

GRADE 5
Science

Administered April 2013

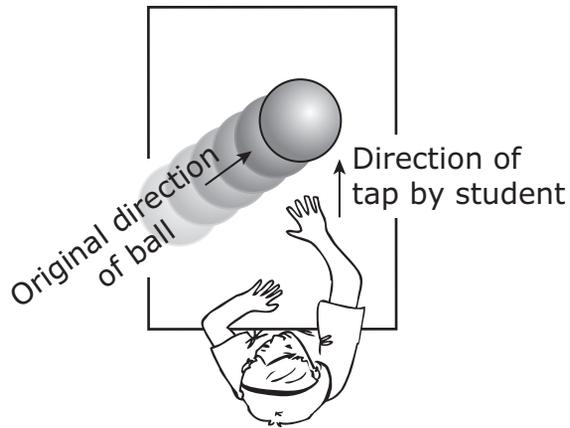
RELEASED

SCIENCE

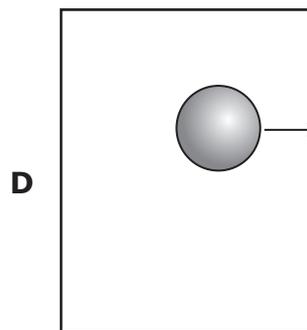
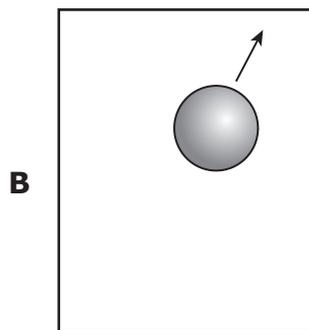
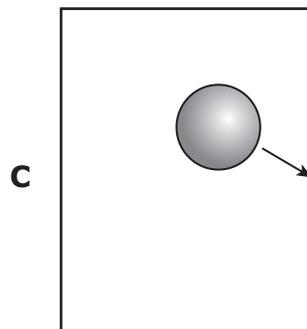
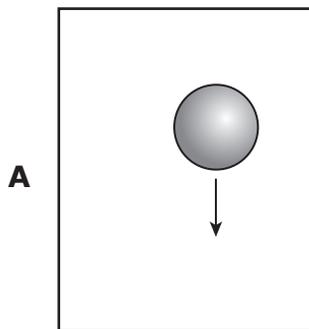
DIRECTIONS

Read each question carefully. For a multiple-choice question, determine the best answer to the question from the four answer choices provided. For a griddable question, determine the best answer to the question. Then fill in the answer on your answer document.

- 1 The diagram below shows a view of a ball from above a table. The ball is rolling across the table. A student lightly taps the rolling ball in the direction shown below.



In which direction does the ball most likely move after the student taps the ball?



2 Which of these is the best conductor of electricity?

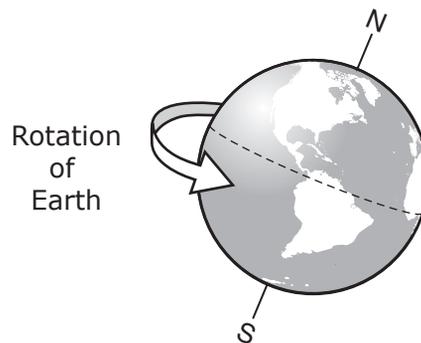
- F** Glass rod
- G** Cotton string
- H** Plastic tubing
- J** Copper penny

3 Some beetles break down the remains of dead animals. Some mushrooms break down the remains of dead trees. How do these actions most benefit plants?

- A** By returning nutrients to the soil
- B** By releasing oxygen into the air
- C** By making space for new animals
- D** By decreasing the population of herbivores

4 Which of these best demonstrates the reflection of light?

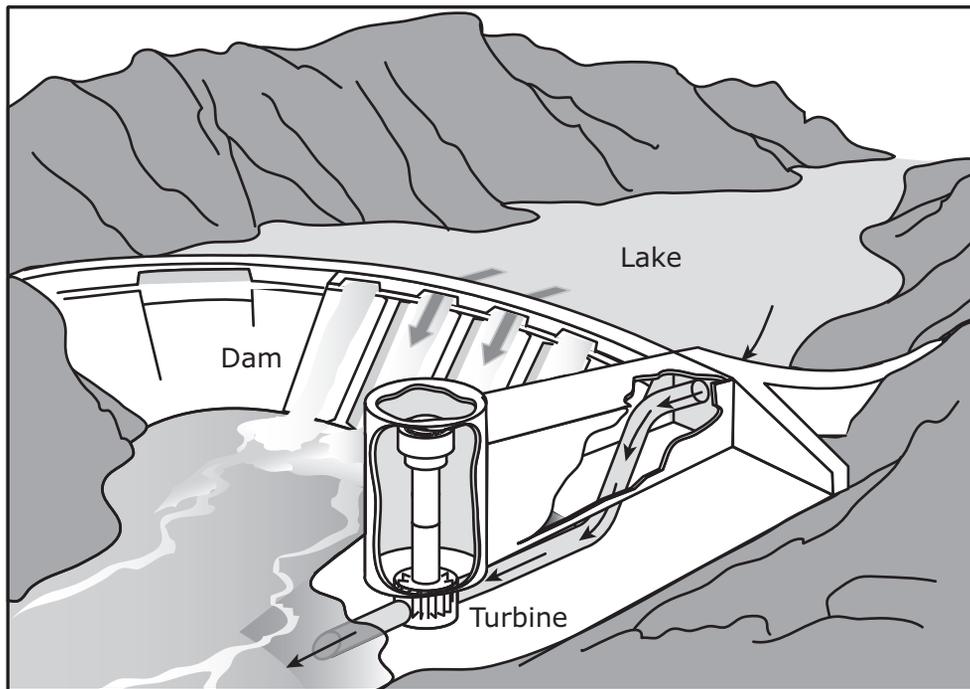
- F Looking through the glass of a large window
- G Looking at an image formed on a silver spoon
- H Looking at a lightbulb that is glowing
- J Looking at a star on a clear night



