

Student Name _____

Teacher Name _____

School _____

System _____

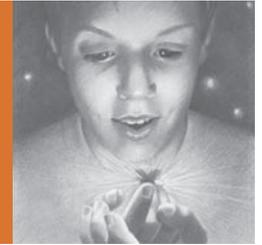


TENNESSEE

Tennessee Comprehensive Assessment Program Achievement Test ~ Grade 4 Item Sampler



Science



Reporting Category: LIFE SCIENCE 1: Cells, Flow of Matter & Energy, Heredity

Performance Indicator: 0407.1.1 Compare basic structures of plant and animal cells.

1 Which part of a plant cell is not found in an animal cell?

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

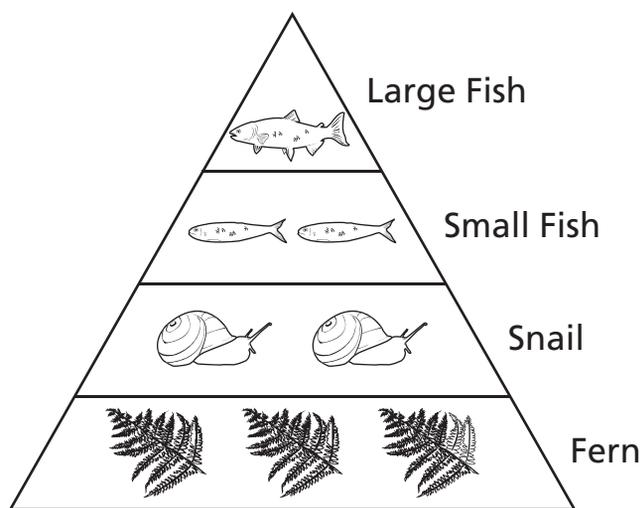
Reporting Category: LIFE SCIENCE 1: Cells, Flow of Matter & Energy, Heredity

Performance Indicator: 0407.TE.1 Select a tool, technology, or invention that was used to solve a human problem.

2 Which tool best helps doctors study how cells work in the human body?

- F** telescope
- G** microscope
- H** reading glasses
- J** magnifying glass

3 An energy pyramid is shown below.



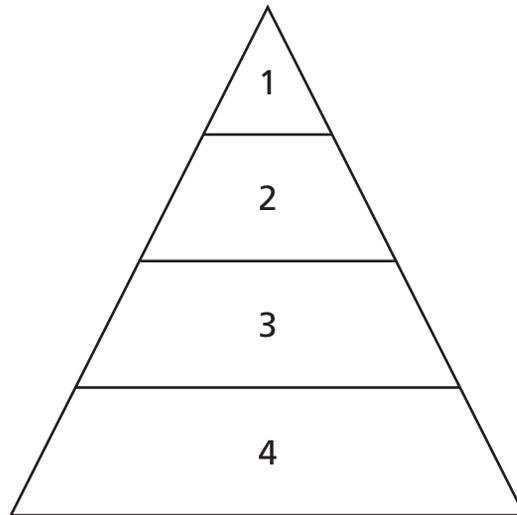
What is the role of the fern in the energy pyramid?

- A** producer
- B** herbivore
- C** carnivore
- D** decomposer

Reporting Category: LIFE SCIENCE 1: Cells, Flow of Matter & Energy, Heredity

Performance Indicator: 0407.3.1 Determine how different organisms function within an environment in terms of their location on an energy pyramid.

4 A diagram of an energy pyramid is shown below.



Which level of the pyramid contains the greatest amount of available energy?

