

Student Name \_\_\_\_\_

Teacher Name \_\_\_\_\_

School \_\_\_\_\_

System \_\_\_\_\_

# ACH



# TENNESSEE

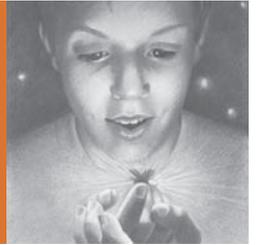
LENNESSEE

**Tennessee Comprehensive Assessment Program**  
**Achievement Test ~ Grade 4**  
**Practice Test**

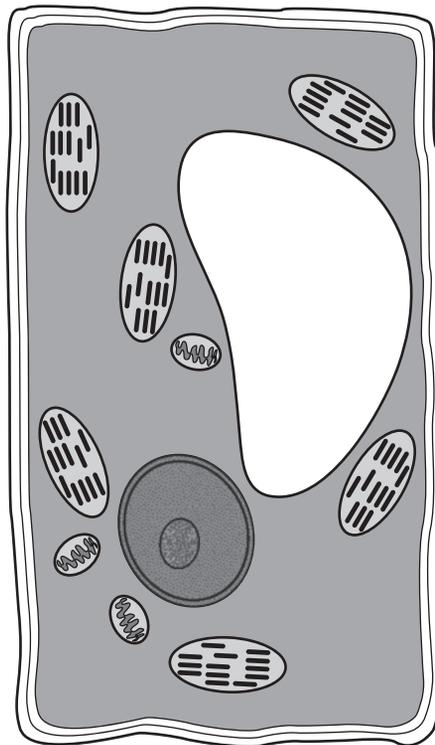




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- 1** A diagram of a plant cell is shown below.



Which part is only found in plant cells?

- A** nucleus
- B** vacuole
- C** chloroplast
- D** cytoplasm

*Go On* ►

**2** Students used a thermometer to measure the temperature of a liquid after being heated in the sun for two hours. Which units would the students use to record the temperature?

- F** degrees Celsius
- G** centimeters
- H** milliliters
- J** grams

**3** A picture of a bat is shown.



© Alamy/Dreamstime #3941563

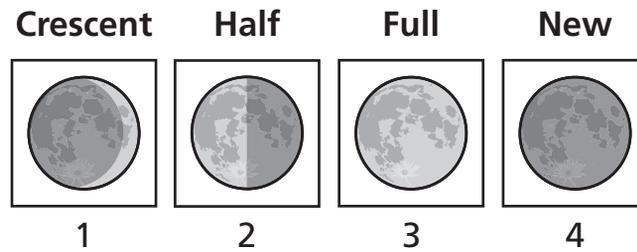
Bats use soundwaves that bounce off objects. The bats' large ears most likely help them

- A** keep cool.
- B** breathe air.
- C** hide from predators.
- D** find food sources.

**4** What causes water in a stream to flow downhill?

- F** wind
- G** friction
- H** gravity
- J** resistance

**5** Four phases of the moon are shown below.



Which correctly sequences the phases of the moon shown?

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

- 6** The distance four cars traveled during the same length of time is shown in the chart below.

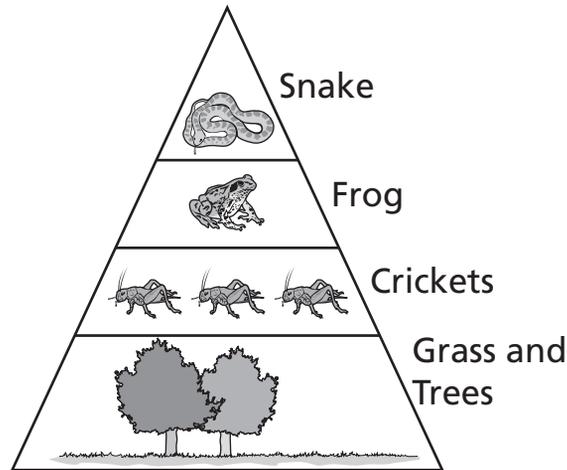
**Car Traveling Data**

Car	Distance to Point 1 (km)	Distance to Point 2 (km)
J	50	50
K	100	50
L	200	25
M	75	25

Based on the data in the table, which car traveled the fastest?

- F** Car J
- G** Car K
- H** Car L
- J** Car M

**7** An energy pyramid is shown below.



According to the energy pyramid, the snake is classified as

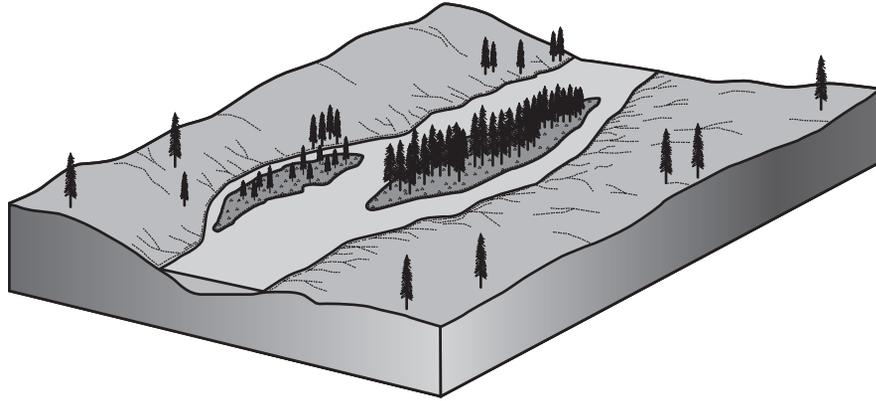
- A** an herbivore.
- B** an omnivore.
- C** a producer.
- D** a carnivore.

**8** Steller's sea cow is an extinct species that was found in the Arctic waters in the 1700s. The sea cow skins were used to make boats. The sea cow's fat was used to burn in oil lamps and for food. What is the most likely reason that Steller's sea cow is extinct?

- F** Its food ran out.
- G** It was over-hunted.
- H** It became too warm.
- J** Its habitat was destroyed.

*Go On* ►

**9** The drawing shows a model of the surface of Earth.



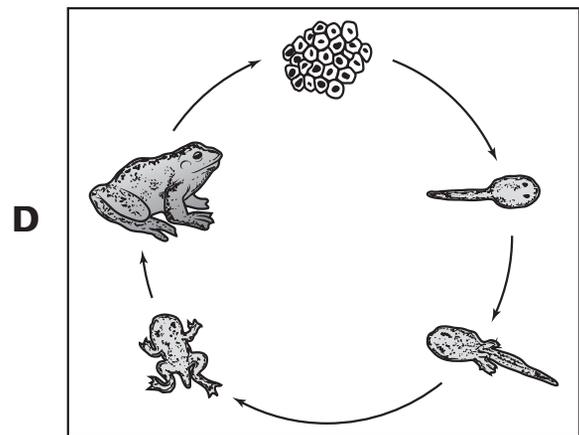
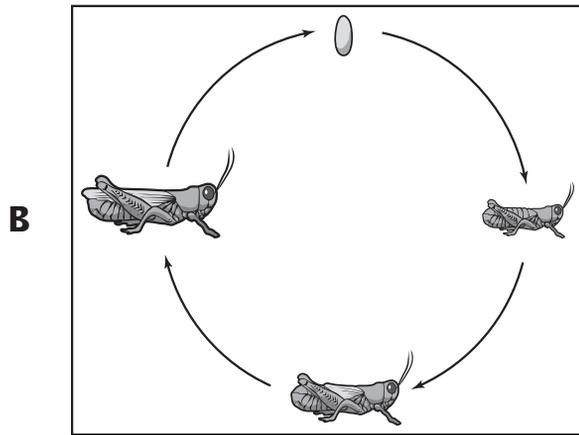
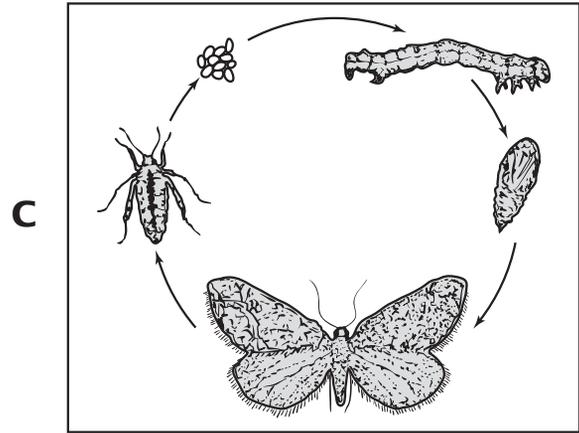
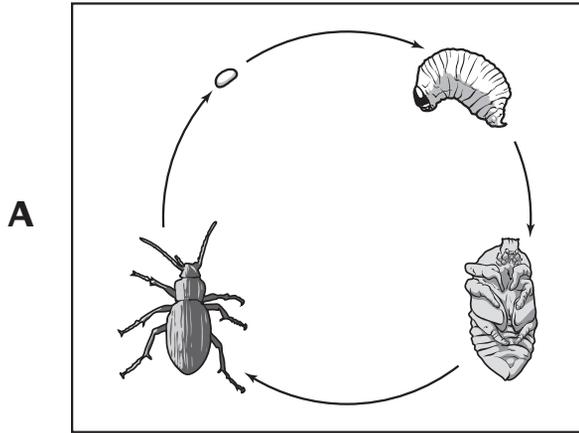
The erosion that has occurred is most likely caused by

