the air increased?

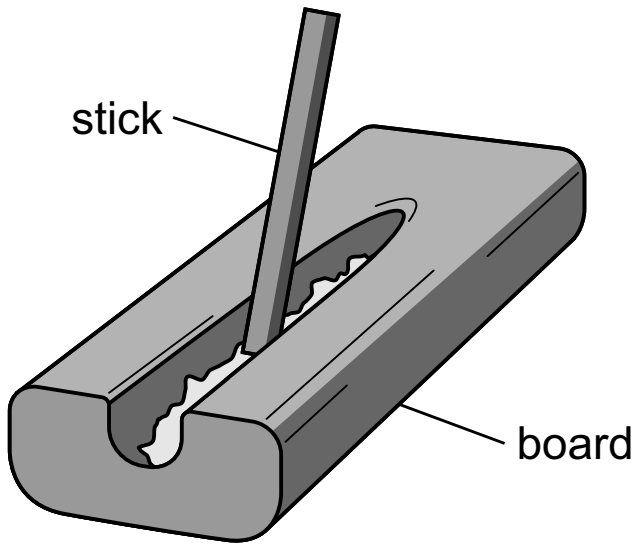
Ⓐ Light energy from the Sun reflected off the steel rod.

Ⓑ Heat energy transferred to the surrounding air when the objects collided.

Ⓒ Motion energy stored in the rock was released into the air when the rock was hit.

Ⓓ Heat energy stored in the steel rod was released into the air after the rod hit the rock.

31. Jon and Ana investigate whether materials other than a steel rod and flint can be used to start a fire. They push a stick of wood against a groove in a board made of a softer type of wood, as shown in the figure.



Part A
Which question could Jon and Ana investigate to determine whether this method can start a fire?

Ⓐ Does the stick absorb energy from the air to create a spark?

Ⓑ Does the stick create heat energy when it is pushed against the board?

Ⓒ Does the stick react with the oxygen in the air to create a spark?

Ⓓ Does the stick create heat and light energy when it first touches the board?

Part B
Which evidence would **best** support the answer to Part A?

Select the **two** correct answers.

Ⓐ deeper grooves created in the board

Ⓑ the presence of sparks near the stick

Ⓒ deep scratches created on the stick

Ⓓ a scent in the air that smells like wood

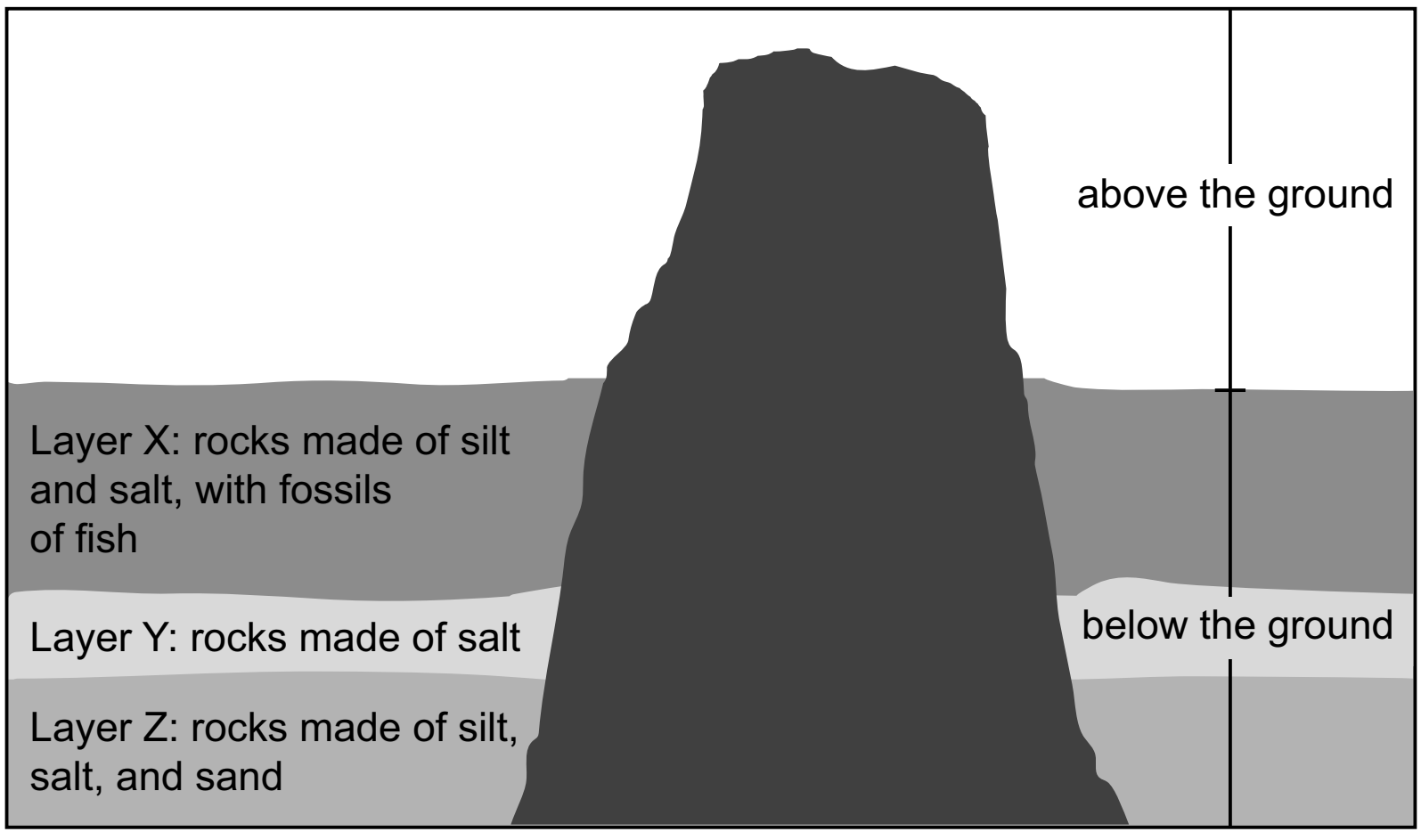
Ⓔ a temperature change in the air close to the board