5 Which of these cycles is a direct result of Earth's rotation?

- A Day and night
- B Moon phases
- C Rainfall and evaporation
- D Seasons

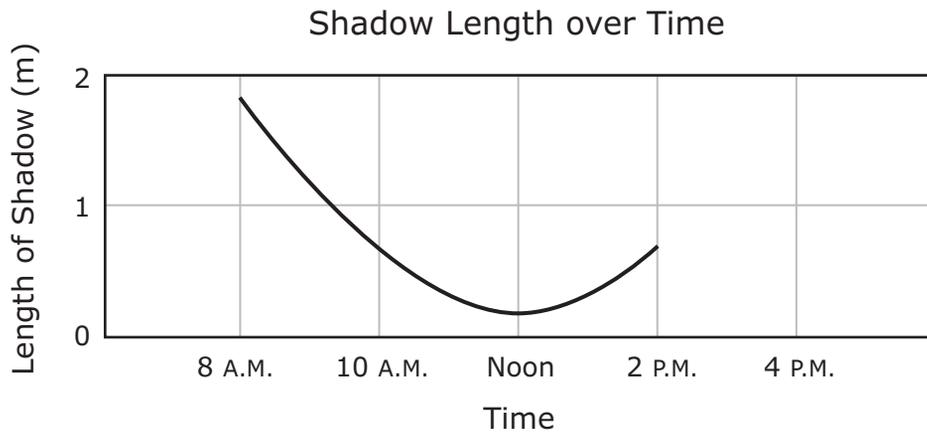
- 6 Water flows through turbines in dams like the one shown below. The flowing water makes the turbines spin.



What type of energy is used to make the turbines spin in this type of dam?

- F Light energy
- G Thermal energy
- H Sound energy
- J Mechanical energy

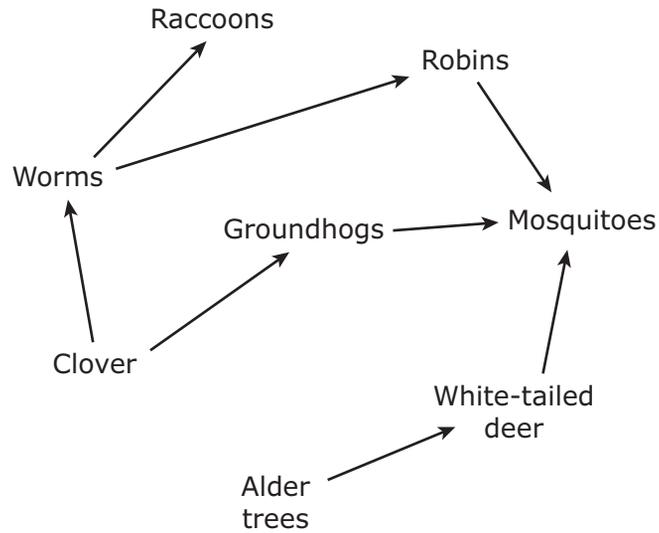
- 7 The graph below shows changes in the length of the shadow of a tree during part of a day.



If this day continues to be sunny, what will most likely happen to the length of the shadow from 2 P.M. to 4 P.M.?

- A The length of the shadow will stay the same.
- B The length of the shadow will decrease and then increase.
- C The length of the shadow will increase.
- D The length of the shadow will decrease.

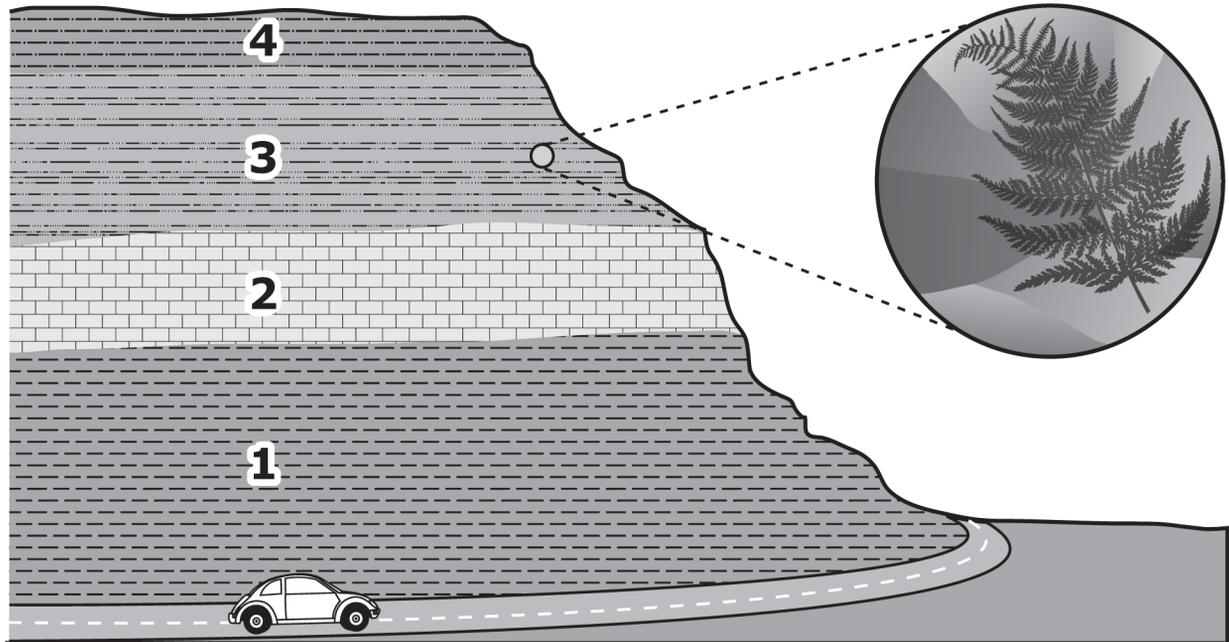
8 The food web below represents organisms in a field.