- A** the movement of water.
- B** the movement of rocks.
- C** the movement of animals.
- D** the movement of glaciers.

**10** Which best describes the change in an ice cube when it melts?

- F** It changes from a liquid to a solid.
- G** It changes from a solid to a liquid.
- H** It changes from a liquid to a gas.
- J** It changes from a gas to a solid.

**11** Which diagram shows an organism that has a life cycle of incomplete metamorphosis?



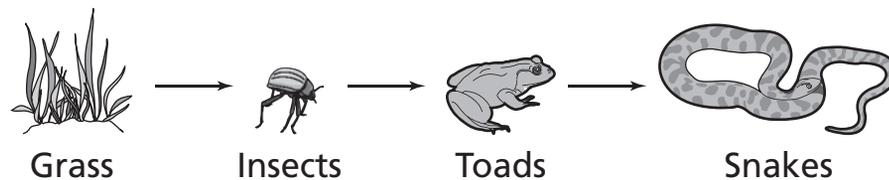
**12** A student connected some wire to a battery and a small bulb to make a simple circuit. Energy from the battery is changed into electricity in the circuit. What type of energy is stored in the battery?

- F** chemical
- G** nuclear
- H** heat
- J** light

**13** Some students want to conduct an experiment to test electrical charges. They have some small pieces of paper and a plastic straw. Which activity will show an electrical charge between the two materials?

- A** Rub the pieces of paper together and blow on them through the straw.
- B** Rub the straw on hair and hold it close to the pieces of paper.
- C** Wet the pieces of paper with the straw.
- D** Hold the pieces of paper over the straw.

**14** A food chain is shown in the diagram below.

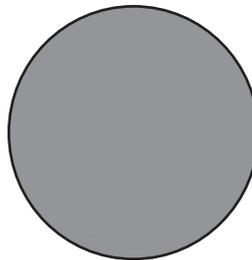


What would happen if the snakes were removed from this food chain?

- F** The toad population would decrease.
- G** There would be less grass for the insects to eat.
- H** The insect population would increase.
- J** The toad population would increase.

- 15** A long time ago scientists could not study animal cells because they could not see their small parts. What tool is used to see the small parts of cells today?
- A** balance
  - B** telescope
  - C** microscope
  - D** thermometer

- 16** The picture below shows a phase of the moon.



New Moon

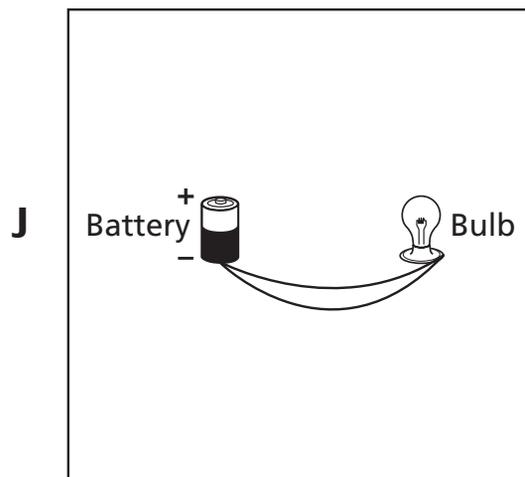
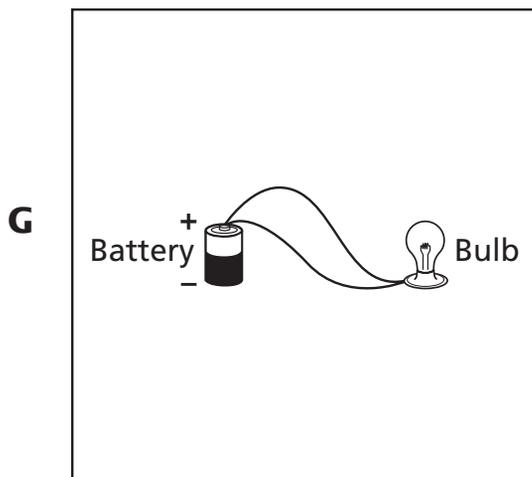
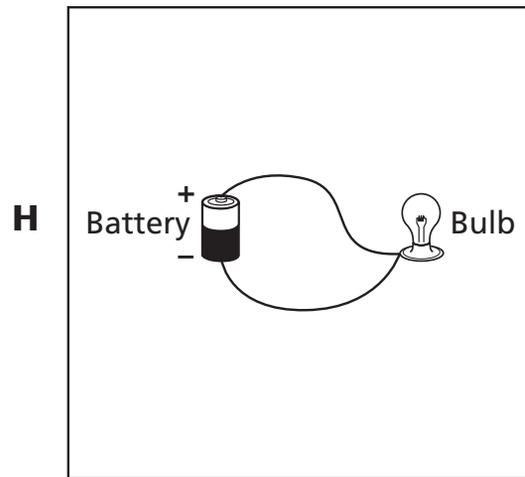
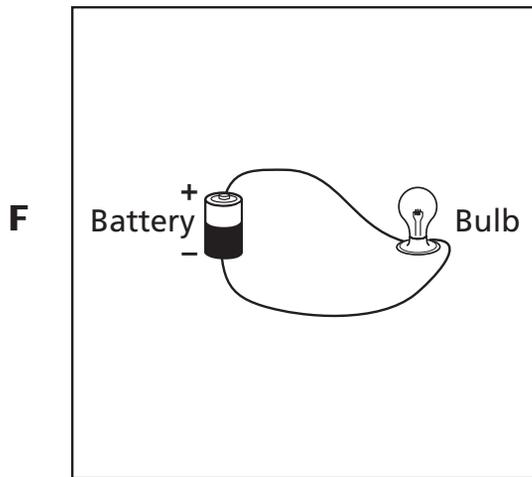
What causes this phase of the moon?

- F** The moon is orbiting around the sun.
- G** The sun is rotating around Earth.
- H** Earth is between the sun and the moon.
- J** The moon is between Earth and the sun.