GO ON ▶

32. Use the information and your knowledge of science to answer the question.

Devils Tower is a landform in Wyoming that was buried underground for millions of years. About 5 million years ago, several processes occurred that resulted in Devils Tower being partly below the ground and partly above the ground, as shown in the figure.

Devils Tower



Which statement **best** explains one of the layers of rock around the landform?

Ⓐ Layer Y was once lava.

Ⓑ Layer Z was once an ocean.

Ⓒ Layer Y is younger than Layer X.

Ⓓ Layer X was once under the ocean.

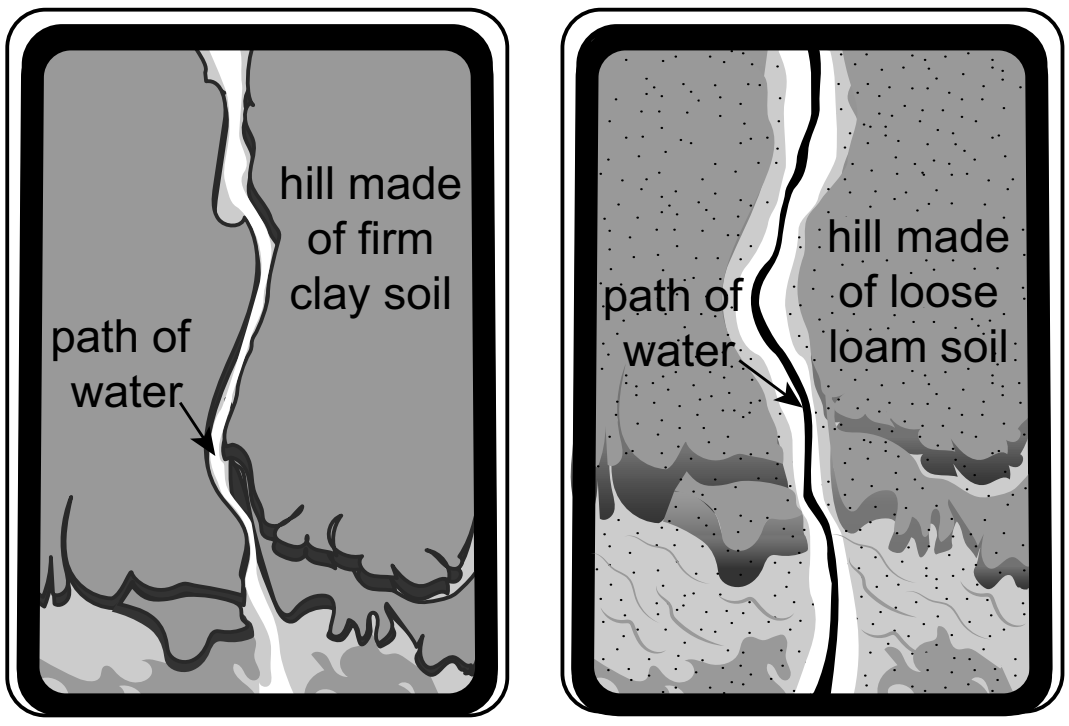
GO ON ▶

33. Use the information and your knowledge of science to answer the question.

A teacher models how rainfall causes erosion on hillsides. She places two plastic containers on a table. She builds a hill made of firm clay soil in one container. She then builds a hill made of loose loam soil in the other container. She pours water onto the top of each model hill.

The setup is shown in the diagram.

Hillside Erosion Setup



Which statement **best** explains the difference in erosion patterns?

Ⓐ Loose soil erodes faster because it absorbs more water.

Ⓑ Firm soil erodes more slowly because water flows into the soil more slowly.