What role do raccoons play in this food web?

- F** Prey
- G** Producer
- H** Decomposer
- J** Consumer

9 The diagram below shows rock layers next to a road.



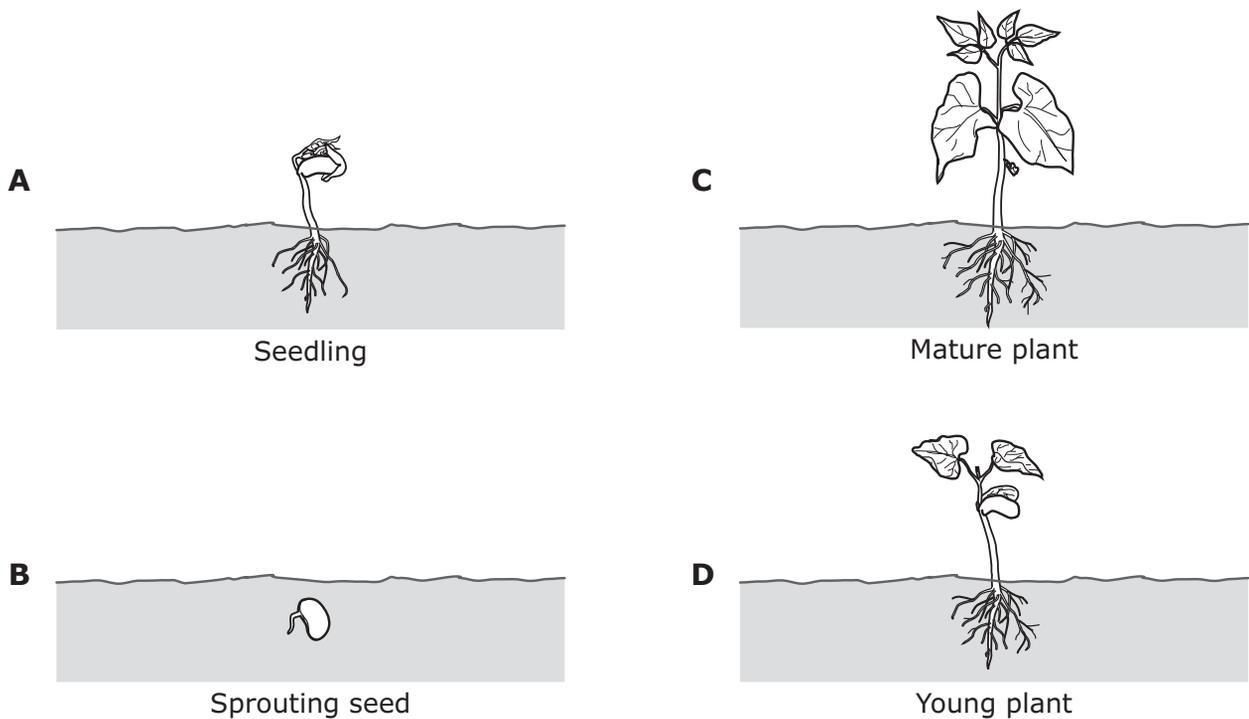
Layer 3 contains many plant fossils. Layer 3 most likely formed in which of these environments?

- A Desert
- B Forest
- C Ocean
- D Tundra

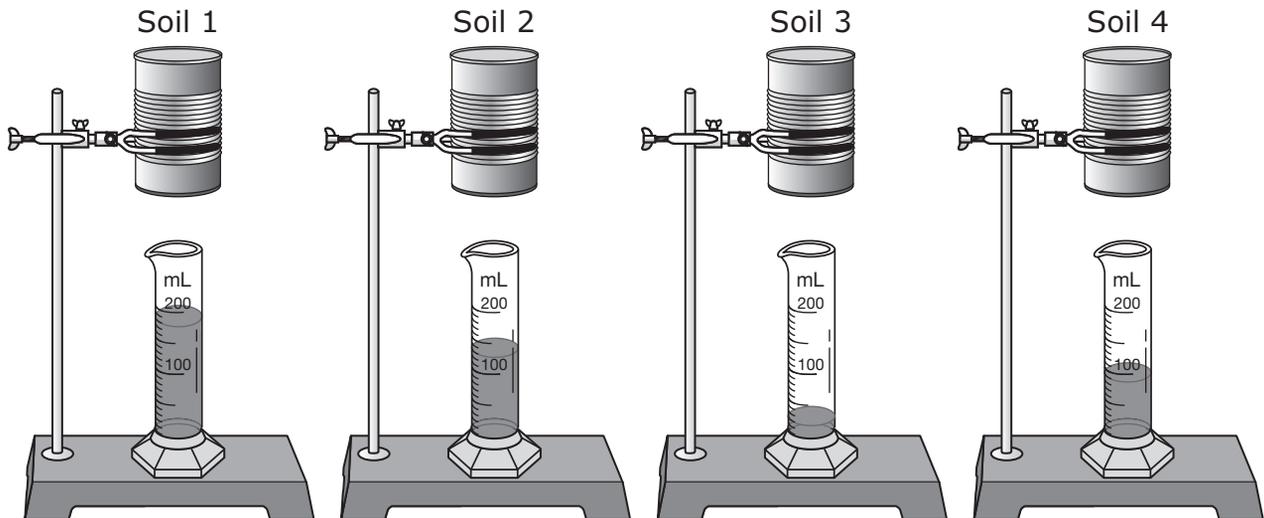
10 A teacher mixes a white powder into a beaker of water. The powder cannot be seen in the water. The teacher then heats the mixture until the water evaporates and the powder can be seen again. Which property of the powder is the teacher demonstrating?

- F** Solubility
- G** Density
- H** Conductivity
- J** Mass

11 At which stage in the life cycle of a plant are seeds produced?



- 12** A student conducts an investigation using four identical cans, each with a hole in the bottom. The student fills each can with a different type of soil and then adds 200 milliliters (mL) of water to each can. The graduated cylinders in the diagram below show the amount of water that drains through the soil and out the bottom of each can.