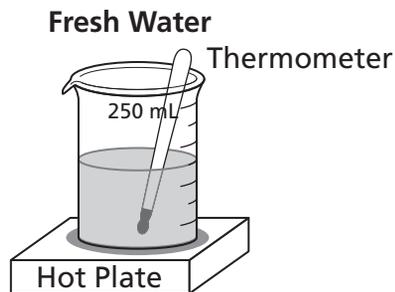
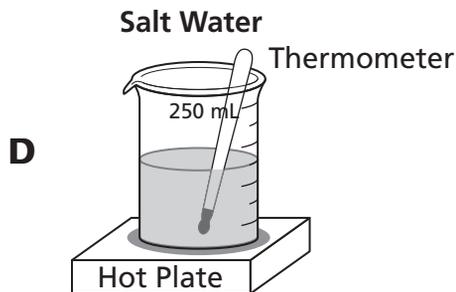
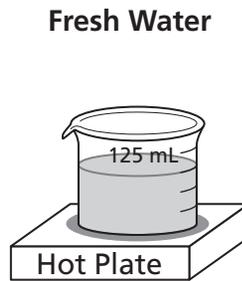
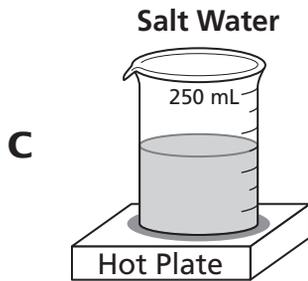
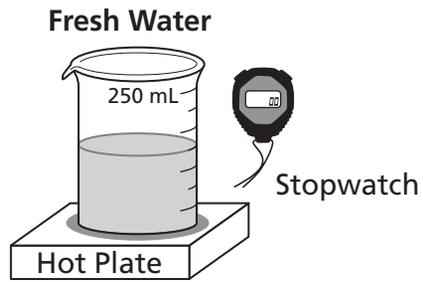
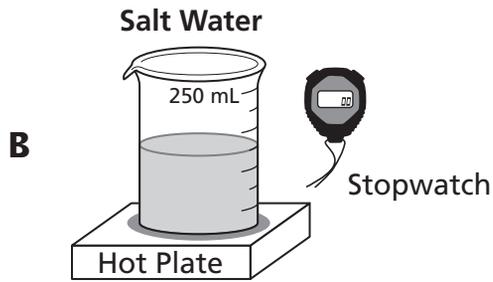
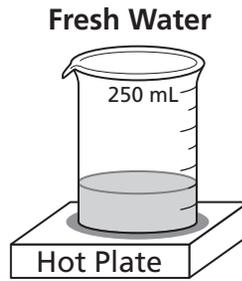
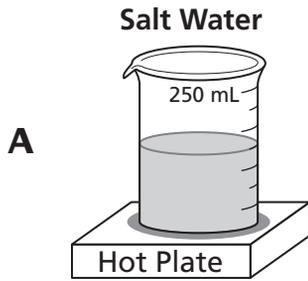
**17** Today glaciers are melting faster than in the past because air temperatures surrounding them have increased over the years. The temperature around glaciers over a period of years is best described as

- A** weather.
- B** climate.
- C** precipitation.
- D** air pressure.

**18** Which diagram shows a complete electrical circuit?



**19** Students want to find out if fresh water or salt water will come to a boil faster. Which investigation will best help the students answer this question?



**20** Which process forms clouds?

- F** runoff
- G** snowing
- H** condensation
- J** precipitation

**21** A photo of a lamp is shown below.



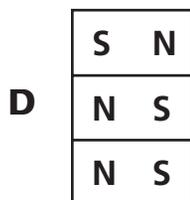
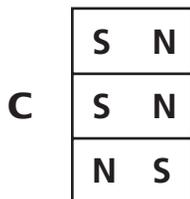
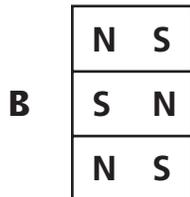
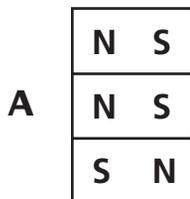
Which type of energy is being produced?

- A** light
- B** nuclear
- C** chemical
- D** mechanical

**22** Which process is most responsible for passing on traits needed for survival?

- F** digestion
- G** growth
- H** metamorphosis
- J** reproduction

**23** A student stacked three magnets on each other. Which diagram shows the three magnets attracted to each other?



**24** Which material is used as a source of heat to help people keep warm when it is cold?

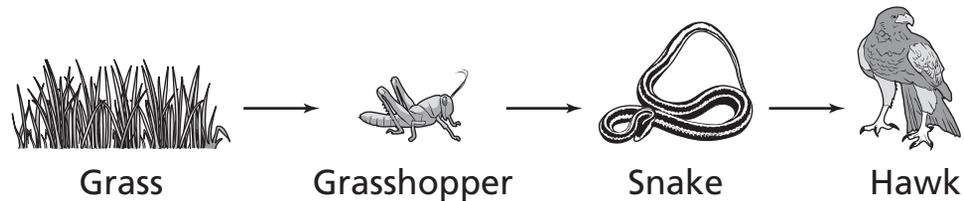
- F** iron
- G** gold
- H** diamonds
- J** natural gas

**25** Four people drove their cars to the ends of different roads. If each person took five minutes, which person traveled the slowest?

Student Name	Distance (miles)
Pete	3
Susan	$3\frac{1}{2}$
John	$2\frac{1}{2}$
Kate	2

- A** Pete
- B** Susan
- C** John
- D** Kate

**26** The diagram below shows a food chain.



If a population of rabbits was introduced to this food chain, which of these would most likely happen?

- F** The grass would grow longer.
- G** The population of snakes would increase.
- H** The population of hawks would become extinct.
- J** The population of grasshoppers would have less to eat.

**27** Some students want to measure water's boiling point. Which tool will best measure the boiling point of water?

- A** thermometer
- B** balance
- C** stopwatch
- D** meter stick

**28** Which statement best describes climate?

- F** The yearly rainfall average for Nashville, Tennessee, is 122 cm.
- G** Knoxville, Tennessee, had 10.2 centimeters of rain today.
- H** Memphis, Tennessee, had 7.6 centimeters of rain in October.
- J** The temperature was 10°C in Jackson, Tennessee, on Monday.

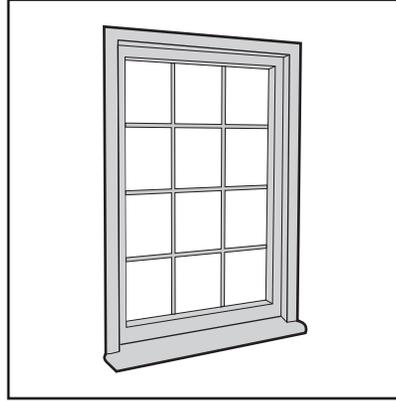
*Go On* ►

**29** Which object shown below is most likely transparent?

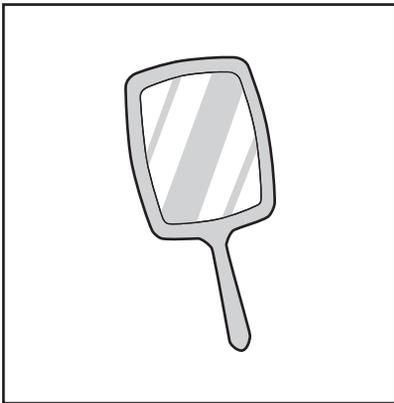
**A**



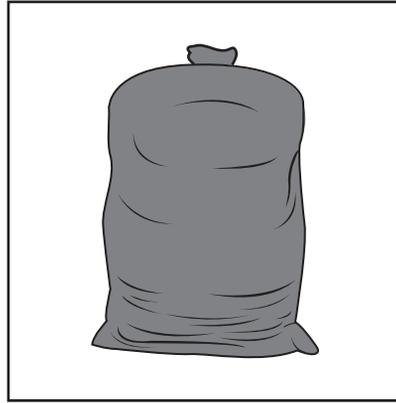
**C**



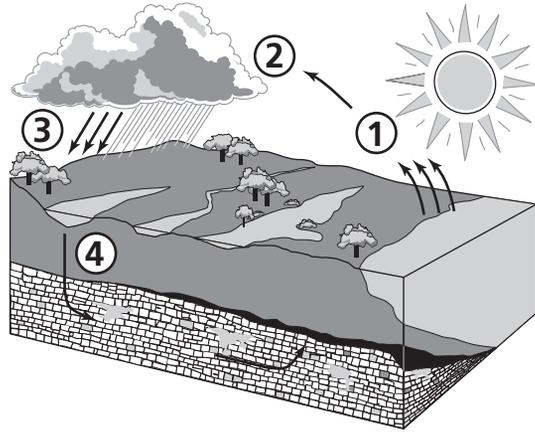
**B**



**D**



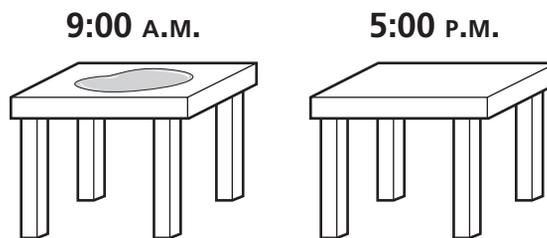
**30** A diagram of the water cycle is shown.



