

**GRADE 5**  
**Science**

**Administered May 2021**

**RELEASED**



# SCIENCE

## DIRECTIONS

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

1 A student recorded the time it took for all the water in a puddle on a sidewalk to evaporate after a rain. Which kind of energy causes water to evaporate?

- A Light energy from streetlights
  - B Sound energy from passing cars
  - C Thermal energy from the environment
  - D Mechanical energy from nearby streets
- 

2 Earth continuously rotates on its axis while also moving in an orbit. About how much time does it take for Earth to make one complete rotation on its axis?

- F 24 hours
- G 30 days
- H 60 minutes
- J 365 days

- 3** For a class demonstration a student turned off the lights in the classroom. The student then shined light from a flashlight through a hole in a piece of cardboard. The class saw the narrow beam of light continue until another student placed a mirror in the light's path.

The light did not continue past the mirror because —

- A** light cannot travel very far
  - B** the mirror absorbed all the light
  - C** the light was refracted back to the light source
  - D** light travels in a straight line and cannot go around objects
- 

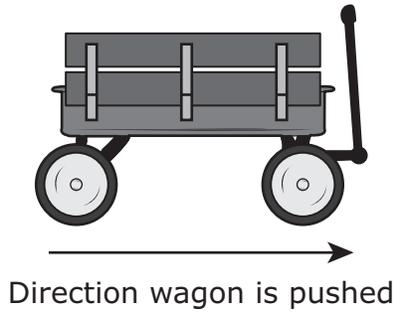
- 4** A table of different properties of four samples of matter is shown.

Sample	Conducts Electricity	Conducts Heat	Soluble in Water	Physical State at Room Temperature
1	No	No	Yes	Solid
2	Yes	Yes	No	Solid
3	No	Yes	Yes	Liquid
4	Yes	Yes	No	Liquid

Which conclusion can be made about the samples based on the table?

- F** Sample 1 is made of plastic.
- G** Sample 2 is made of metal.
- H** Sample 3 is attracted to magnets.
- J** Sample 4 is less dense than water.

- 5 A wagon is pushed and begins to move. As the wagon moves, it slows and comes to a stop. The wagon and the direction it is pushed are shown.



What force causes the wagon to stop?

- A The force of gravity which is acting in the same direction as the arrow
- B The force of friction which is acting in the same direction as the arrow
- C The force of gravity which is acting in the opposite direction of the arrow
- D The force of friction which is acting in the opposite direction of the arrow

- 
- 6 Students made a chart classifying animal behaviors.

Animal Behaviors

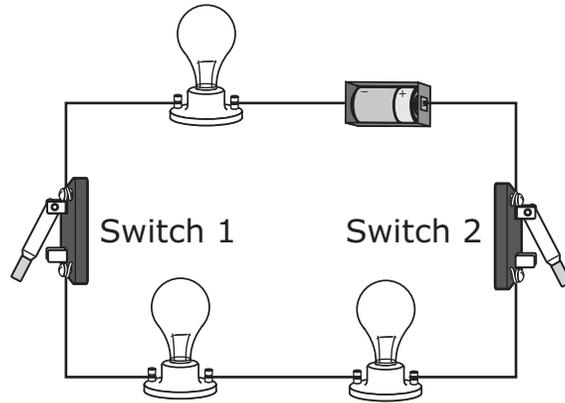
Inherited	Learned
Bear looking for food in a trash can	Dog coming when its name is called
Owl being active at night	Pony pulling a cart
Turtle burying eggs	Squirrel getting seeds from a bird feeder

Which animal behavior is NOT correctly classified?