Ⓒ Loose soil erodes faster because soil particles float on the surface of the water.

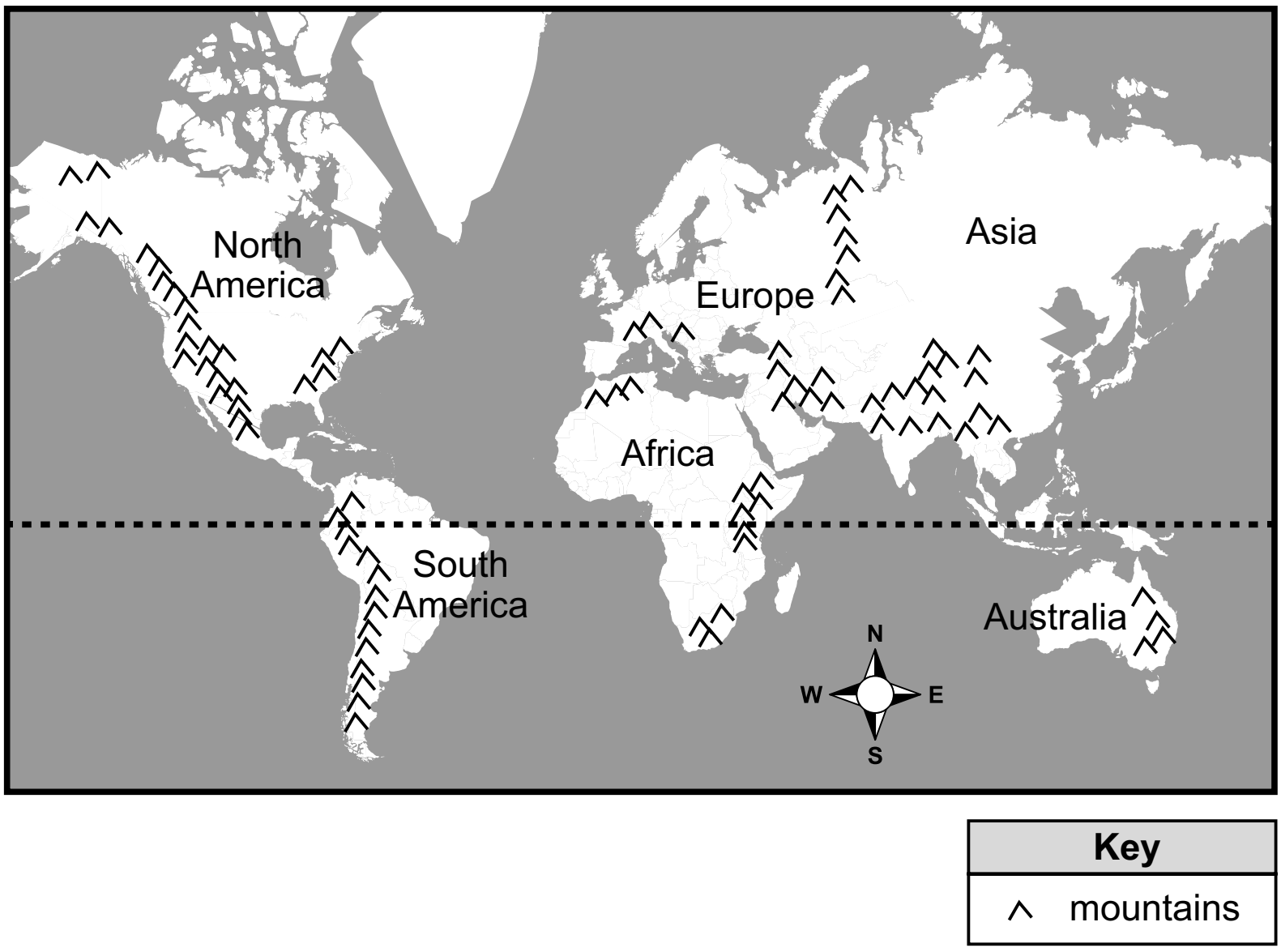
Ⓓ Firm soil erodes more slowly because it is difficult for water to break soil particles apart.

GO ON ▶

34. Use the information and your knowledge of science to answer the question.

The locations of mountain ranges are shown on the map.

Mountain Ranges



Which pattern describes the locations of the mountain ranges shown on the map?

Ⓐ Most mountain ranges are found along ocean and continent boundaries.

Ⓑ Most mountain ranges are found on islands.

Ⓒ Most mountain ranges are found where two oceans meet.

Ⓓ Most mountain ranges are found near the equator.