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

Reporting Category: LIFE SCIENCE 1: Cells, Flow of Matter & Energy, Heredity

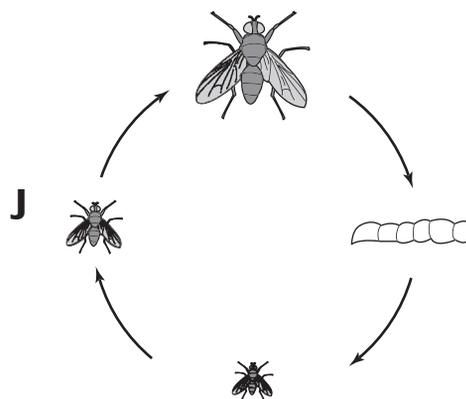
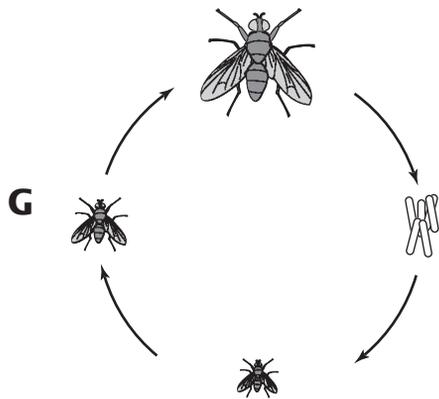
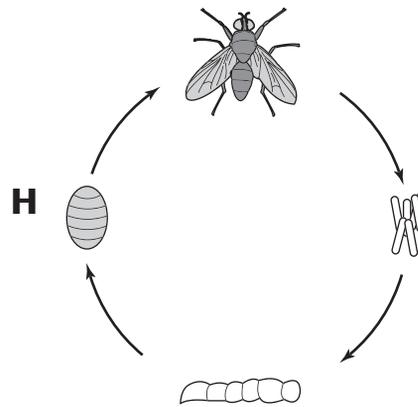
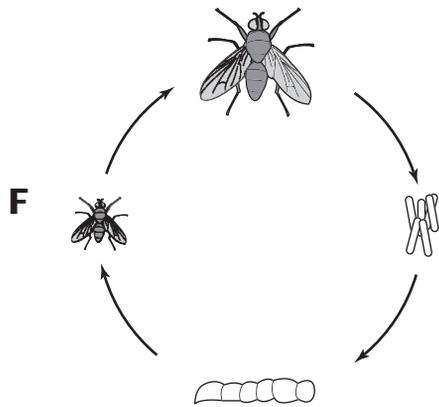
Performance Indicator: 0407.4.1 Draw conclusions about the relationship between reproduction and the survival of a species.

5 What will most likely happen if a rose species is not pollinated?

- A** The species will attract more bees.
- B** The species will increase in number.
- C** The species will produce more flowers.
- D** The species will become extinct.

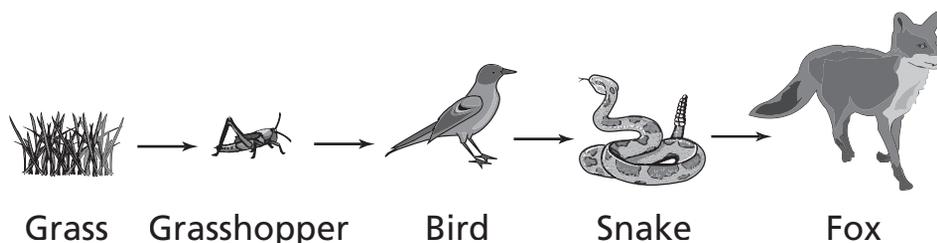
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6 Look at the following diagrams. Which diagram best shows complete metamorphosis?



Performance Indicator: 0407.2.1 Recognize the impact of predation and competition on an ecosystem.

7 A food chain is shown below.



Which would most likely result if another predator of the bird was introduced into this food chain?

- A The grasshopper and bird populations would decrease.
- B The fox and snake populations would increase.
- C The snake population would increase.
- D The bird population would decrease.

Reporting Category: LIFE SCIENCE 2: Interdependence, Biodiversity & Change

Performance Indicator: 0407.5.1 Determine how a physical or behavioral adaptation can enhance the chances of survival.

8 A grizzly bear is shown below.



How do its claws most likely help the grizzly bear survive?

- F** move quickly
- G** stay warm
- H** hide from predators
- J** catch food

Reporting Category: LIFE SCIENCE 2: Interdependence, Biodiversity & Change

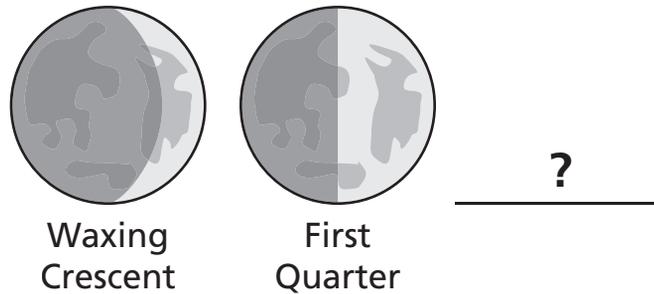
Performance Indicator: 0407.5.2 Infer the possible reasons why a species became endangered or extinct.