Which process occurs at number 3?

- F** condensation
- G** precipitation
- H** evaporation
- J** runoff

**31** Study the drawing of a classroom investigation shown below.



What most likely caused the water on the table to evaporate?

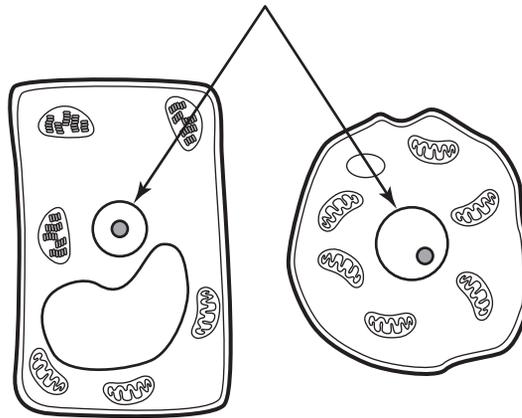
- A** heat
- B** wind
- C** gravity
- D** light

*Go On* ►

**32** Aluminum is an Earth material that is strong and lightweight. How has aluminum most likely been used to improve transportation?

- F** building railroad tracks
- G** fueling automobiles
- H** paving roads
- J** making airplanes

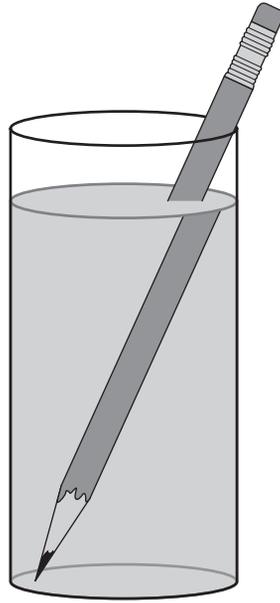
**33** A diagram of a plant and an animal cell is shown below.



Which structures are the arrows pointing to that plant and animal cells have in common?

- A** cell walls
- B** nuclei
- C** chloroplasts
- D** chlorophyll

**34** Look at the picture below.



What causes the pencil to appear broken when placed in a glass of water?

- F** light being absorbed
- G** light being reflected
- H** light being created
- J** light being refracted

*Go On* ►

**35** A load is easier to move using the machine below.



Which of these was reduced by using the wheelbarrow to move the soil?

- A** friction
- B** gravity
- C** air pressure
- D** air resistance

**STOP** 

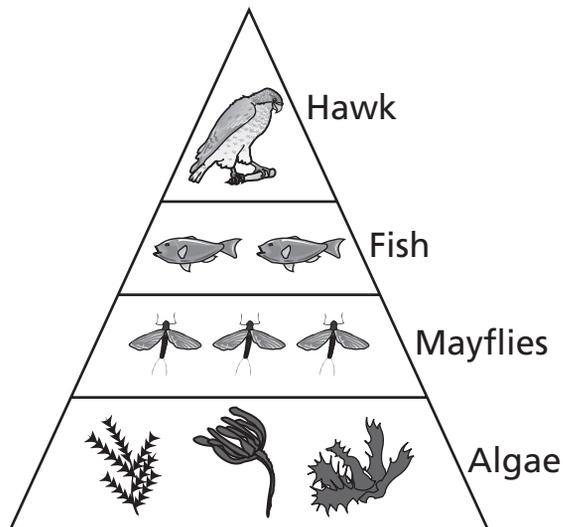
**DO NOT  
MARK  
ON THIS  
PAGE**

## Part 2

**36** Giraffes have long, slim necks. This adaptation helps the animals survive because the giraffes can

- F** run faster.
- G** lead the herd.
- H** reach more food.
- J** drink more water.

**37** An energy pyramid is shown below.



Which organisms are producers?

- A** Hawks
- B** Fish
- C** Mayflies
- D** Algae

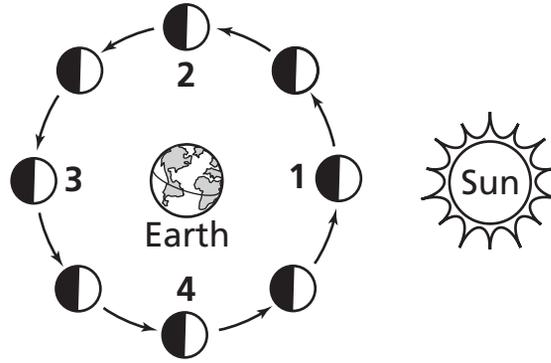
**38** A glass of water is left outside on a sunny day. What will most likely happen to the water?

- F** It will change shape.
- G** It will condense.
- H** It will evaporate.
- J** It will boil.

**39** The spruce-fir moss spider is an endangered animal that lives in moss under some fir trees. The trees keep the moss from getting too dry from the sun or too wet from the rain. Which is the most likely reason the spruce-fir moss spider is an endangered animal?

- A** Large amounts of fir trees were destroyed.
- B** The number of spider predators decreased.
- C** Moss began growing on the trees.
- D** The deer population in the forest increased.

**40** A diagram of the sun-Earth-moon system is shown below.



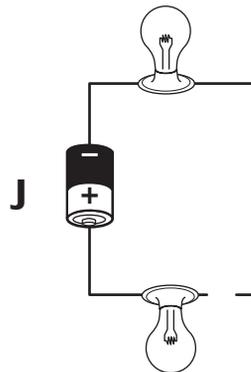
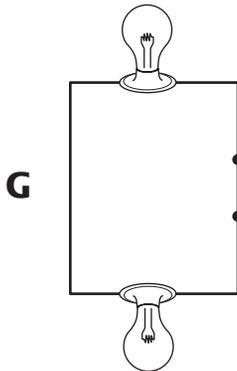
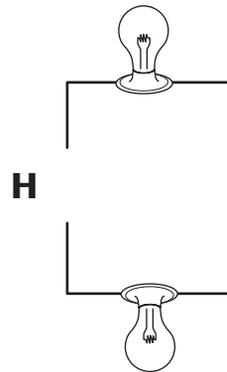
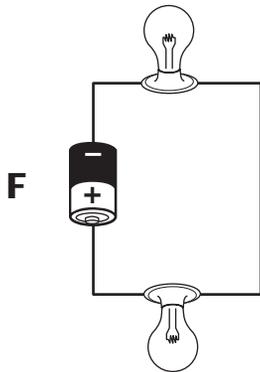
In which position would the moon be to see a full moon on Earth?

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

**41** Some eagles eat fish that contain chemicals from polluted water. Some chemicals cause eagle eggs to have thin shells that break easily. Which will most likely happen to eagles that live near water pollution?