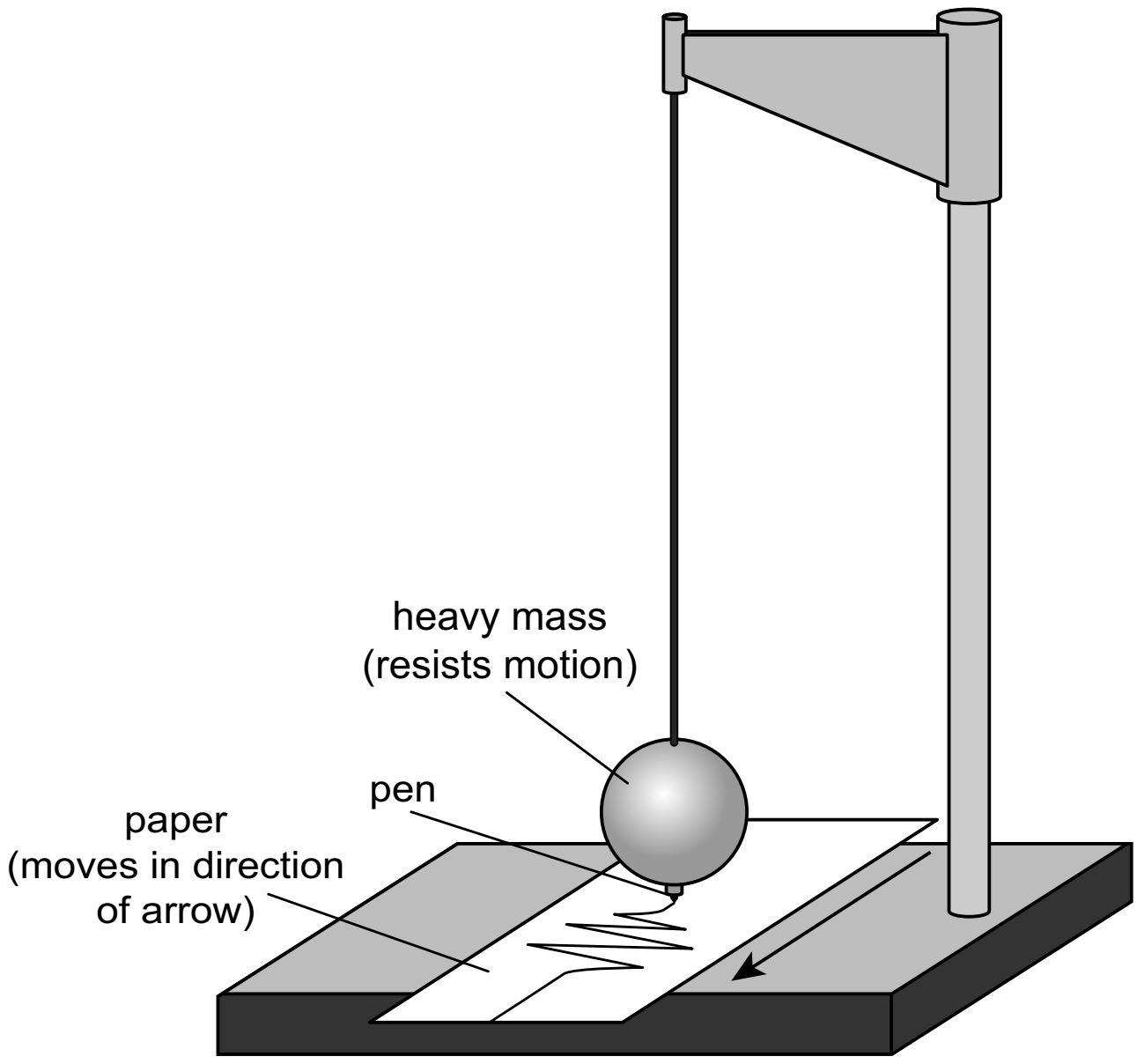
GO ON ▶

GO ON TO NEXT PAGE

35. Use the information and your knowledge of science to answer the question.

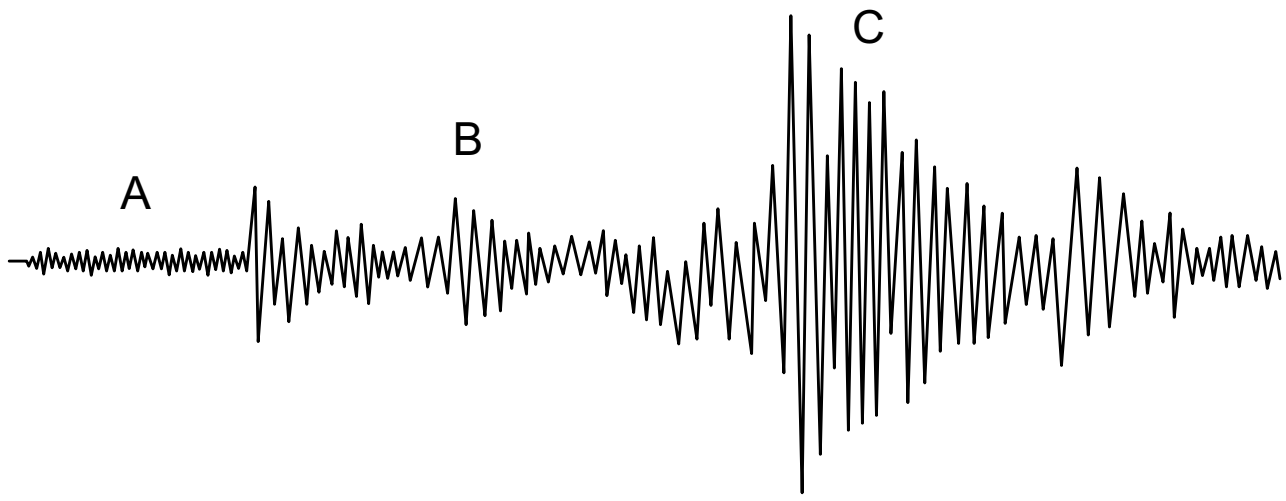
A seismometer is a device that measures and records the shaking of the ground during an earthquake. Figure 1 shows how a seismometer works.