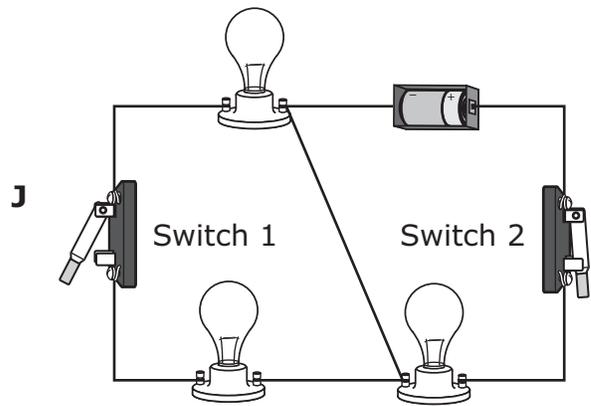
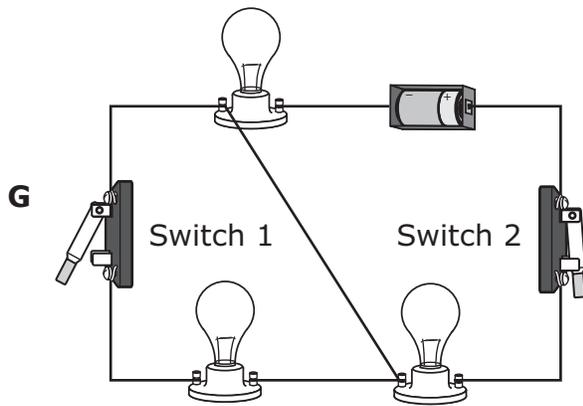
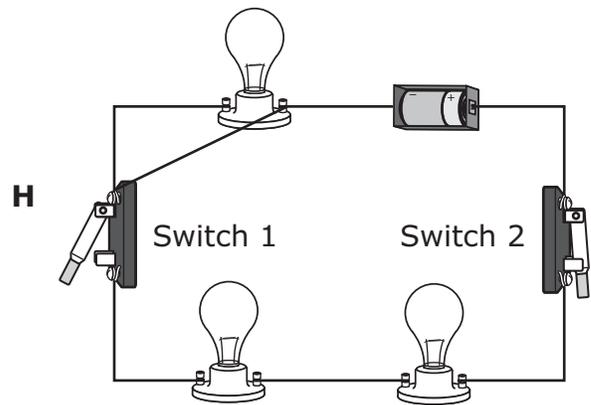
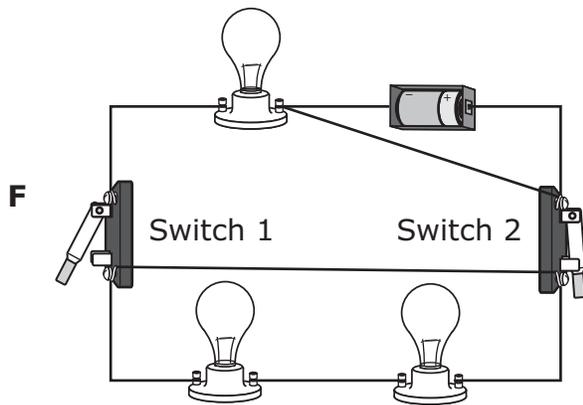
- F Bear looking for food in a trash can
- G Owl being active at night
- H Dog coming when its name is called
- J Squirrel getting seeds from a bird feeder

- 7 Canyons and mesas are two landforms found in the western part of the United States. Which statement best describes how canyons and mesas are similar?
- A Both were formed by slow-moving glaciers.
  - B Both were formed by erosion by wind and water.
  - C Both were part of a mountain that was weathered by ice.
  - D Both were part of a desert that was reshaped by a flood.

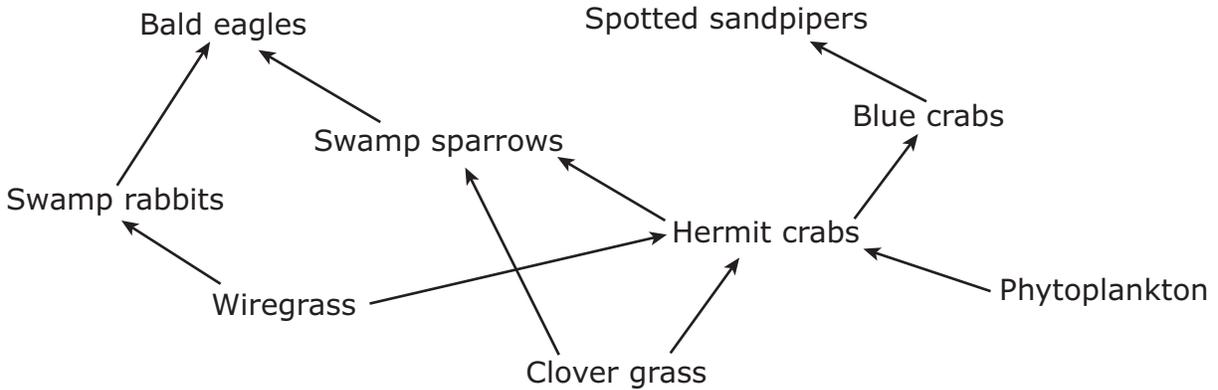
- 8 A student wants to make a change to the circuit shown below so that when Switch 1 is open and Switch 2 is closed, only one light will be on in the circuit.



Which diagram shows how the student should change the circuit?



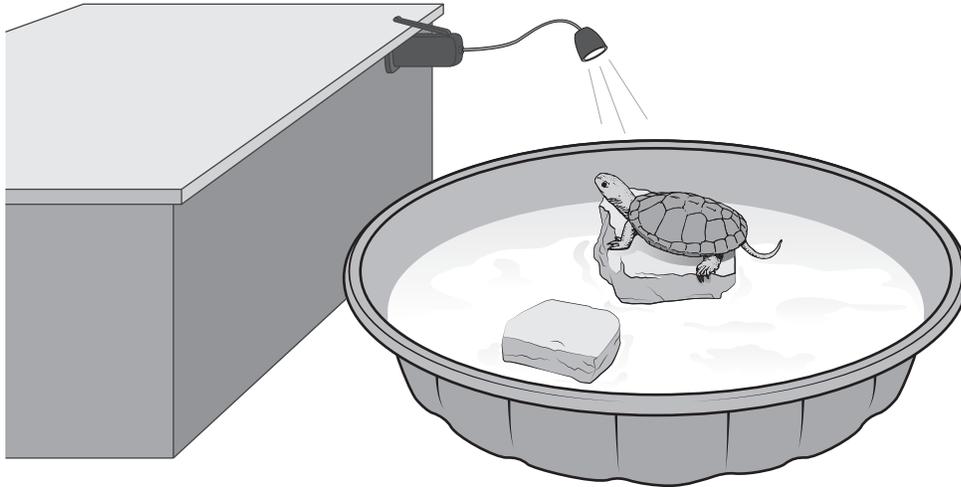
- 9 Students researching the relationships between some organisms in the Lavaca Bay ecosystem in Texas made this partial food web.