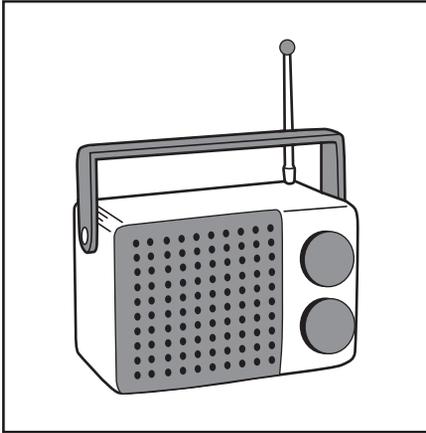
- A** They will move to an area that has more dry land.
- B** They will eat other foods instead of fish.
- C** More birds will migrate south.
- D** Fewer young will survive.

**42** Which best shows a complete circuit?



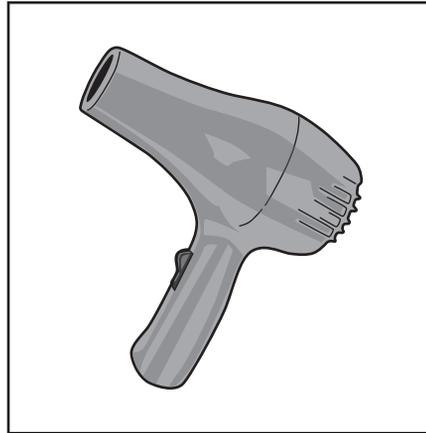
**43** Scientists have discovered that a type of plastic is an effective insulator to block heat. What tool was developed as a result of this discovery?

**A**



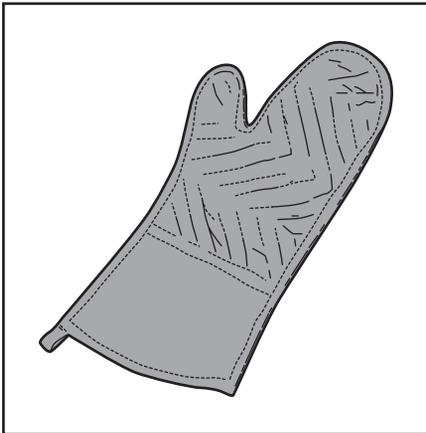
**Radio**

**C**



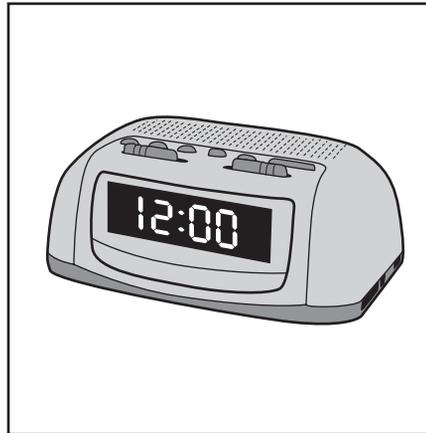
**Hair Dryer**

**B**



**Oven Mitt**

**D**

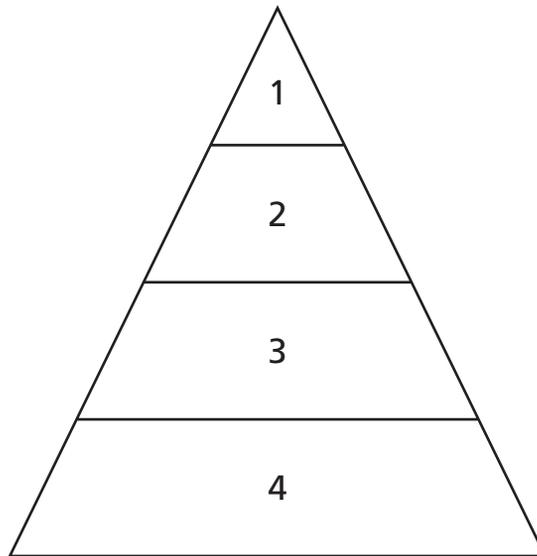


**Digital Clock**

**44** Students need to build a model that shows how wind can change the surface of Earth. Which model best shows wind erosion?

- F** pouring water over a pile of rocks
- G** digging in soil with a shovel
- H** spraying water over a tray of soil
- J** blowing air over a pile of sand

**45** Study the following energy pyramid.

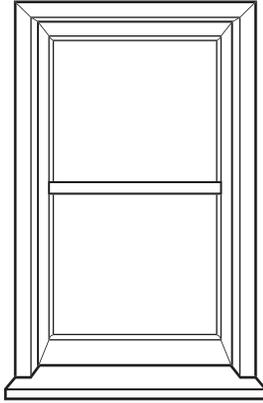


Rabbits are animals that eat plants. Where in the energy pyramid would a rabbit belong?

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

**46** Which object is most likely opaque?

**F**



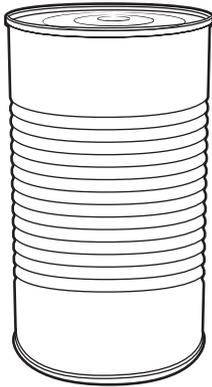
**Window**

**H**



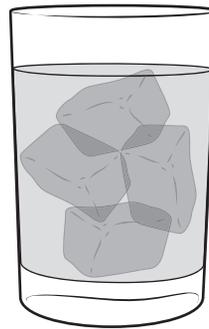
**Jar**

**G**



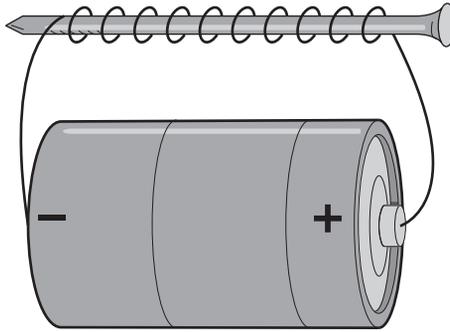
**Can**

**J**



**Drinking Glass**

- 47** Students made an electromagnet by wrapping a wire around an iron nail and attaching the wire to a battery as shown below.



Which object will be attracted to the electromagnet?

- A** metal bar
  - B** plastic fork
  - C** ceramic mug
  - D** wooden ruler
- 48** Polar bears are found where it is very cold. The thick fur of a polar bear most likely helps it survive by
- F** keeping it warm.
  - G** helping it find food.
  - H** taking in extra oxygen.
  - J** protecting it from predators.

**49** Skyscrapers are tall buildings built to save space in cities. These buildings are made of materials that will hold heavy weights and last for hundreds of years. Which material is best for building skyscrapers?

- A** plastic
- B** coal
- C** rubber
- D** steel

**50** Ovens are designed to cook and bake food.

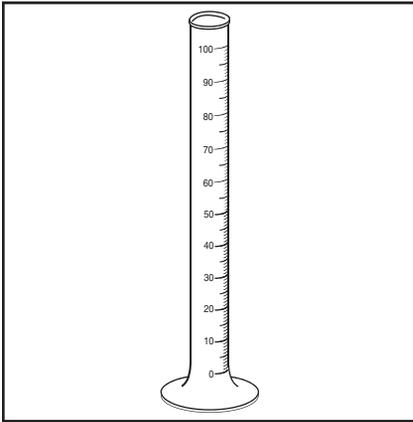


What type of energy is used to cook food in an oven?

- F** heat
- G** solar
- H** nuclear
- J** mechanical

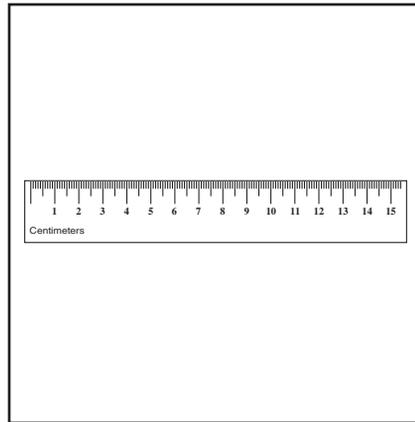
**51** Students compared the properties of pine cones. Which tool would best help the students measure the mass of the pine cones?