Figure 1. Seismometer



A sample seismometer recording is shown in Figure 2.

Figure 2. Sample Seismometer Recording



Why does the recording look different at time A and time C?

Ⓐ The temperature of the ground at time A was different from the temperature at time C.

Ⓑ The angle of the ground at time A was different from the angle at time C.

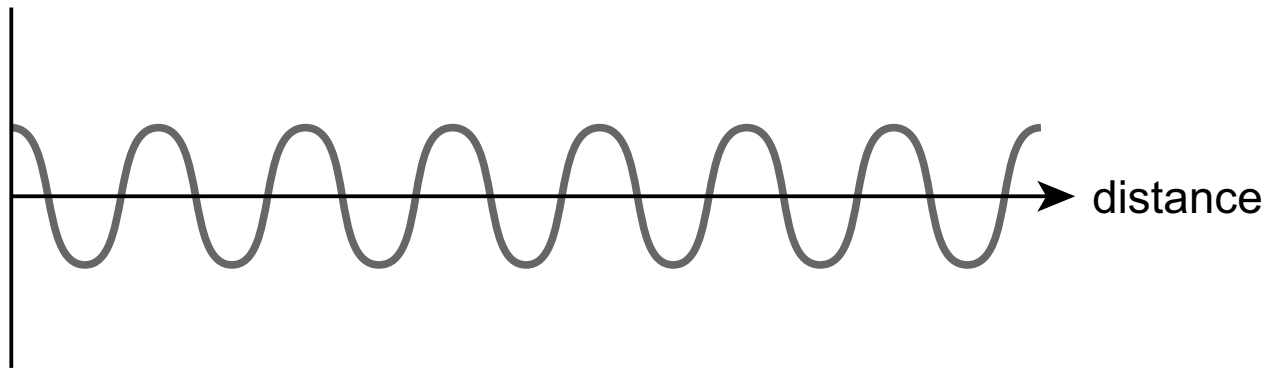
Ⓒ The amount the ground moved at time A was different from the amount the ground moved at time C.

Ⓓ The strength of the wind close to the ground at time A was different from the strength of the wind close to the ground at time C.

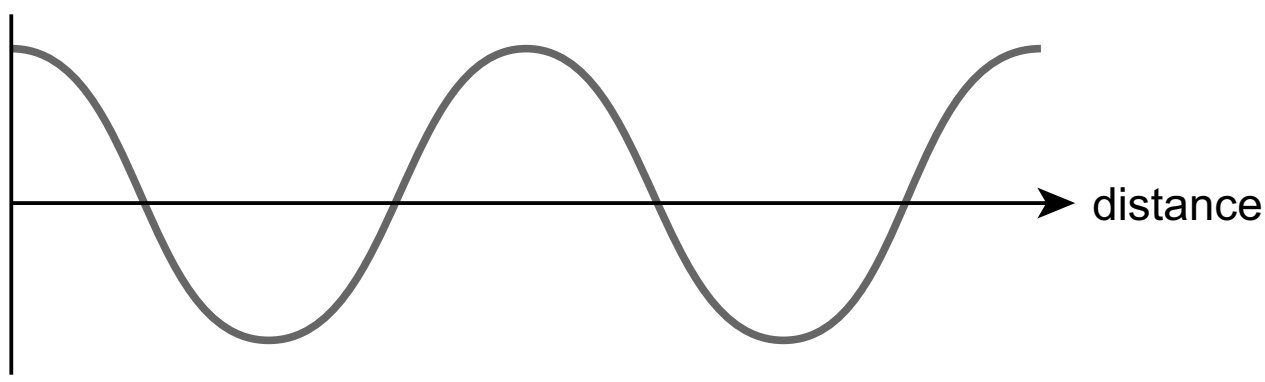
36. Use the information and your knowledge of science to answer the question.

Melissa and Rebecca created models of two waves, as shown in the figure.

Short-Wavelength Model



Long-Wavelength Model



Which statement **best** describes the relationship between the two waves in the models?