Which of these lists contains only organisms that receive some of their energy directly from other organisms that produce their own food?

- A Bald eagles and spotted sandpipers
- B Swamp rabbits, hermit crabs, and swamp sparrows
- C Phytoplankton, hermit crabs, and blue crabs
- D Wiregrass, clover grass, and phytoplankton

- 10** A science class is observing a pet turtle in a small plastic pool. The students turn on a portable camping lamp that is clamped on to a counter next to the pool.



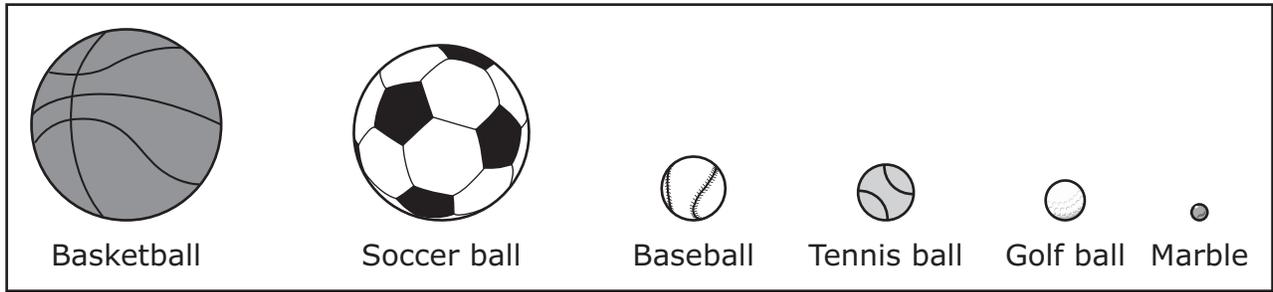
Which kind of energy is used by the portable lamp to produce light?

- F** Mechanical energy, because the lamp is clamped on to the counter
  - G** Thermal energy, because the lamp increases the temperature of the water
  - H** Electrical energy, because the lamp is battery-operated
  - J** Sound energy, because the lamp vibrates when clicked on
- 
- 11** Students observe a glass of ice and water. The glass is dry on the outside. After ten minutes students see drops of water on the outside of the glass.

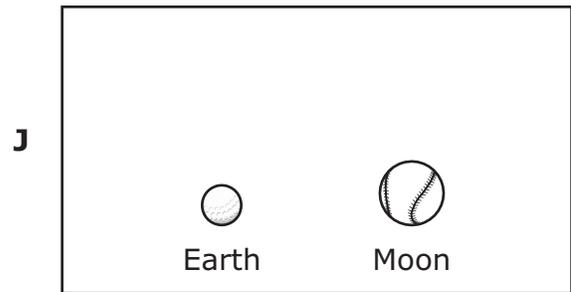
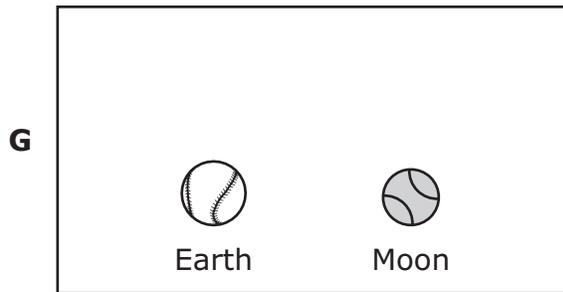
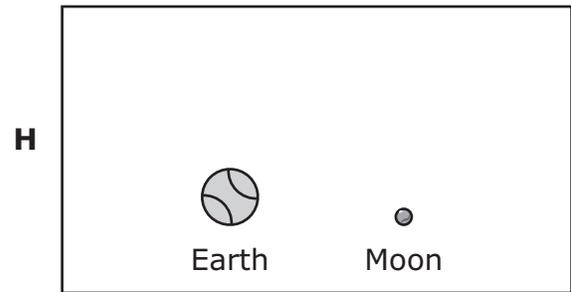
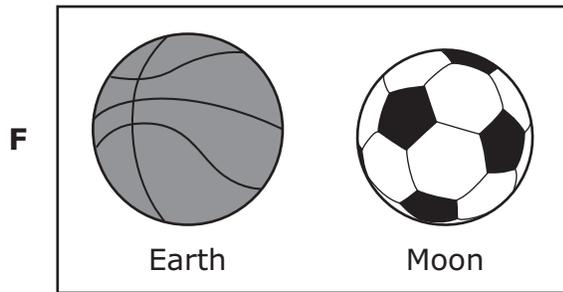
Which statement best explains the students' observations?

- A** The water vapor in the air changes to a liquid when it touches the cold glass.
- B** The cold water inside the glass rises and then slides down the outside of the glass.
- C** The ice in the glass melted and caused the water to overflow the glass.
- D** The water moved to the outside surface through tiny holes in the glass.