Some plants have roots that reach very deep underground. Which type of soil will most likely stop water from flowing to the deepest roots of these plants?

- F** Soil 1
- G** Soil 2
- H** Soil 3
- J** Soil 4

- 13** Fox squirrels live in the trees of city parks throughout Texas. Each spring they build nests of twigs and leaves in the tops of the trees. Fox squirrels are often found near park benches, waiting to be fed by visitors.



Fox squirrel

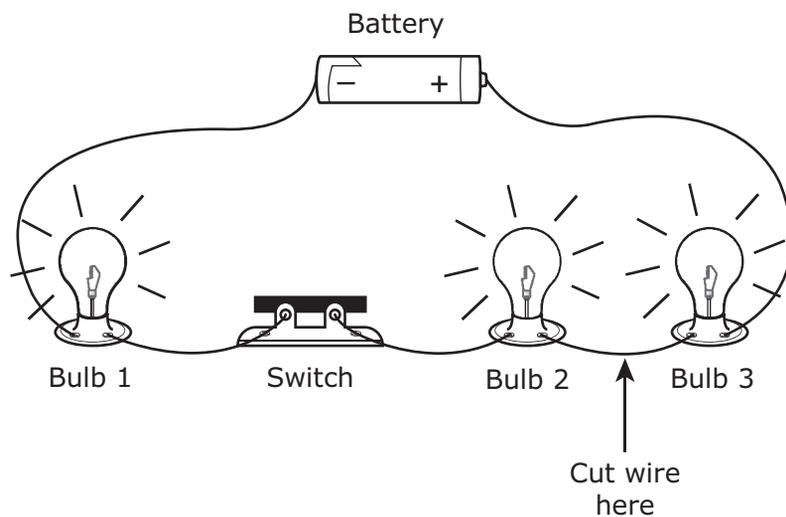
For fox squirrels, which of these is a learned behavior?

- A** Building a nest each spring
- B** Taking food from people
- C** Having a long, bushy tail
- D** Having sharp claws

- 14** A student measures the temperature of water being heated on a hot plate. The student observes that the temperature of the water is 53°C . How many more degrees Celsius must the temperature rise before it reaches the boiling temperature of water?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

-
- 15** Which of the following events in the water cycle is an example of solar energy being absorbed?
- A** Water vapor condensing to form clouds
 - B** Water evaporating from the surface of an ocean
 - C** Rain freezing as it falls toward the ground
 - D** Clouds releasing precipitation over a mountain



16 The diagram shows a series circuit with three lit bulbs. How many of the bulbs will remain lit if the wire is cut at the point shown by the arrow?

- F** 0
- G** 1
- H** 2
- J** 3

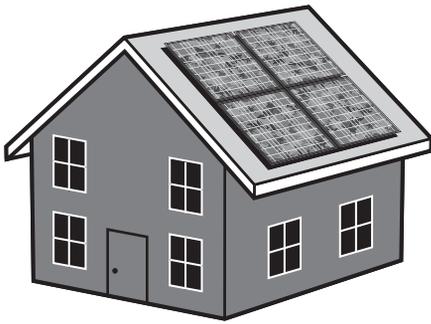
- 17** The diagram below shows the sequence of the processes that turn solid rock into sandstone.



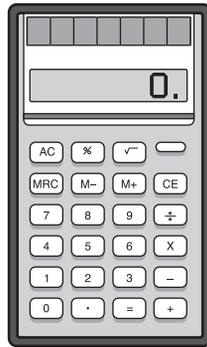
Which two processes best complete this diagram?

- A** Melting and cooling
- B** Erosion and compaction
- C** Compaction and cementation
- D** Evaporation and dissolving

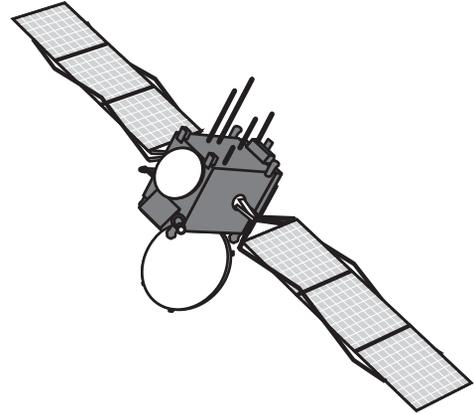
18 Three different objects that use the same source of energy are shown below.



Energy-efficient house



Calculator

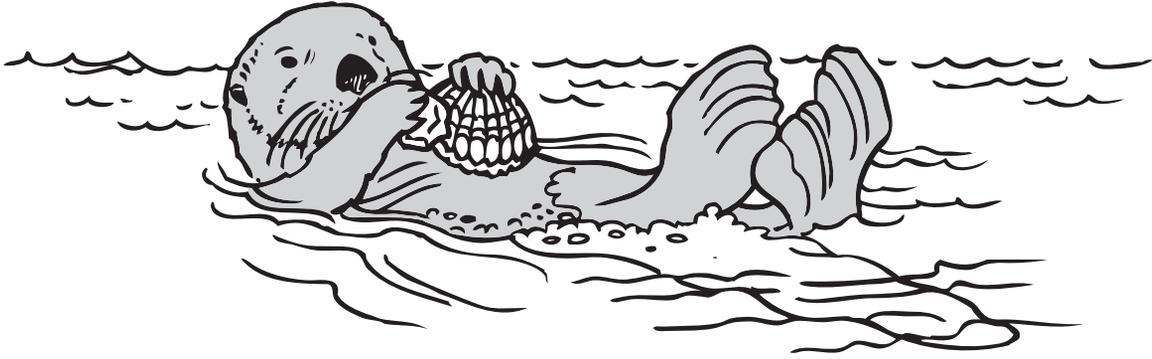


Satellite

What is the energy source for these objects?