9 Whooping cranes like to nest near water where people build homes and farms. What most likely caused the whooping crane to become endangered?

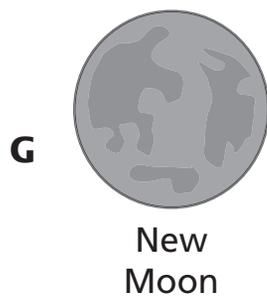
- A** a disease
- B** loss of habitat
- C** a changing climate
- D** hunting by predators

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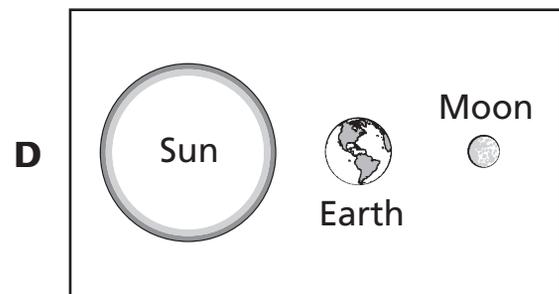
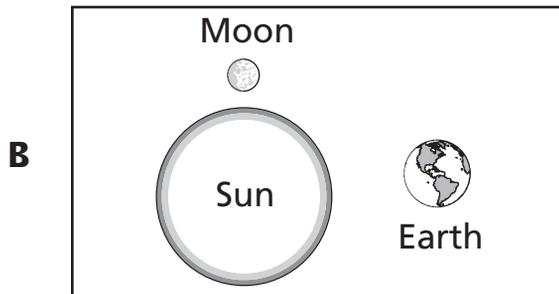
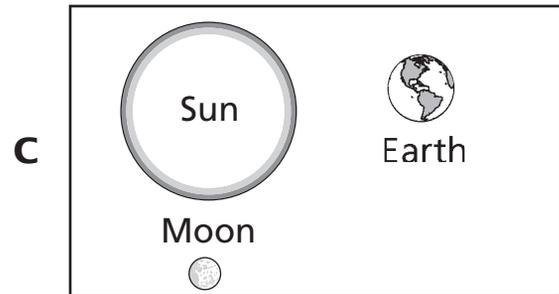
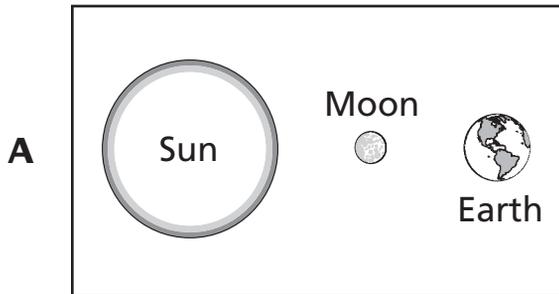
10 The picture below shows two phases of the moon.