12 Students chose objects to model the relative sizes of Earth and the moon.



Which set of objects best compares the sizes of Earth and the moon?



**13** A dinosaur fossil is shown.



Which question can scientists most likely answer from studying the fossil of the dinosaur?

- A** What was the pattern on the skin of the dinosaur?
  - B** What was the type of food the dinosaur ate?
  - C** How fast was the heart of the dinosaur beating?
  - D** How many eggs were in the nest of the dinosaur?
- 

**14** In the early 1600s, the astronomer Galileo used a telescope to make observations of Mercury and Venus. What are the positions of these planets in relation to the sun?

- F** Mercury is the planet closest to the sun, and Venus is the second planet from the sun.
- G** Mercury is the second planet from the sun, and Venus is the third planet from the sun.
- H** Venus is the planet closest to the sun, and Mercury is the second planet from the sun.
- J** Mercury is the third planet from the sun, and Venus is the planet closest to the sun.

**15** This chart describes some beak and toe adaptations that help four bird species survive in different habitats.

Bird 1	Bird 2	Bird 3	Bird 4
<ul style="list-style-type: none"> <li>• Long, sharp beak for hammering into tree trunks</li> <li>• Special toe placement that helps with support on tree trunk</li> </ul>	<ul style="list-style-type: none"> <li>• Sharp beak for spearing fish</li> <li>• Long toes for walking on mud and grasping plants</li> </ul>	<ul style="list-style-type: none"> <li>• Heavy, pointed beak with sharp edges for splitting open seeds</li> <li>• Special toe placement that helps with perching and hopping</li> </ul>	<ul style="list-style-type: none"> <li>• Grooved beak for straining food from water</li> <li>• Webbed toes for moving through water</li> </ul>

Based on these adaptations, which table best matches the bird species to its environment?

**A**

Species	Type of Environment
Bird 1	Prairie
Bird 2	Forest
Bird 3	Pond
Bird 4	Marsh

**C**

Species	Type of Environment
Bird 1	Prairie
Bird 2	Marsh
Bird 3	Pond
Bird 4	Forest

**B**

Species	Type of Environment
Bird 1	Forest
Bird 2	Pond
Bird 3	Marsh
Bird 4	Prairie

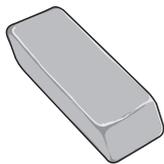
**D**

Species	Type of Environment
Bird 1	Forest
Bird 2	Marsh
Bird 3	Prairie
Bird 4	Pond

**16** A student compares the physical properties of the four objects shown.



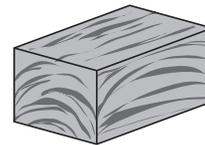
Rock



Rubber eraser



Paper cup

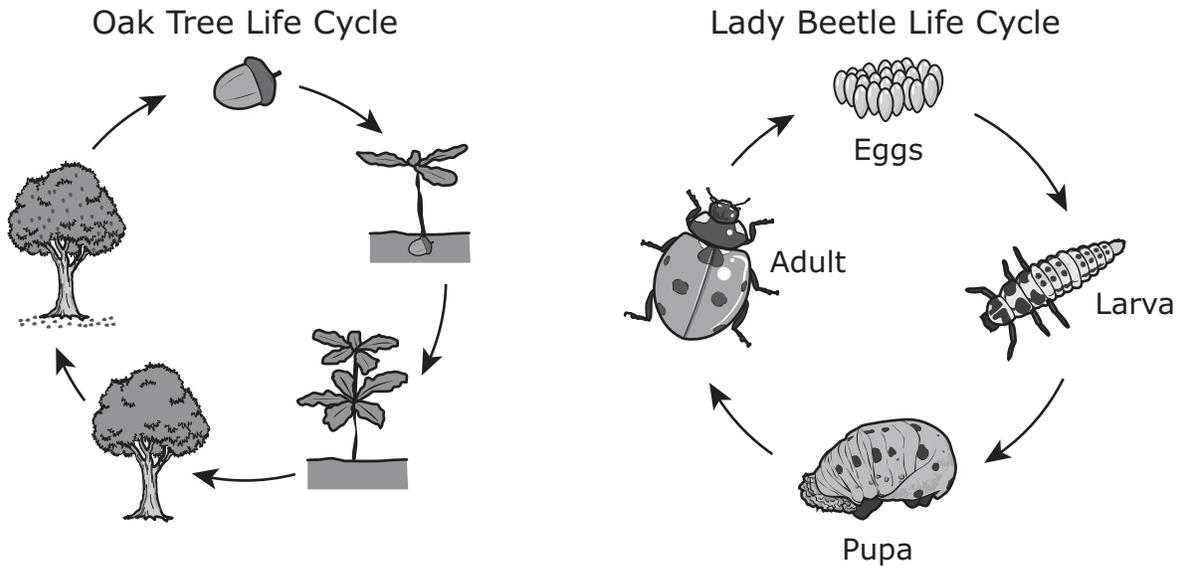


Wooden block

Which of these physical properties do all four objects have in common?