**A**



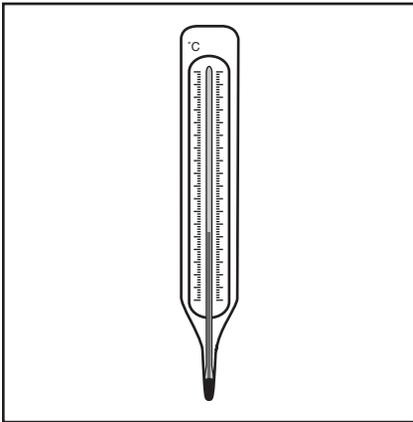
**Graduated Cylinder**

**C**



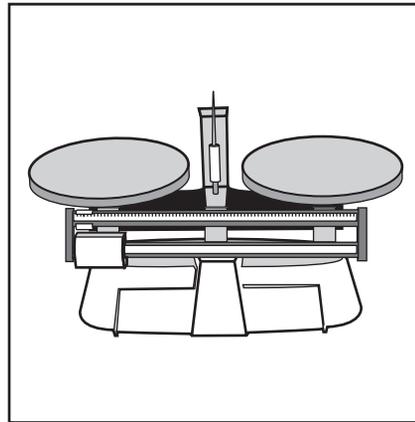
**Metric Ruler**

**B**



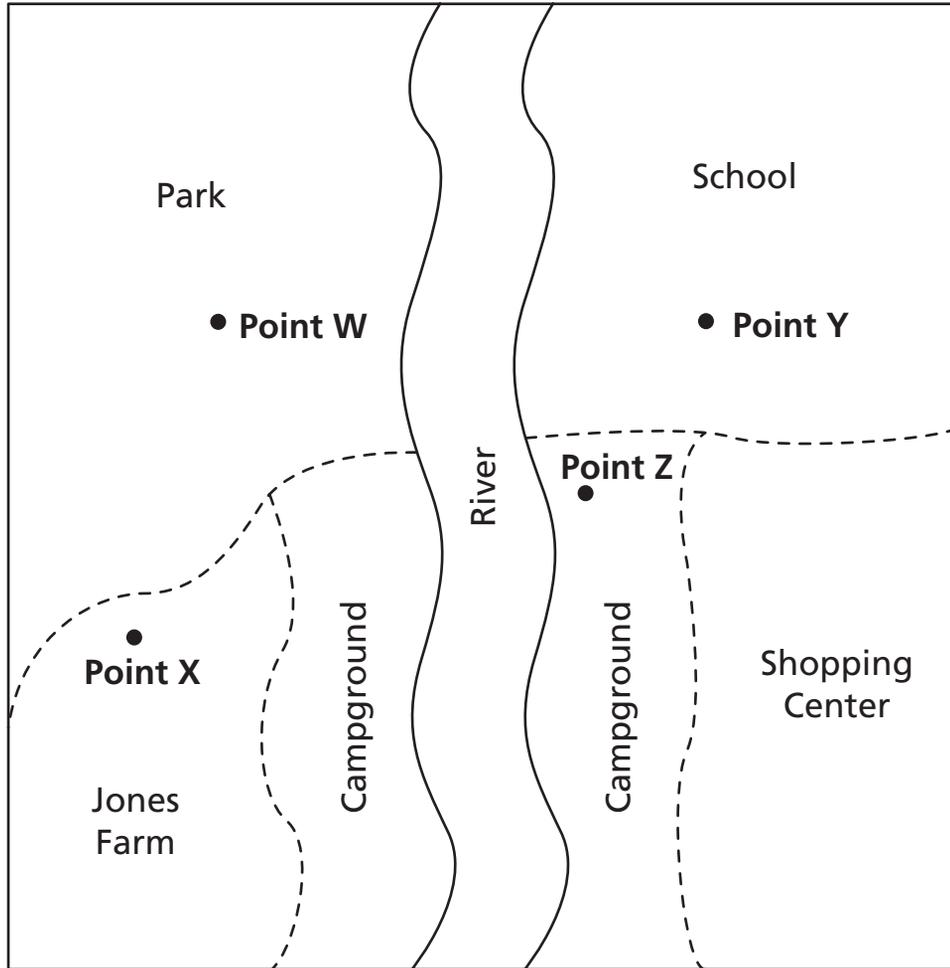
**Thermometer**

**D**



**Pan Balance**

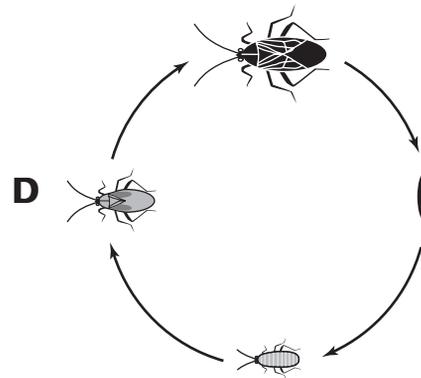
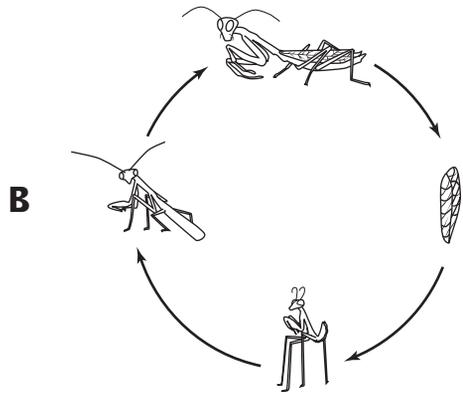
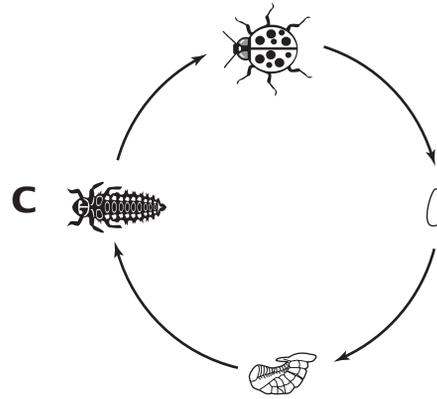
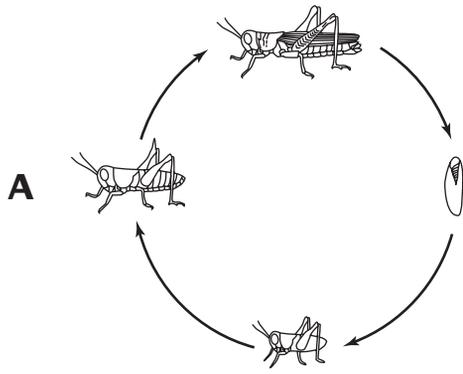
**52** A map is shown below.



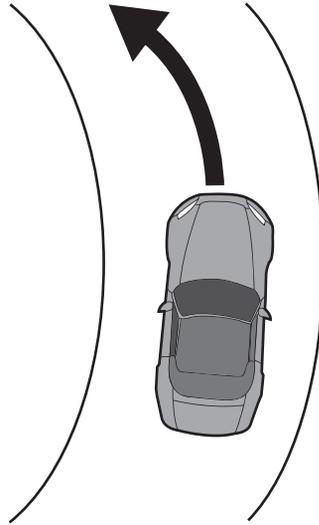
Which location is farthest from the river?