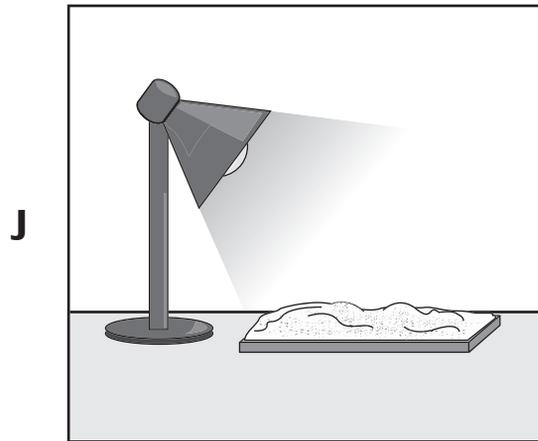
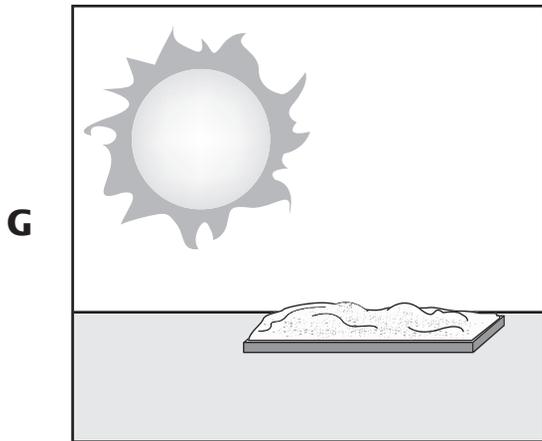
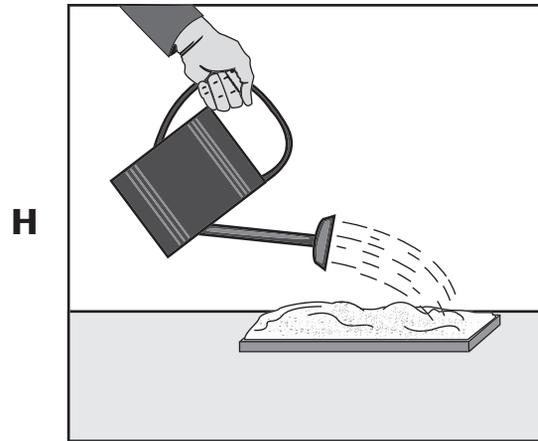
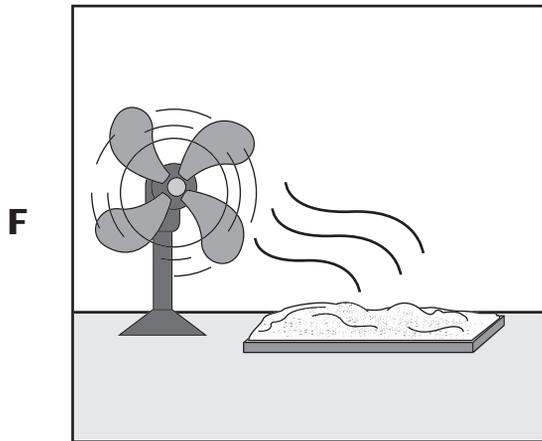
Which phase of the moon happens next?



11 Which diagram correctly shows the positions of the sun, Earth, and the moon when the moon is full?



12 Which model would best show how water can change the surface of Earth?



Reporting Category: EARTH AND SPACE SCIENCE: The Universe, The Earth, The Atmosphere

Performance Indicator: 0407.7.2 Analyze how different earth materials are utilized to solve human problems or improve the quality of life.

13 Coal is an Earth material that is often used to heat people's homes. How has coal improved the quality of life for people on Earth?

- A** People use coal as a fuel source.
- B** People use coal to build bridges.
- C** People use coal to power wind turbines.
- D** People use coal to prevent disease.

Reporting Category: EARTH AND SPACE SCIENCE: The Universe, The Earth, The Atmosphere

Performance Indicator: 0407.TE.2 Recognize the connection between a scientific advance and the development of a new tool or technology.

14 Years ago, scientists discovered that a curved piece of glass magnified the image of an object. Which new technology was created from this discovery?

- F** satellites
- G** computers
- H** telescopes
- J** radios

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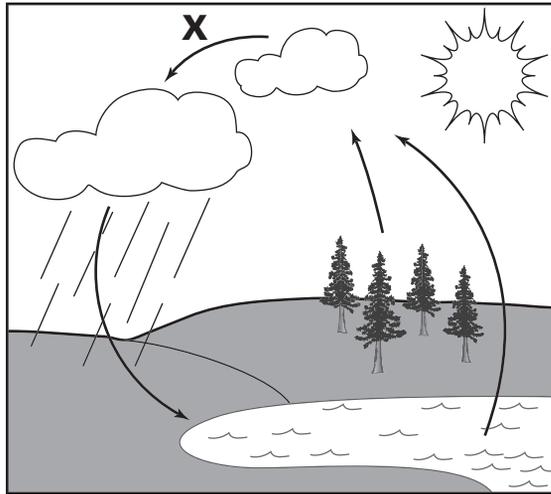
Reporting Category:

EARTH AND SPACE SCIENCE: The Universe,
The Earth, The Atmosphere

Performance Indicator:

0407.8.1 Identify the basic features of the water cycle and describe their importance to life on earth.

15 A diagram of a water cycle is shown.



What process should be at the label X?