- F** They all have the same physical state and conduct electricity.
- G** They all conduct electricity and attract the same metal objects.
- H** They all attract the same metal objects and are not soluble in water.
- J** They all are not soluble in water and have the same physical state.

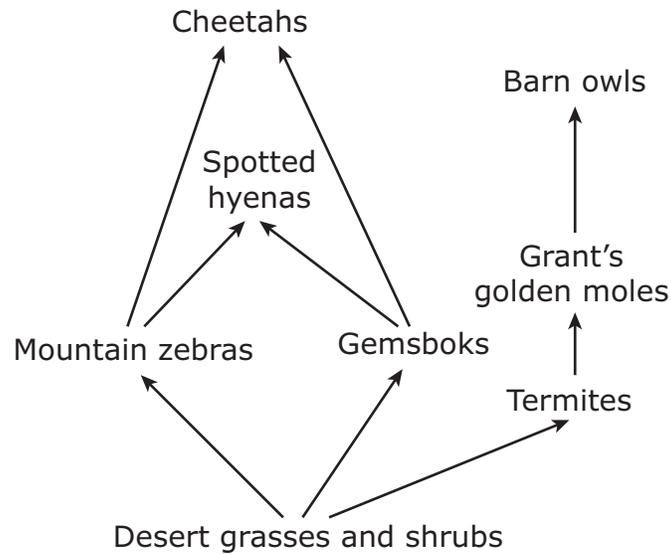
- 17** Students observe these diagrams showing the life cycles of an oak tree and a lady beetle.



Which inference can be made by comparing these diagrams?

- A** Plants require less energy than insects require to undergo changes from a young organism to a mature organism.
  - B** Insects and plants follow a series of changes that allows them to survive and reproduce.
  - C** Insects are more likely than plants are to adapt to changes in the environment to survive.
  - D** Insects and plants are dependent on one another for survival.
- 
- 18** Which process will happen when the sun interacts with the ocean?
- F** Rain will fall only on the land.
  - G** Water will not evaporate at nighttime.
  - H** Salt water will become fresh water vapor.
  - J** Precipitation will happen less often.

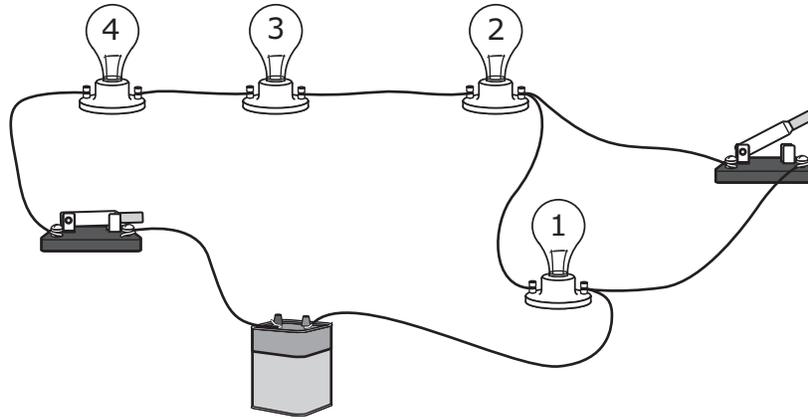
19 A partial desert food web is shown.



Which food chain shows one complete pathway in which energy flows through this food web?

- A Desert grasses and shrubs → termites → barn owls
- B Desert grasses and shrubs → mountain zebras → cheetahs
- C Desert grasses and shrubs → termites → spotted hyenas
- D Desert grasses and shrubs → gemsboks → Grant's golden moles

**20** A student constructs the circuit shown for a science demonstration.



With the switches in these positions, which lights are on?

- F** All the lights
- G** Lights 1 and 2 only
- H** Lights 3 and 4 only
- J** None of the lights

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**21** A student prepared a snack that consisted of grapes, pecans, and strawberries sprinkled with white powdered sugar. The student stored the snack in a refrigerator. An hour later the student observed that the powdered sugar could no longer be seen but the fruit and nuts had not changed in appearance.

What most likely happened to the sugar in the mixture?

- A** The sugar evaporated at the lower temperature in the refrigerator without causing any changes to the fruit and nuts.
- B** The sugar was more dense than the other foods in the mixture, so it settled to the bottom of the container.
- C** The sugar dissolved in the moisture on the fruit.
- D** The sugar absorbed energy from the nuts and melted into a colorless liquid.