- F** Light energy
- G** Mechanical energy
- H** Sound energy
- J** Electrical energy

19 A scientist observes sea otters using rocks to break open clamshells.

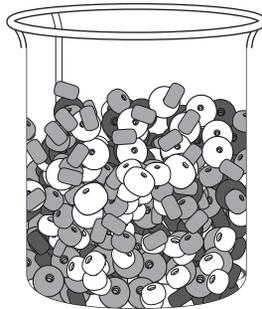


Which of these investigations would best help the scientist determine whether this skill is a learned or an inherited behavior?

- A** Determining what sizes and kinds of rocks are used most often by sea otters
- B** Determining whether shellfish are an important food source in the diet of sea otters
- C** Raising young sea otters away from adult otters that use rocks and observing whether the young otters use rocks
- D** Observing families of sea otters over time to see whether adults that use rocks have offspring that use rocks

- 20** Glaciers are masses of ice that move slowly on land. Which of these features was most likely formed by a glacier?
- F** A wide valley
 - G** A deep ocean
 - H** A lava flow
 - J** A mountain range

-
- 21** A mixture of beads was placed in a container, as shown below. The beads are of various sizes, and each one is made of plastic, glass, or steel.



The mixture would be easy to separate because all the beads —

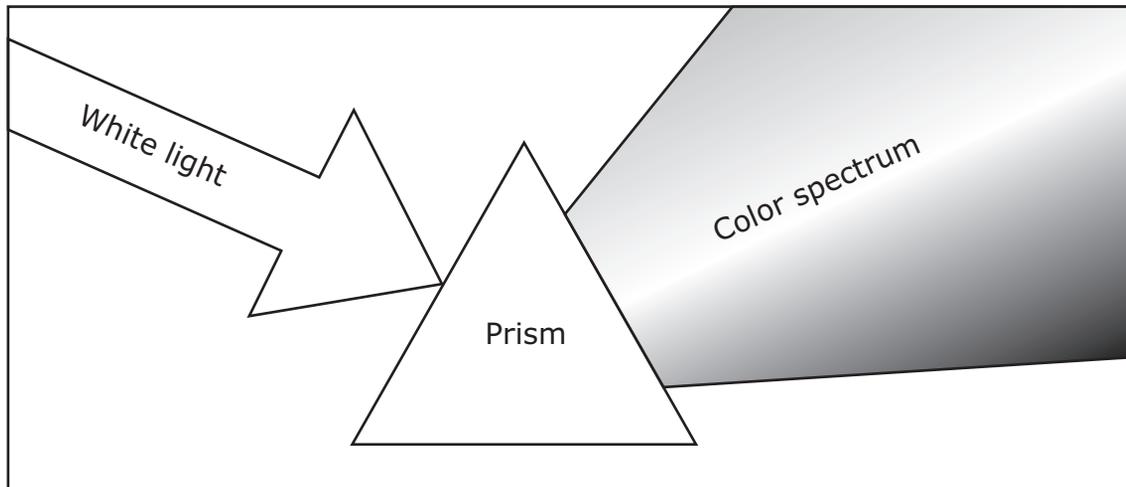
- A** are less dense than water
- B** are solids
- C** have the same mass
- D** are attracted to a magnet

Prickly Pear Cactus



- 22** Which two traits best help a cactus conserve water in the dry conditions of a West Texas desert ecosystem?
- F** Large flowers and sweet fruit
 - G** Sweet fruit and sharp spines
 - H** Sharp spines and waxy stems
 - J** Waxy stems and large flowers

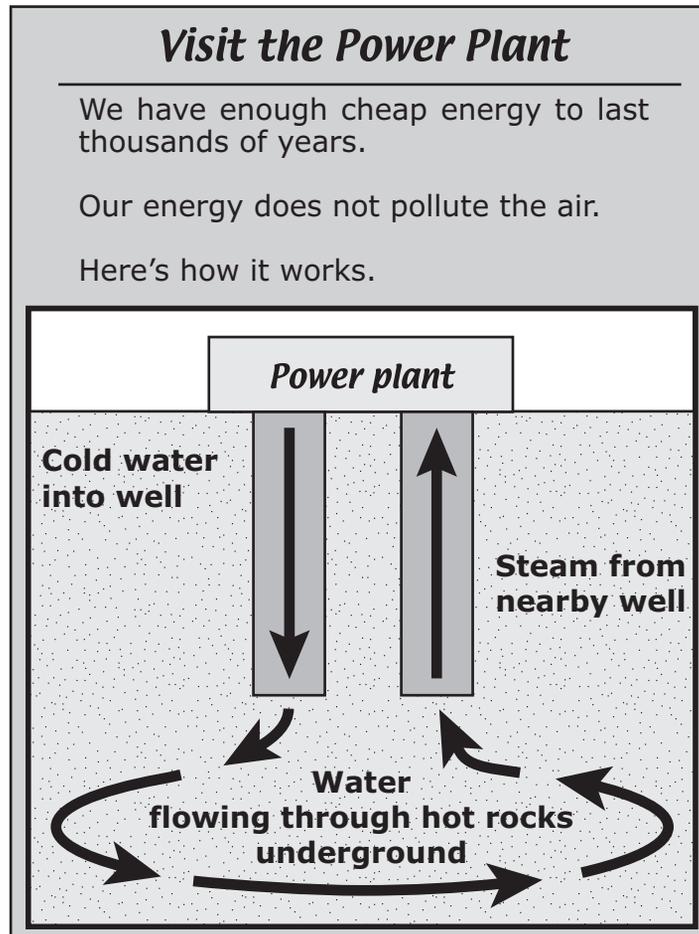
23 When light travels through air into a prism, it bends and separates into many colors.



In which other situation does light bend?