- A precipitation
- B condensation
- C evaporation
- D runoff

Reporting Category: EARTH AND SPACE SCIENCE: The Universe, The Earth, The Atmosphere

Performance Indicator: 0407.8.2 Distinguish between weather and climate.

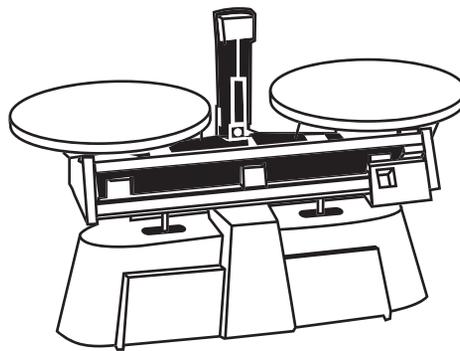
16 Monday was sunny and hot. Tuesday was cool and wet. These conditions are examples of

- F** seasons.
- G** climate.
- H** weather.
- J** ecosystem.

Reporting Category: PHYSICAL SCIENCE 1: Matter and Energy

Performance Indicator: 0407.9.1 Choose an appropriate tool for measuring a specific physical property of matter.

17 A laboratory tool is shown below.



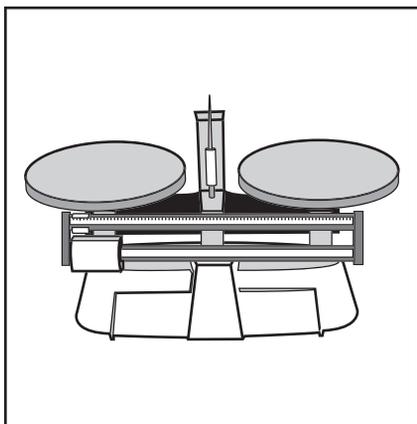
Which property does this tool most likely measure?

- A** mass
- B** length
- C** volume
- D** width

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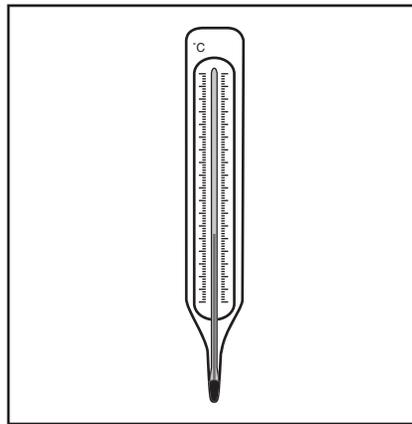
18 Students collected some rainwater in a container during a storm. Which tool would best help the students measure the volume of water they collected?

F



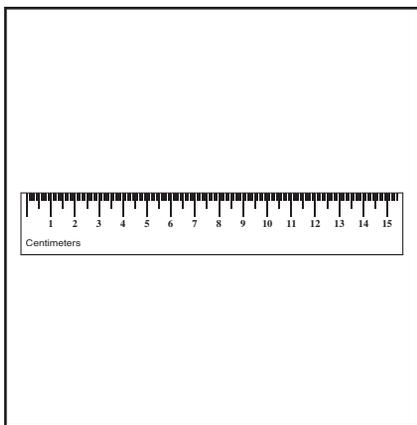
Pan Balance

H



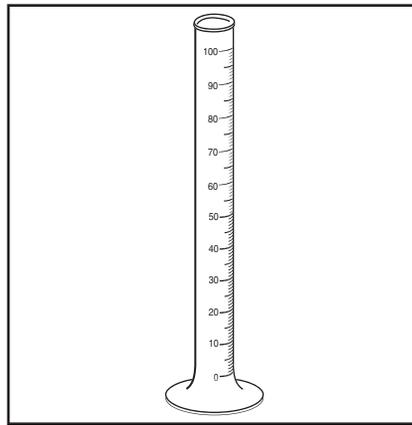
Thermometer

G



Metric Ruler

J



Graduated Cylinder

Reporting Category: PHYSICAL SCIENCE 1: Matter and Energy

Performance Indicator: 0407.9.2 Determine the mass, volume, and temperature of a substance or object using proper units of measurement.