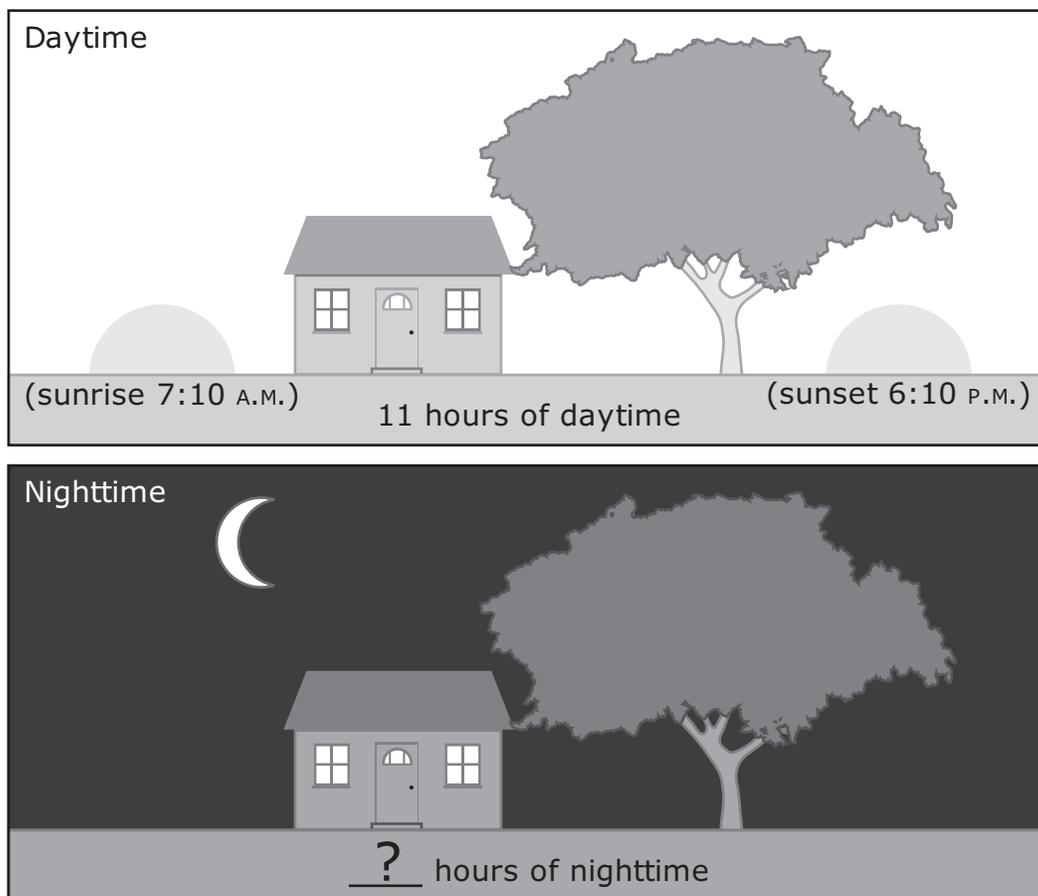
**22** The chart lists plants and animals interacting with parts of an environment.

1. A hummingbird dips its beak inside a flower.
2. A lizard burrows into the sand to stay cool.
3. A fish absorbs oxygen through its gills.
4. A cactus wren eats seeds from a cactus fruit.
5. A sea star clings to a rock in a tidal pool.
6. A bear scratches its back against a tree.

Which statements describe an animal interacting with a living part of the environment?

- F** Statements 1, 4, and 6 only
- G** Statements 1, 3, and 5 only
- H** Statements 2, 5, and 6 only
- J** Statements 2, 3, and 4 only

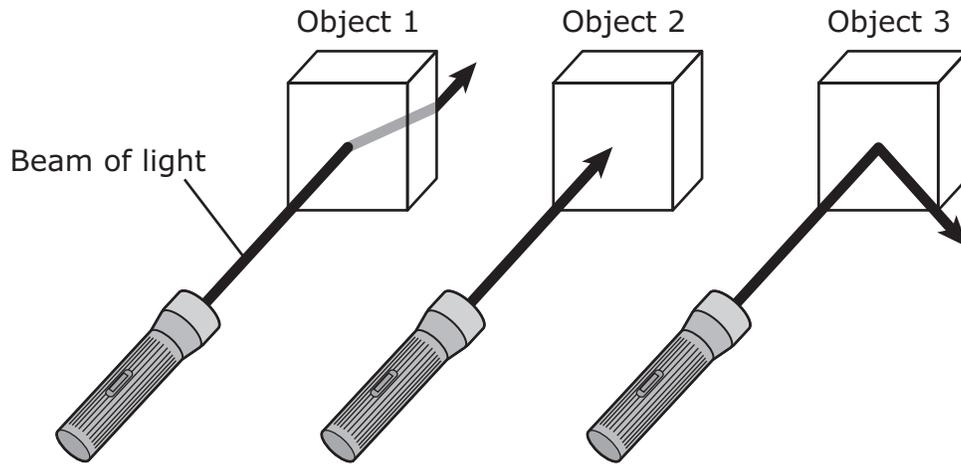
23 A student drew the following pictures to show the day-night cycle of Earth.



Based on the pictures, how many hours should the student record on the nighttime picture to complete a day-night cycle?

- A 11 hours
- B 12 hours
- C 13 hours
- D 24 hours

24 A student uses a flashlight to shine a beam of light on three different objects.



Which table describes what happens to the light beam as it interacts with each object?

**F**

Object	Light Beam
1	Scattered
2	Absorbed
3	Reflected

**H**

Object	Light Beam
1	Reflected
2	Absorbed
3	Refracted

**G**

Object	Light Beam
1	Refracted
2	Absorbed
3	Reflected

**J**

Object	Light Beam
1	Absorbed
2	Refracted
3	Scattered

- 25** White oak trees grow to be 24 to 30 meters tall. Their long branches are covered with leaves, and their roots reach deep into the soil to hold the tree in place. White oaks drop their leaves during the winter months.