- F** Point W
- G** Point X
- H** Point Y
- J** Point Z

**53** Which diagram shows complete metamorphosis?



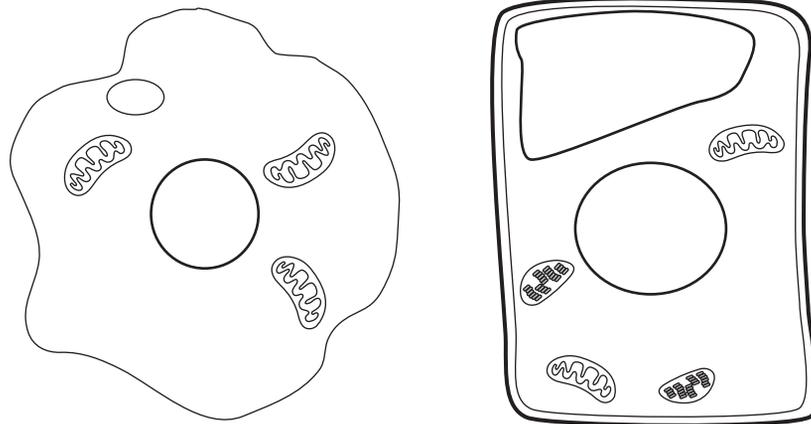
**54** A car is making a sharp turn on a road.



Which factor keeps the car from going off the road?

- F** speed
- G** air pressure
- H** friction
- J** mass

**55** A diagram of a plant and animal cell is shown below.

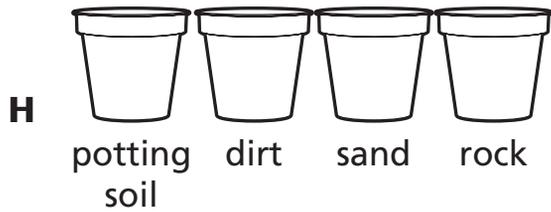
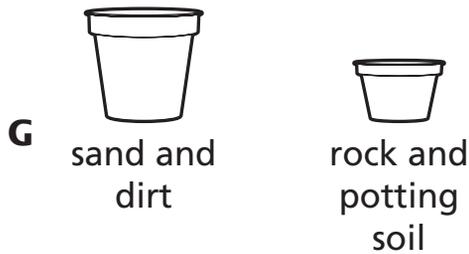
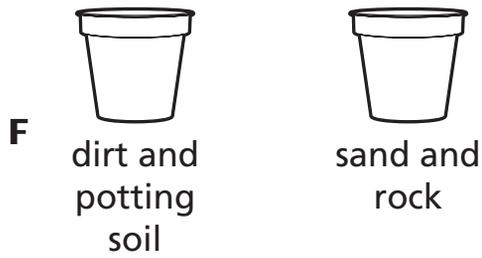


Which part of a cell is found in plant cells but not in animal cells?

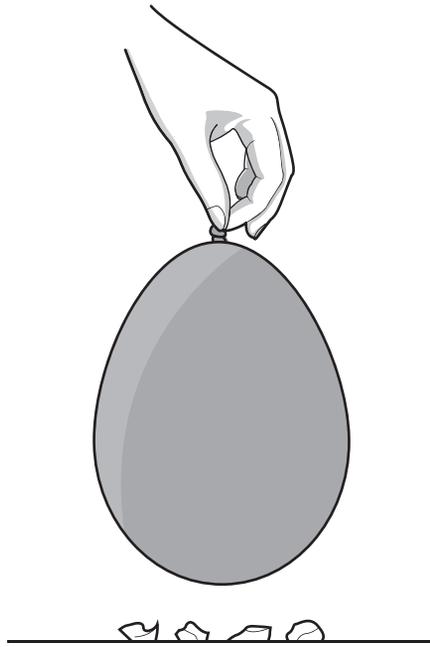
- A** cell membrane
- B** cell wall
- C** nucleus
- D** vacuole

*Go On* ►

**56** A group of students wanted to find out if the type of soil affected the rate at which corn plants would grow. Which investigation would best help the students answer this question?



- 57** A student rubbed a balloon on her head. The student then held the electrically charged balloon over some small pieces of paper.

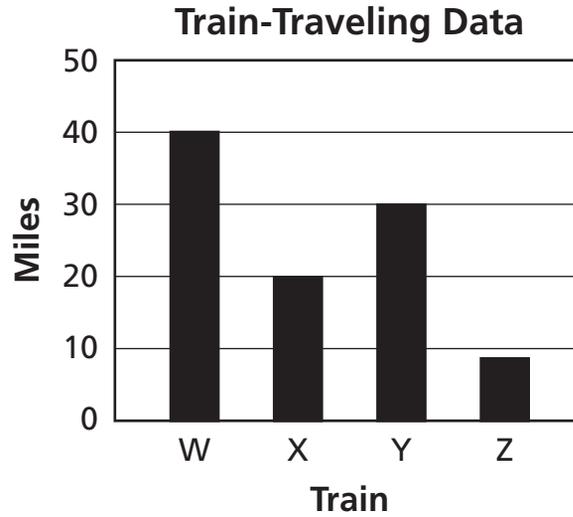


What will most likely happen to the small pieces of paper?

- A** The pieces will stick to the table.
- B** The pieces will scatter around the table.
- C** The pieces will be attracted to the balloon.
- D** The pieces will move away from the balloon.

*Go On* ►

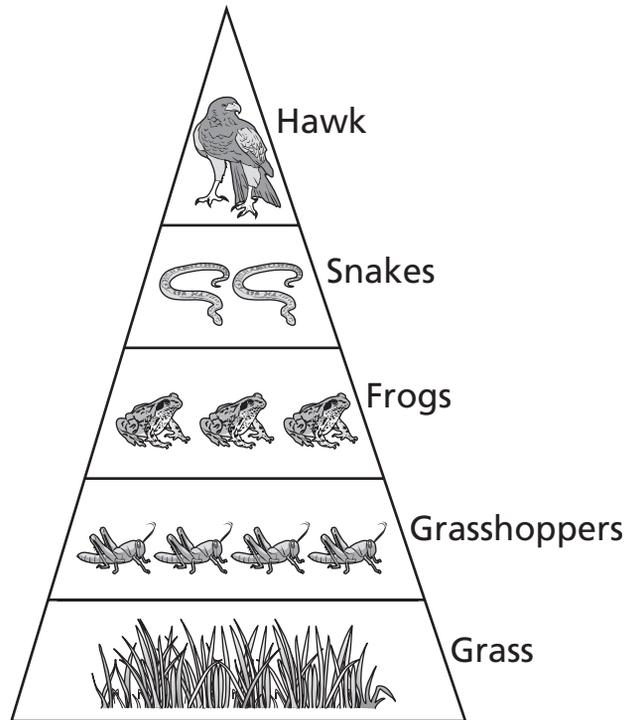
**58** The graph shows the distance that four different trains traveled.



If each train traveled for four hours, which train traveled at the fastest speed?

- F** Train W
- G** Train X
- H** Train Y
- J** Train Z

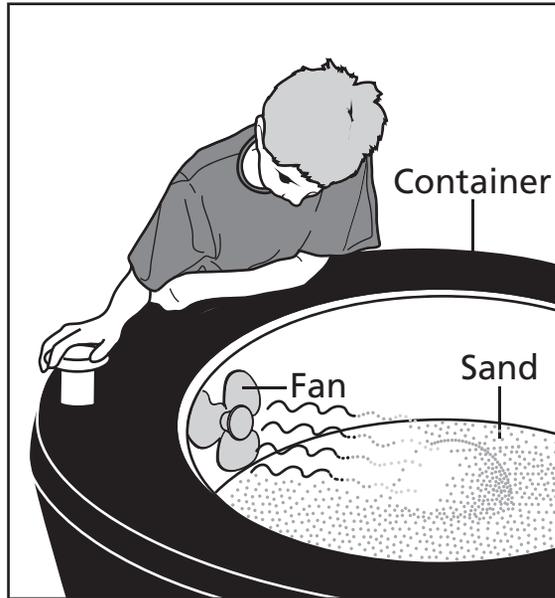
**59** The diagram shows an energy pyramid.



Which organism gets its energy directly from the grasshopper?

- A** Hawk
- B** Snake
- C** Frog
- D** Grass

**60** The following model was set up at a local science museum.



What type of erosion is the student most likely observing with this model?