- A** When light moves through air into water
- B** When light hits a wall
- C** When light passes through outer space
- D** When light hits a mirror

24 The poster shown below advertises tours of a power plant.

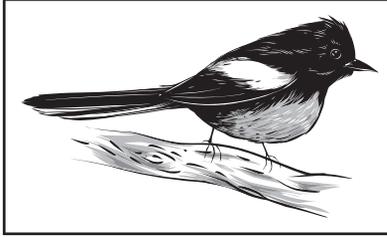


This power plant produces electricity most likely by using —

- F** fossil fuels
- G** biofuels
- H** solar energy
- J** geothermal energy

- 25** Some facts about a bird called the painted redstart are listed in the box shown below.

Facts About the Painted Redstart

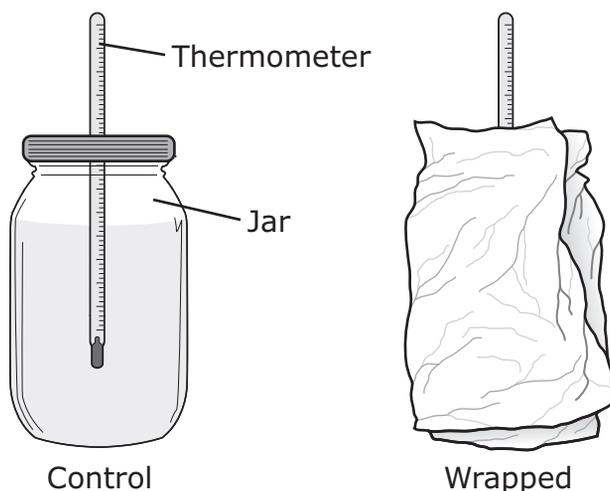


1. Builds nests on hillsides covered with dense vegetation
2. Usually raises one group of young each year
3. Hunts for insects and spiders on plant leaves
4. Feeds on sugar water and peanut butter at feeders

Which fact best describes one way this bird changes its environment to meet its needs?

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

- 26** A teacher sets up an experiment using five jars like the ones shown below. The teacher keeps one jar unwrapped as the control. The other four jars are wrapped with equal thicknesses of four different materials.



The jars are each filled with an equal amount of water that is 92°C . Students observe and record the water temperature in each jar after 10 minutes. The results are shown in the table below.

Water Temperature After 10 Minutes

Material Wrapping Jar	Water Temperature ($^{\circ}\text{C}$)
No wrapping (control)	84
Newspaper	87
Construction paper	87
Paper towel	85
Cotton towel	90

Which property of the materials wrapping the jars are the students most likely investigating?

- F** State of matter
- G** Thermal energy insulation
- H** Thermal energy production
- J** Ability to conduct electricity

27 The diets of several types of prairie animals are described in the table below.

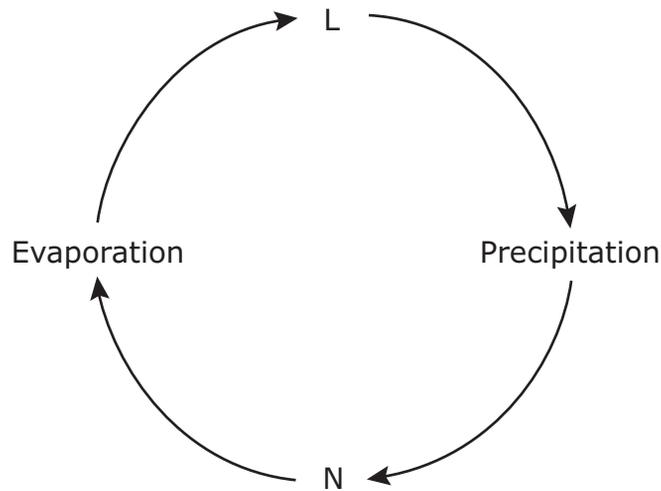
Diets of Some Prairie Animals

Type of Animal	Foods Eaten
Badger	Prairie dogs, rabbits
Prairie dog	Leaves, stems, and roots of grasses
Grasshopper	Grasses, wildflowers
Sparrow	Insects, seeds
Coyote	Prairie dogs, rabbits
Eagle	Prairie dogs, rabbits, coyotes

Which of the following prairie food chains is in the correct order?

- A** Eagles → prairie dogs → coyotes
- B** Wildflowers → badgers → grasshoppers
- C** Sparrows → seeds → insects
- D** Grasses → prairie dogs → badgers

28 A diagram of the stages in the water cycle is shown below.



Which of these observations would most likely be seen at Stage N?

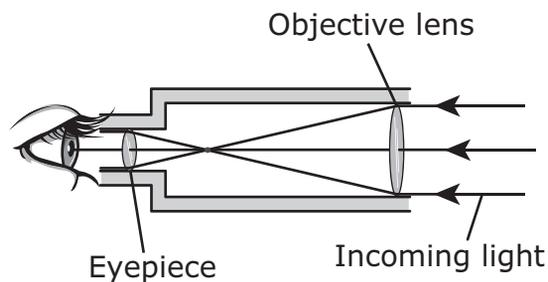
- F** Water flowing downhill
- G** Fog forming along a highway
- H** The water level of a lake decreasing
- J** Dark clouds forming in the sky

29 In fall and winter many trees lose their leaves in response to cooler temperatures and —

- A** a decrease in average wind speed
- B** fewer hours of daylight
- C** an increase in humidity
- D** more direct sunlight

- 30** Many cities are taking actions to cause less harm to the environment. Which action produces energy from an alternative source?
- F** Burning coal to heat homes
 - G** Replacing lawns with plants that require less water
 - H** Using biofuels to generate electricity
 - J** Building a new water-treatment plant to improve water quality

-
- 31** Scientists use telescopes to make distant objects appear closer. Some parts of a telescope are shown below.