Characteristics of Four Ecosystems

Ecosystem	Temperature	Yearly Precipitation	Soil
1	Long, cold winters with temperatures below 0 °C and short, cool summers	Less than 25 cm of rain	Thin layer of topsoil; frozen ground below
2	Warm throughout the year, very hot in summer	Less than 28 cm of rain	Sandy, rocky soil
3	Cold-to-moderate winters and warm summers	Between 76 and 152 cm of rain	Rich, deep soil
4	Warm and wet year-round	Between 200 and 1000 cm of rain	Soil drains quickly; thin top layer of humus

In which ecosystem would forests of white oak trees be most likely to survive?

- A** Ecosystem 1
- B** Ecosystem 2
- C** Ecosystem 3
- D** Ecosystem 4

- 
- 26** A three-step process is shown.



Which of these are most likely formed by the process shown?

- F** Glaciers
- G** Mountains
- H** Sand dunes
- J** Sedimentary rocks

- 27** A group of students is given four small cubes of the same size and instructed to place them in a beaker of water. One cube floats to the surface of the water. Two of the cubes float in the middle of the beaker under the surface of the water. The last cube sinks to the bottom of the beaker.

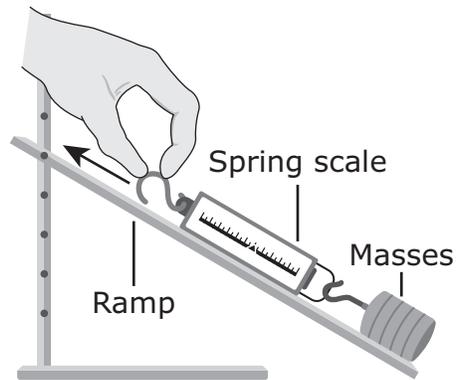
Which conclusion is best supported by what the students observed?

- A** Two of the four cubes are soluble in water.
  - B** All four cubes have different masses.
  - C** Each cube is made of a different type of solid material.
  - D** One of the cubes is more dense than the other three.
- 

- 28** Which effect would most likely occur if a six-lane highway were built through an ecosystem?

- F** Competition for resources would be reduced.
- G** Habitats available to animals would be reduced.
- H** Air pollution would decrease.
- J** Water pollution would decrease.

- 29** Students investigate force. The masses they use begin at rest on the ramp. The setup the students use is shown.



Which change will reduce the amount of force needed to move the masses?

- A** Decrease the height of the ramp
- B** Increase the height of the ramp
- C** Add an additional mass
- D** Pull the spring scale with two hands

- 
- 30** Students record characteristics of a tomato plant. One student's list is shown.

Tomato Plant Characteristics

- Stems with branches that have many wide leaves
- Roots growing out of lower stem into the ground
- Small yellow flowers
- Seven large red tomatoes
- Four small green tomatoes

Which tomato plant characteristic is least likely to be inherited?

- F** Flower color
- G** Leaf shape
- H** Type of roots
- J** Number of tomatoes

31 Students list resources that are used to heat buildings.

- Wood
- Coal
- Natural gas
- Petroleum
- Solar energy

Which of these tables correctly classifies the resources?