- F** wind erosion
- G** water erosion
- H** soil erosion
- J** rock erosion

**61** Which factor most likely prevents a deer population from growing too large in a forest ecosystem?

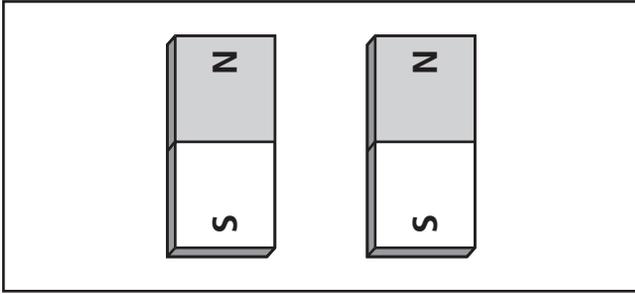
- A** the age of the trees
- B** the amount of oxygen
- C** the amount of sunlight
- D** the number of predators

**62** Students are collecting data for the number of days it has rained in the past month. The number of rainy days would be an example of

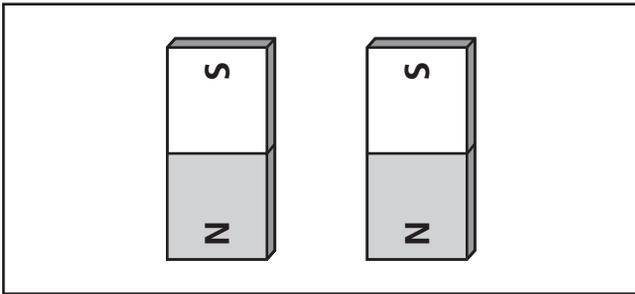
- F** season.
- G** climate.
- H** weather.
- J** temperature.

**63** Which diagram shows magnets that attract each other?

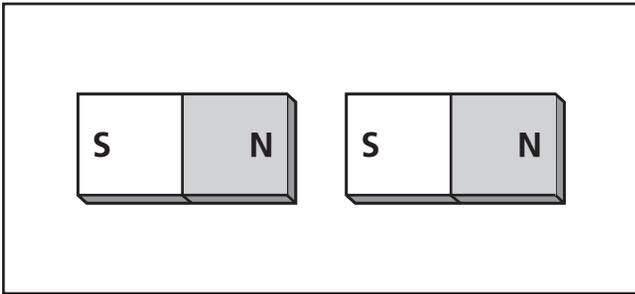
**A**



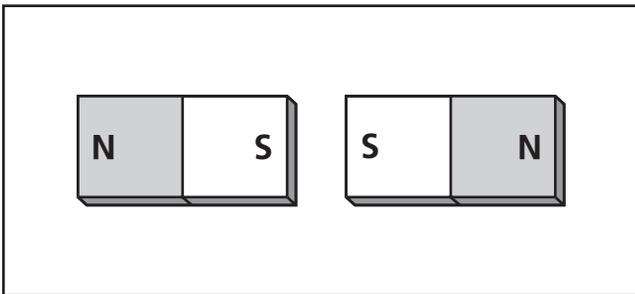
**B**



**C**



**D**



**64** Which tool should be used to measure the volume of water?

**F** ruler

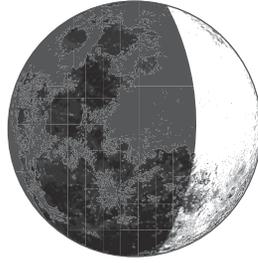
**G** balance scale

**H** thermometer

**J** graduated cylinder

*Go On* ►

**65** A diagram of a moon phase is shown.



Which shows the correct order of the moon phases that would follow?

**A**

		
First Quarter	Full Moon	Crescent Moon

**B**

		
First Quarter	Full Moon	Last Quarter

**C**

		
Full Moon	Crescent Moon	First Quarter

**D**

		
Crescent Moon	Full Moon	First Quarter

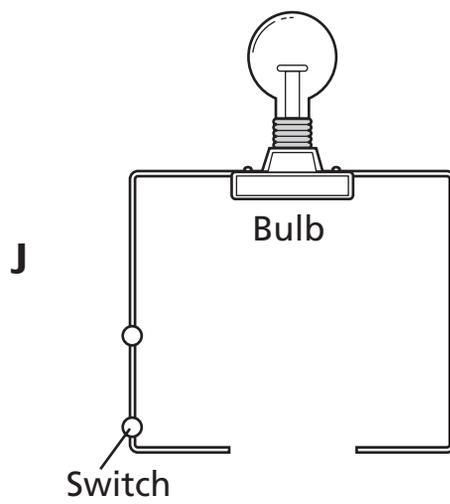
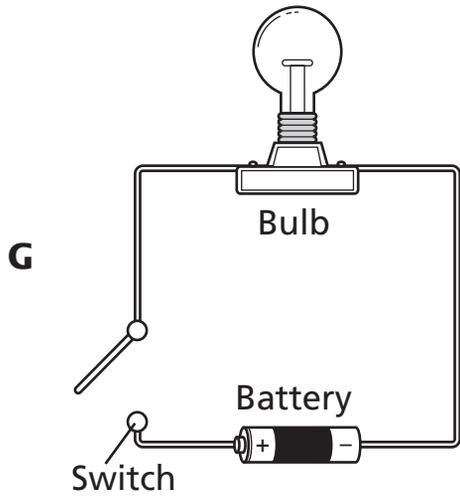
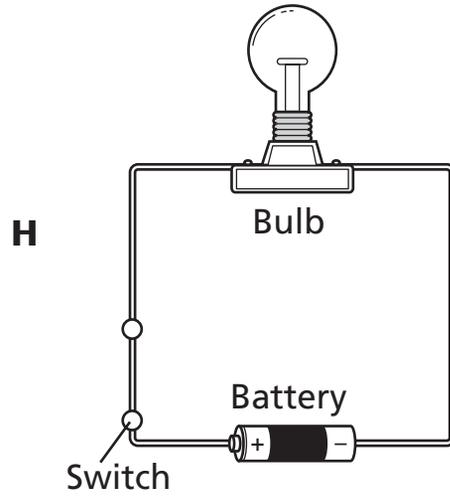
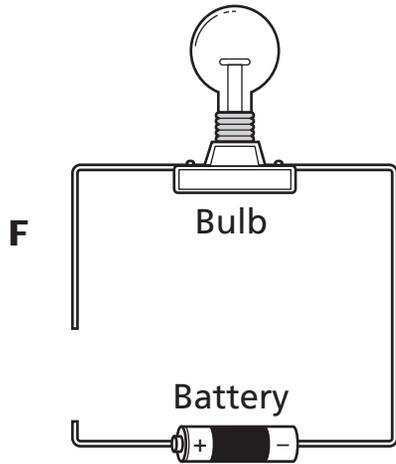
**66** The local forecast predicts it will be cold and rainy. Which term best describes this information?

- F** season
- G** weather
- H** climate
- J** habitat

**67** Which units are best to use when measuring the volume of cooking oil?

- A** meters
- B** centimeters
- C** centigrams
- D** milliliters

**68** Which diagram below shows a closed circuit?



**69** Which object is most likely transparent?

- A** black shirt
- B** glass window
- C** wooden door
- D** metal cabinet

**STOP** 

**DO NOT  
MARK  
ON THIS  
PAGE**

# Science Answer Key

1	C
2	F
3	D
4	H
5	D
6	H
7	D
8	G
9	A
10	G
11	B
12	F
13	B
14	J
15	C
16	J
17	B
18	F

19	B
20	H
21	A
22	J
23	B
24	J
25	D
26	J
27	A
28	F
29	C
30	G
31	A
32	J
33	B
34	J
35	A
36	H

37	D
38	H
39	A
40	H
41	D
42	F
43	B
44	J
45	C
46	G
47	A
48	F
49	D
50	F
51	D
52	G
53	C
54	H

55	B
56	H
57	C
58	F
59	C
60	F
61	D
62	H
63	C
64	J
65	B
66	G
67	D
68	H
69	B





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**Achievement Test ~ Grade 4**  
**Practice Test**



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