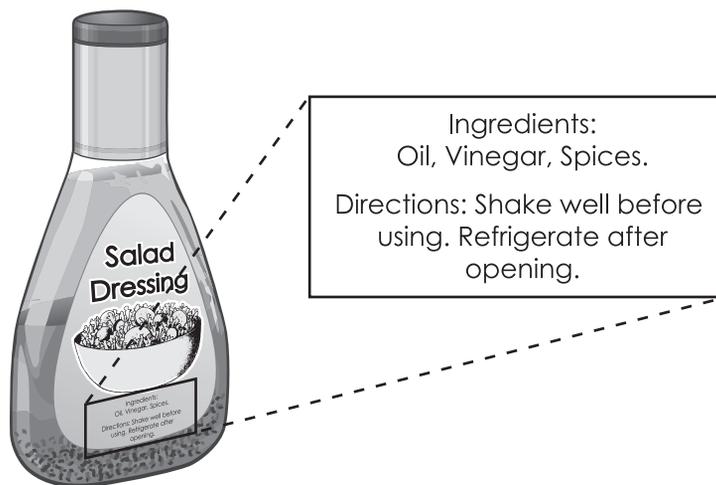


Which of the following best describes how the objective lens of this telescope helps a scientist observe the moon?

- A** The objective lens produces light.
- B** The objective lens blocks light.
- C** The objective lens reflects light.
- D** The objective lens refracts light.

- 32** On which side of a house in Texas should a window be placed so that the people inside the house can see the sunrise each day through the window?
- F** North
 - G** South
 - H** East
 - J** West

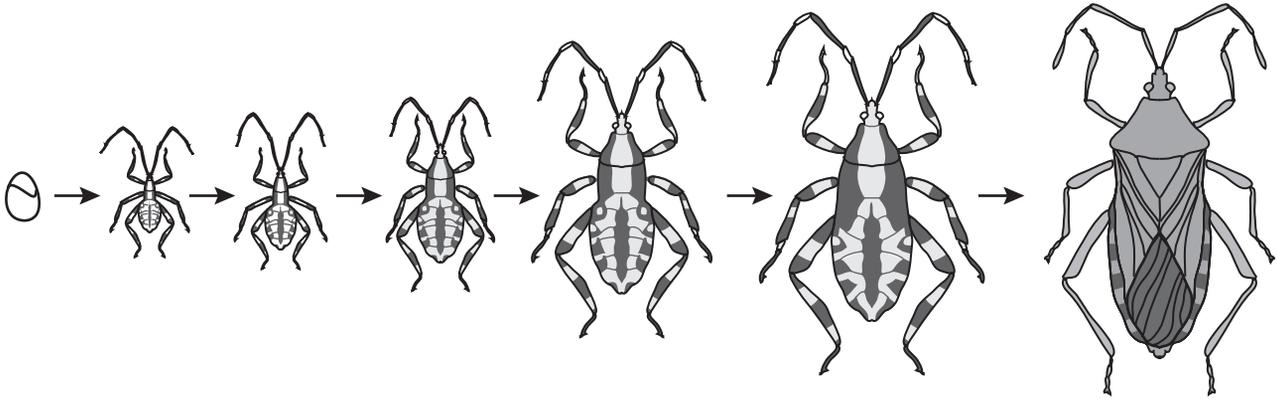
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- 33** A student reads the label on the bottle of salad dressing shown below.



Why would the student shake the salad dressing well before using it?

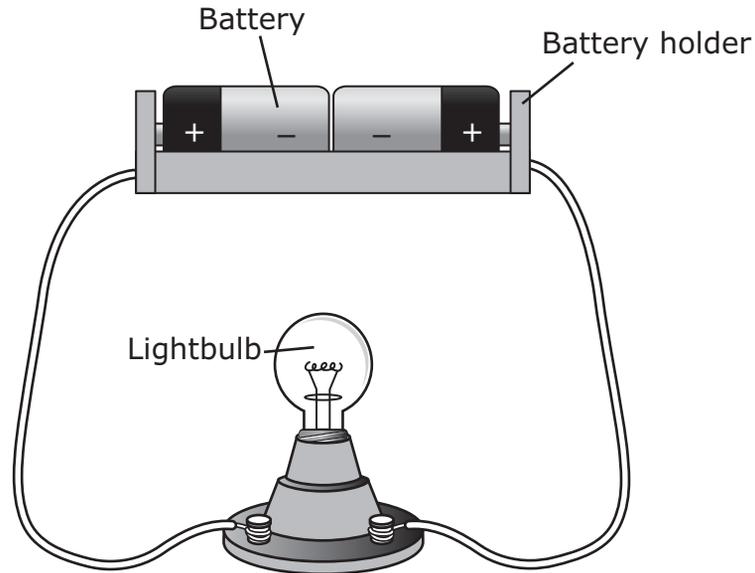
- A** Vinegar and oil have different densities.
- B** Vinegar and oil easily form a solution.
- C** Vinegar and oil both contain water.
- D** Vinegar and oil are both liquids.

34 The stages in the development of an insect are shown below.



Which observation best supports the conclusion that this insect undergoes incomplete metamorphosis?

- F** The insect changes color when it becomes an adult.
- G** The first stage of the insect's development is as an egg.
- H** The insect undergoes more than four stages in its development.
- J** The insect has similar body parts throughout its development.



Which of these changes to the electric circuit shown above will cause the lightbulb to light up?

- A** Straightening the wire so that the current can flow more easily
- B** Adding a switch and more wire so that the current can flow more easily
- C** Turning one battery so that its positive end connects to the other battery's negative end
- D** Making the length of wire the same on both sides of the lightbulb

- 36** The picture below shows a type of plant called kudzu. Kudzu is a fast-growing Asian vine that was introduced into the United States. Kudzu quickly uses available resources and can completely cover the plants in an area.



What effect does the rapid growth of kudzu most likely have on an ecosystem?

- F** The variety of native plants decreases.
- G** The water supply in the area increases.
- H** Weather patterns in the area change.
- J** The number of other plants increases.

- 37** Which of these best describes climate rather than weather?
- A** Wind speed is changing as a storm moves through an area.
 - B** The temperature is decreasing in a slow-moving cold front.
 - C** Annual high temperatures in the summer have increased over many decades.
 - D** The rainfall during one year was greater than the rainfall during the following year.