Ⓐ The amplitude of the long-wavelength wave is the same as the amplitude of the short-wavelength wave.

Ⓑ The amplitude of the long-wavelength wave is higher than the amplitude of the short-wavelength wave.

Ⓒ The amplitude of the long-wavelength wave is lower than the amplitude of the short-wavelength wave.

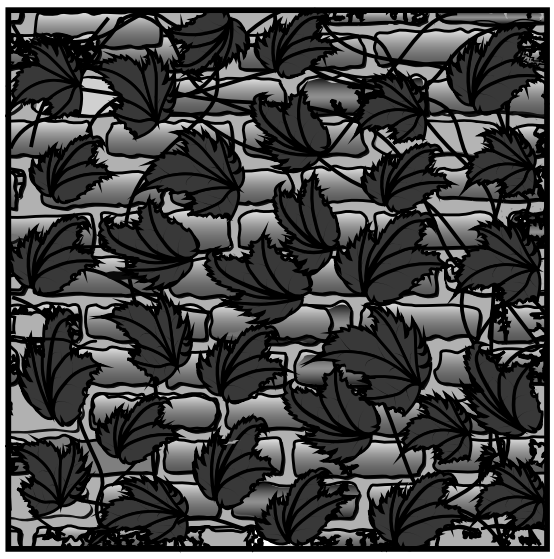
Ⓓ The amplitude of the long-wavelength wave is wider than the amplitude of the short-wavelength wave.

GO ON ▶

37. Use the information and your knowledge of science to answer the question.

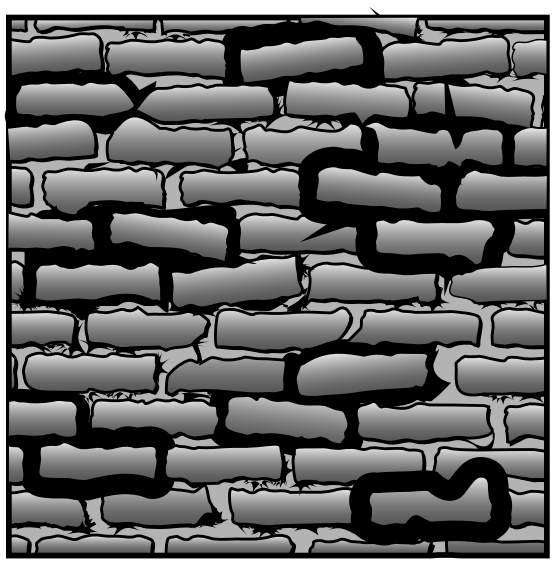
Joseph observed workers removing ivy from the brick wall of his school building.

Bricks Covered with Ivy



Ivy Being Removed from Bricks

Bricks after Removal of Ivy



Which question should **most likely** be investigated to discover why the bricks shown in the drawing changed?

Ⓐ Did the roots and leaves of the ivy dissolve the bricks?

Ⓑ Did the ivy leaves grow behind the bricks and push them outward?

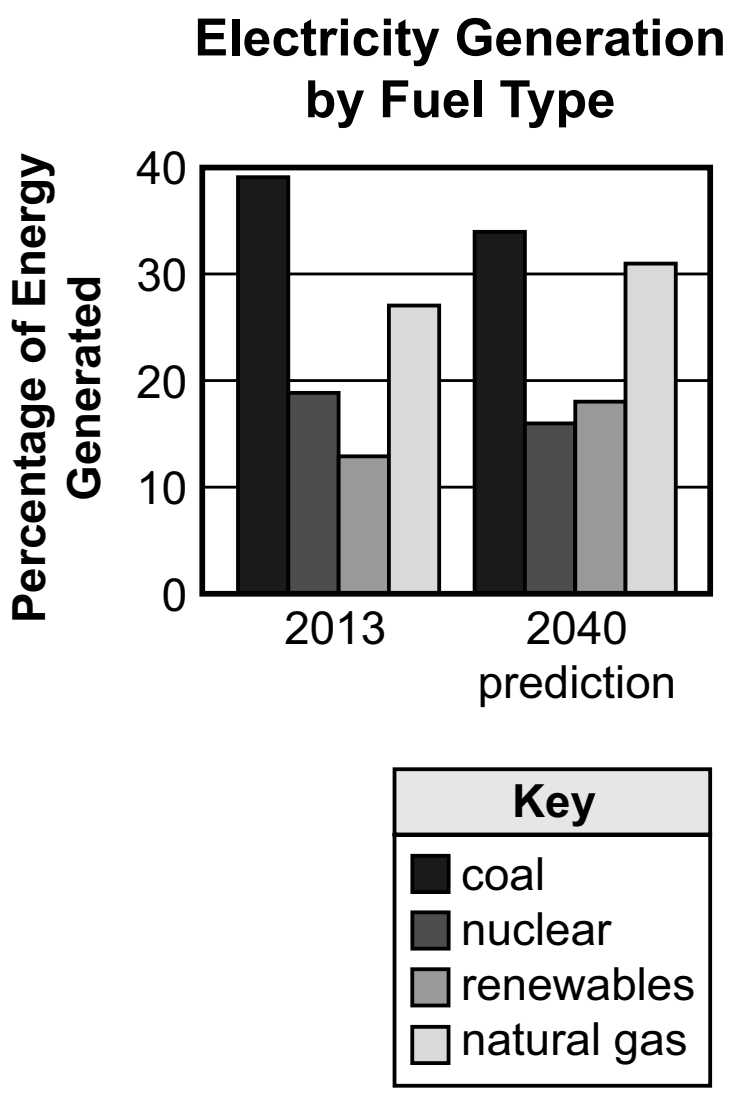
Ⓒ Were the bricks loosened because the roots of the ivy grew in the cracks?