**A**

Renewable	Nonrenewable
Solar energy	Petroleum
Wood	Natural gas
	Coal

**C**

Renewable	Nonrenewable
Wood	Solar energy
Coal	Petroleum
	Natural gas

**B**

Renewable	Nonrenewable
Solar energy	Coal
Natural gas	Petroleum
	Wood

**D**

Renewable	Nonrenewable
Petroleum	Solar energy
Natural gas	Wood
Coal	

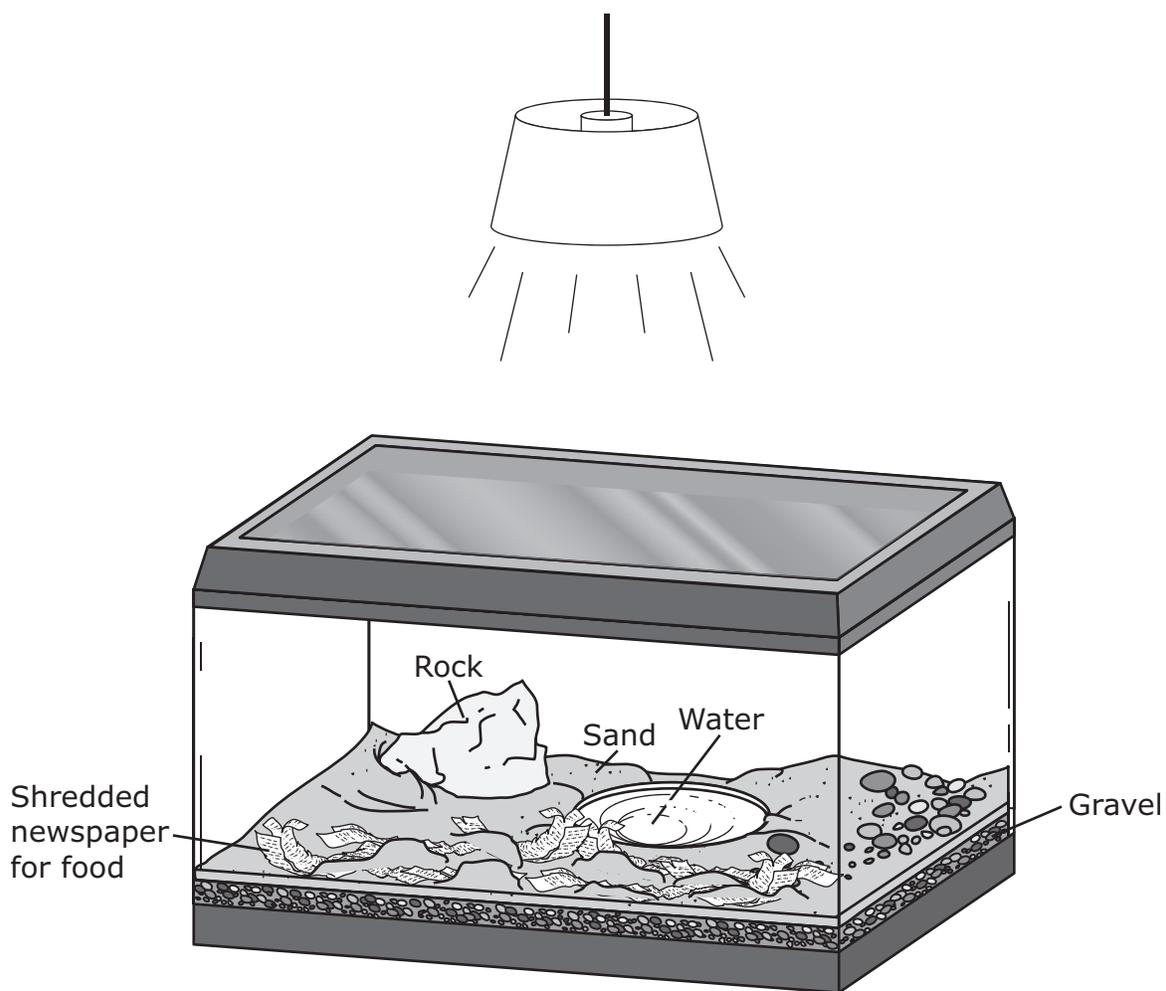
- 32** A student mixes a sample of stones with a sample of table salt. The mass and volume of the samples were determined before mixing the samples. The mass and volume of each sample is shown.

Material	Grams (g)	Milliliters (mL)
Stones	45	25
Salt	40	35

Which statement is true about the mixture?

- F** The mass of the mixture is 85 grams.
- G** The mass of the mixture is 60 milliliters.
- H** The volume of the mixture is 60 grams.
- J** The volume of the mixture is 85 milliliters.

- 33** A student's model of a closed ecosystem is shown. The student plans to add land snails to the model in order to show how the snails interact with different parts of the ecosystem.



What should the student add to the model so that the snails will survive?

- A** Fish to provide food
- B** Sticks to provide a place to hide
- C** Deep water to provide carbon dioxide
- D** Living plants to provide oxygen

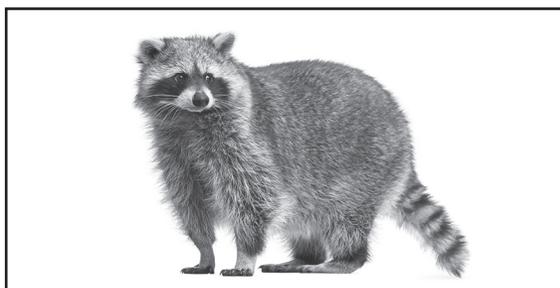
**34** Deltas are large landforms found along coastlines. What process forms deltas?

- F** Cementation of sediments by rivers
- G** Deposition of sediments by rivers
- H** Erosion of sediments by ocean waves
- J** Deposition of sediments by ocean waves

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**35** The raccoon can be found in most areas of Texas. The coati has a smaller territory and is found from Big Bend to Brownsville. These two species are related. The chart shows the characteristics of these two species.

Raccoon



© iStock.com/GlobalP

- Sharp teeth and powerful claws
- Paws with flexible toes
- Good eyesight at night
- Eats fruits, berries, insects, rodents, frogs, fish, eggs, corn
- Long fluffy tail

Coati



© iStock.com/Oktay Ortakcioglu

- Sharp teeth and long claws
- Paws with flexible toes
- Good eyesight at night
- Eats insects, lizards, frogs, roots, fruits, nuts, and eggs
- Long tail that helps in balancing

Which statement does NOT describe how the body structures of these animals help them escape predators?

- A** Paws with long claws on flexible toes help them climb trees.
- B** Sharp teeth allow them to catch prey on land or in water.
- C** Long tails allow them to balance on branches in trees.
- D** Good eyesight helps them to see at night.

**36** Sediments are transported at different speeds. Which type of sediment transport is the slowest?

- F** Transport by rivers
- G** Transport by winds
- H** Transport by glaciers
- J** Transport by ocean currents









**STAAR  
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