19 A cook poured some hot water into a pot. Which unit should be used to measure the volume of water in the pot?

- A** liters
- B** meters
- C** grams
- D** degrees Celsius

Reporting Category: PHYSICAL SCIENCE 1: Matter and Energy

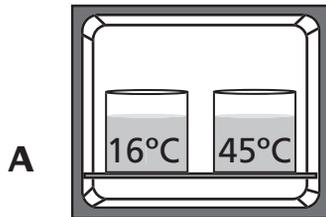
Performance Indicator: 0407.9.3 Interpret the causes and effects of a physical change in matter.

20 Students left some ice cubes on a table and they turned into water. Which best explains why the ice cubes changed?

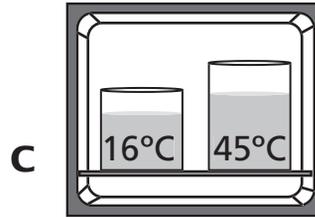
- F** The ice cubes lost mass.
- G** The temperature of the ice cubes increased.
- H** The ice cubes gained mass.
- J** The temperature of the ice cubes decreased.

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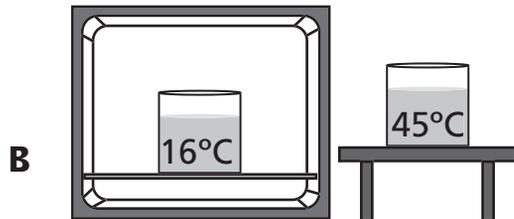
21 Students wanted to investigate whether warm water freezes faster than cool water. Which setup will best help students answer this question?



In freezer
at 0°C

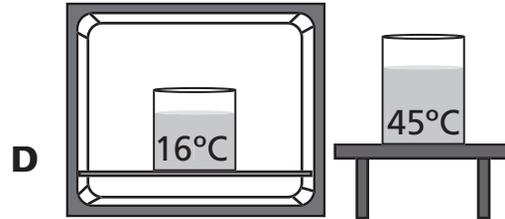


In freezer
at 0°C



In freezer
at 0°C

On table
at 20°C

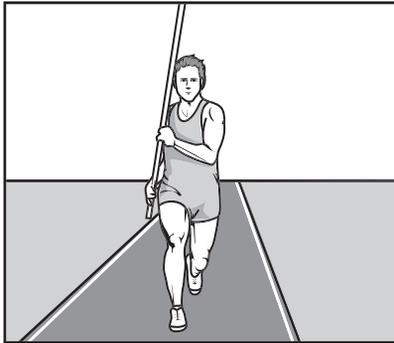


In freezer
at 0°C

On table
at 20°C

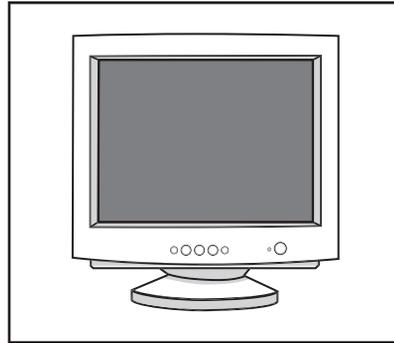
22 Which is designed to change electrical energy to heat energy?