Ⓓ Were the bricks weakened in the winter because they were covered with frozen ivy?

GO ON ▶

38. **Use the information and your knowledge of science to answer the question.**

Sharon found a graph that shows a prediction about energy sources in 2040. The graph shows renewable and nonrenewable energy sources. Renewables include energy sources such as water, wind, and solar power. Nonrenewables include nuclear energy and fossil fuels such as coal and natural gas.



Which developments would **most likely** result from these predicted changes?

Select the **two** correct answers.

Ⓐ Fewer coal mines would be opened.

Ⓑ All fossil fuels would decrease in use.

Ⓒ Electricity use would drop over the years.

Ⓓ Nuclear power would become more common.

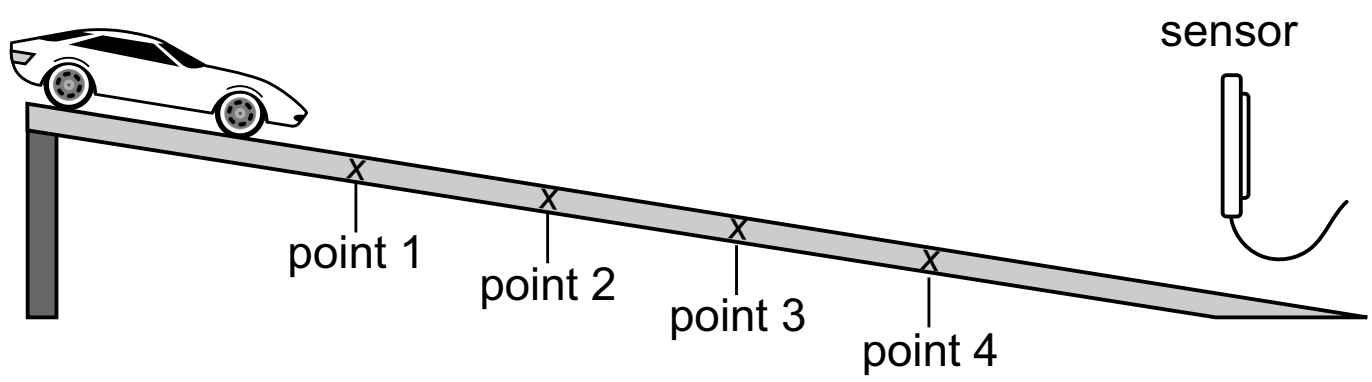
Ⓔ There would be greater use of solar and wind power.

GO ON ▶

39. Use the information and your knowledge of science to answer the question.

Aiden released a toy car from different points on a ramp, as shown in the diagram.

Ramp Experiment



Aiden used a sensor to measure the speed of the car at the same location after the car was released from each point. Aiden concluded that the car had the most energy when it was released from point 1.

Which evidence did Aiden **most likely** use to reach his conclusion?

Ⓐ Point 1 is farthest from the sensor.

Ⓑ Point 1 is closest to the top of the ramp.

Ⓒ The car took the most time to reach the end of the ramp from point 1.

Ⓓ The car had the greatest speed at the sensor when it was released from point 1.

40. Use the information and your knowledge of science to answer the question.

Some car side mirrors have a small extra mirror. This extra mirror is circular and curved like a dome. The picture shows what the driver sees in one of these side mirrors.

Source: ssimone/Shutterstock, Inc.

Which statements **best** explain how the small curved mirror helps a driver see objects near the car?

Select the **two** correct answers.

Ⓐ Light from beside the car reflects into the driver's eyes.

Ⓑ Light from many directions reflects into the driver's eyes.

Ⓒ Light from the car's other mirrors reflects into the driver's eyes.

Ⓓ The driver can see only a few objects near the car.