-
- 38** Some students put two ice cubes on separate plates. One ice cube had a mass of 80 grams. The other had a mass of 40 grams. Which result would be the same for both ice cubes in this investigation?
- F** The time it took each ice cube to melt completely
 - G** The temperature at which each ice cube melted
 - H** The amount of liquid produced on each plate
 - J** The total volume of each ice cube

- 39** Crayfish live in water and often hide under rocks or plants. They come out to look for food and will eat both plants and animals.

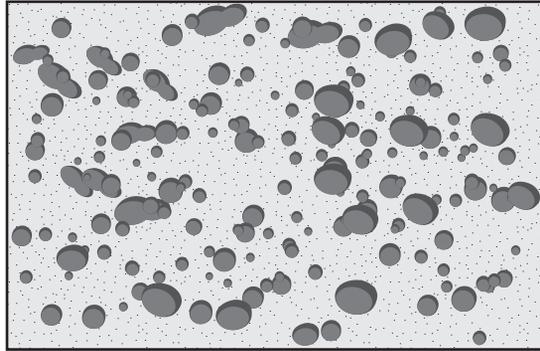


Which of these is a trait that a crayfish most likely inherits from its parents?

- A** The average distance it travels each day
- B** The number of legs it has
- C** The amount of food it eats each day
- D** The type of plants in its habitat

- 40** A worker built a sidewalk and pressed some large salt particles into the concrete while it was still wet. When the concrete was dry, the worker washed the sidewalk with water. The picture below shows the sidewalk after it was washed.

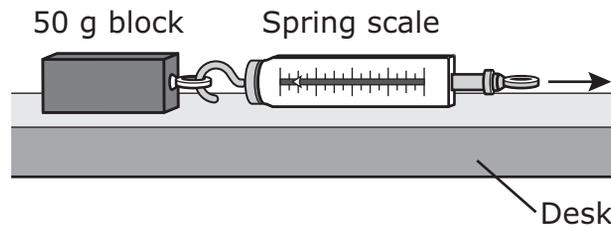
Holes in Concrete



What most likely happened to the salt?

- F** It evaporated into a gas.
- G** It turned into concrete.
- H** It dissolved in the water.
- J** It turned into a solid.

- 41** A student uses a spring scale to pull a 50-gram block horizontally across a wood desk. Then the student pulls the block the same distance across surfaces of carpet, sandpaper, and glass.

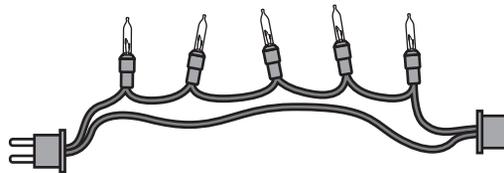


Which question is this investigation most likely designed to answer?

- A** How do blocks of different sizes react to force?
- B** How do different surfaces affect the amount of force needed to move a block?
- C** How do blocks affect spring scales?
- D** How does the mass of a block change when it is pulled across a desk?

- 42** Many types of plants grow in a forest ecosystem. How do plants affect the air that forest animals breathe?
- F** Plants use oxygen from the air to make food.
 - G** Plants release pollution into the air.
 - H** Plants release energy from the sun into the air.
 - J** Plants take in carbon dioxide and release oxygen into the air.

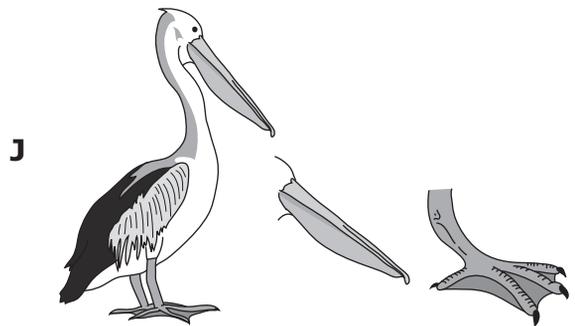
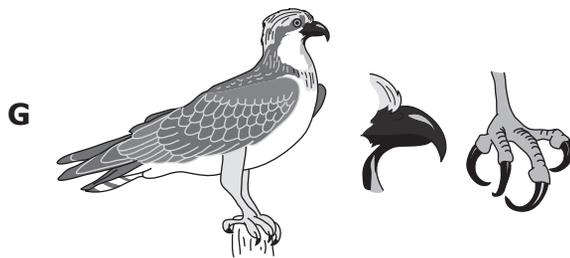
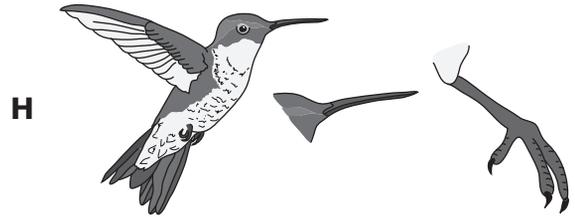
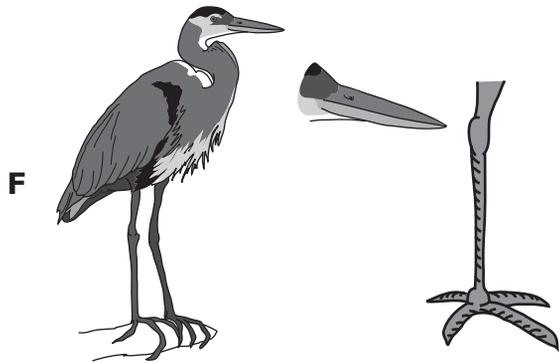
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- 43** A string of lights with small bulbs is shown below. The bulbs are connected by wire that is covered with an insulator.



When the lights are on, electricity travels in —

- A** a complete circuit
- B** a sound wave
- C** a light ray
- D** an incomplete path

44 Eagles catch fish in rivers with their talons. They fly with the fish to a tree branch and tear the fish into small pieces. Which bird most likely catches and eats its food the way an eagle does?



BE SURE YOU HAVE RECORDED ALL OF YOUR ANSWERS ON THE ANSWER DOCUMENT.



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