F



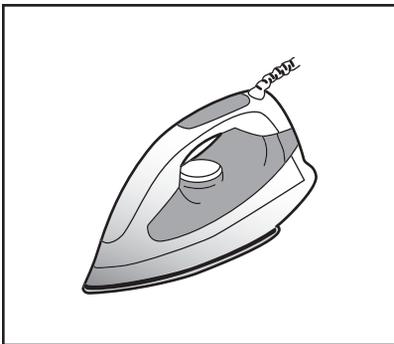
Pole Vaulter

H



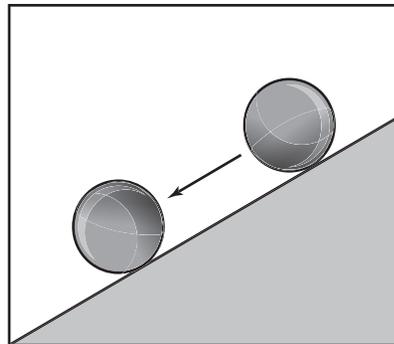
Computer Screen

G



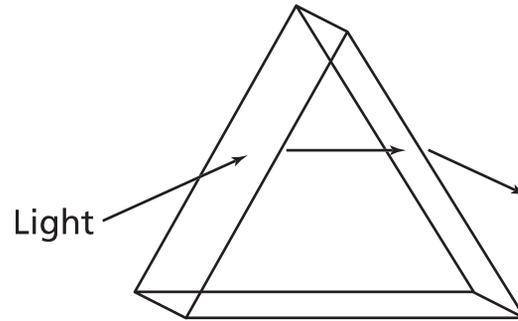
Iron

J



Ball Rolling

23 Light shines on a crystal as shown in the picture below.



The light on this crystal is being

- A** reflected.
- B** absorbed.
- C** refracted.
- D** scattered.

24 Which is the best example of an opaque object?

F



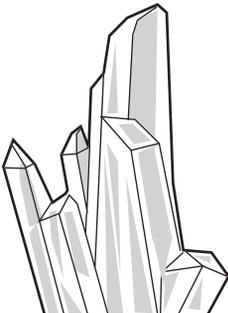
Wooden Door

H



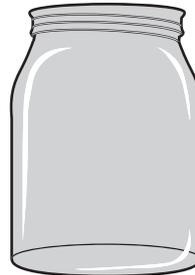
Plastic Bag

G



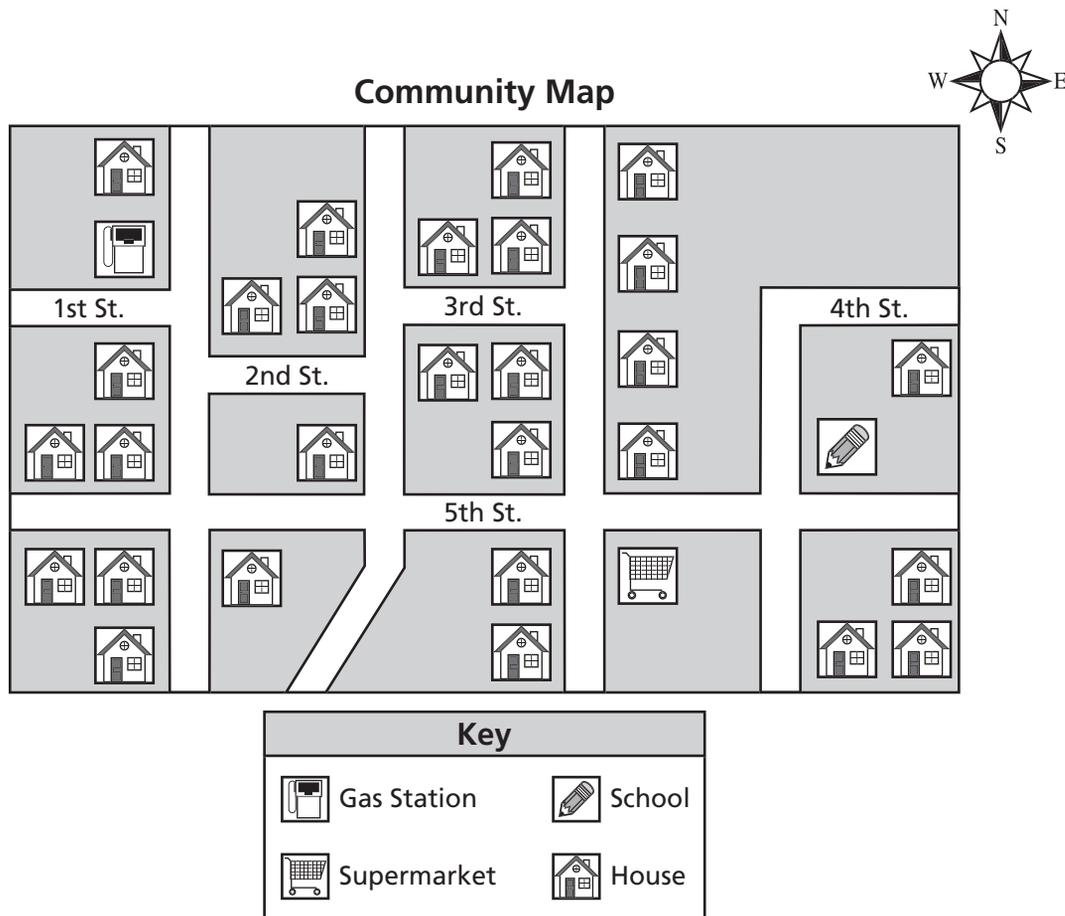
Crystal Rock

J



Glass Jar

25 Three students are leaving school and heading to the supermarket. A map of their community is shown below.



In which direction do students need to travel to get to the supermarket?