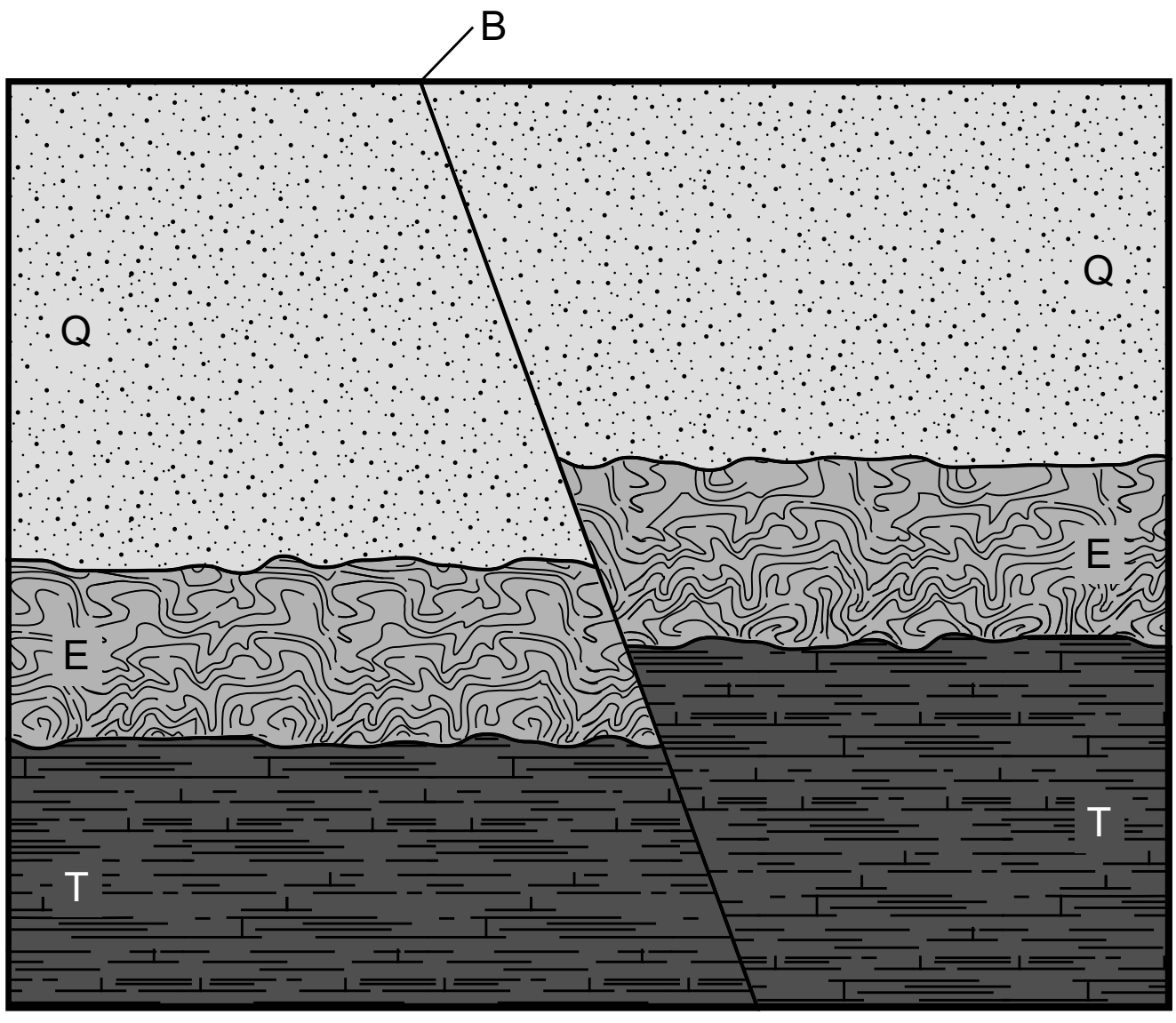
Ⓔ The driver can see objects in many places near the car.

GO ON ▶

GO ON TO NEXT PAGE

41. Use the information and your knowledge of science to answer the questions.

The figure shows several layers of rock and a line where there was movement in the layers.



Part A
Which set of statements **best** explains the order of events that formed the rock layers?

Ⓐ The layers formed in the order Q, E, T. Afterward, the layers moved along line B.

Ⓑ The layers formed in the order T, E, Q. Afterward, the layers moved along line B.

Ⓒ Layers T and E formed. Then, the layers moved along line B. Last, layer Q formed.

Ⓓ Layer Q formed. Then, the layers moved along line B. Next, layers E and T formed.

Part B
Which evidence **best** supports the answer to Part A?

Select the **two** correct answers.

Ⓐ Layer Q is at the top, so this is the oldest layer of rock.

Ⓑ Layers E and T are at the bottom, so these are the oldest layers of rock.

Ⓒ Line B cuts through layers E, Q, and T, so the layers moved after they formed.

Ⓓ Layer Q is thicker on one side, so it formed after the other layers moved.

Ⓔ Layers E and T are thicker on one side, so they formed after layer Q moved.

STOP

You have come to the end of Session 3 of the test.

- **Review your answers from Session 3 only.**
- **Then, close your test booklet and sit quietly or read silently.**

STOP

LEAP 2025

DEPARTMENT of EDUCATION

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