- A northeast
- B southwest
- C southeast
- D northwest

Reporting Category: PHYSICAL SCIENCE 2: Motion, Forces in Nature

Performance Indicator: 0407.11.2 Identify factors that influence the motion of an object.

26 A ball rolled across a table and fell to the floor. What caused the ball to fall to the floor?

- F** friction
- G** gravity
- H** air pressure
- J** air resistance

Reporting Category: PHYSICAL SCIENCE 2: Motion, Forces in Nature

Performance Indicator: 0407.11.3 Determine the relationship between speed and distance traveled over time.

27 Four cars traveled different distances, as shown in the chart below.

Car	Distance (miles)
1	12
2	15
3	17
4	21

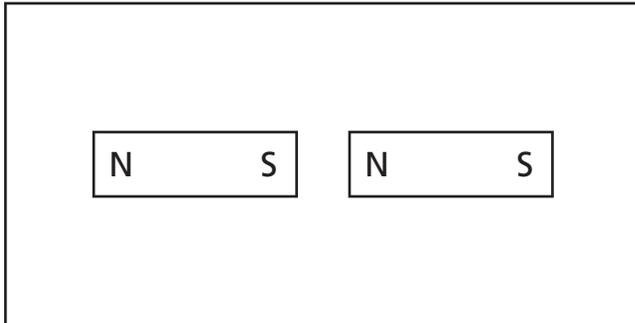
If all the cars finished at the same time, which car traveled the fastest?

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

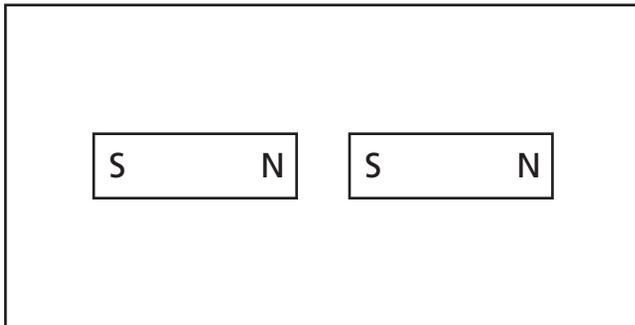
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28 Which diagram shows magnets that will repel each other?

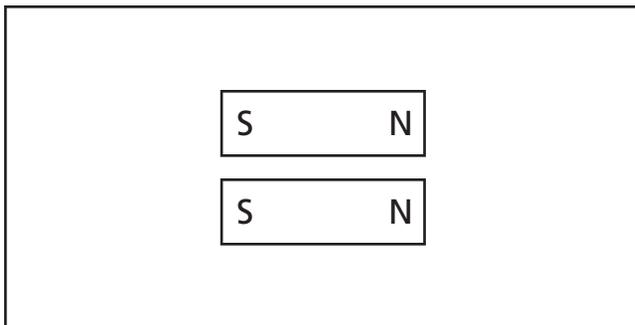
F



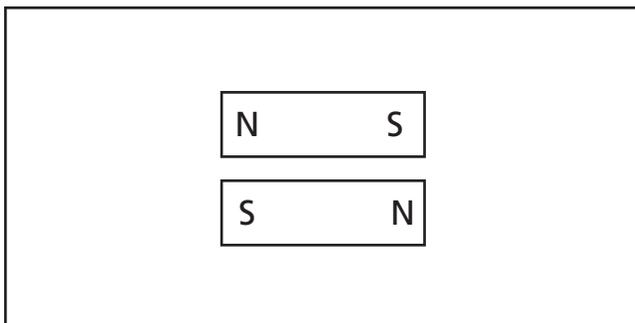
G



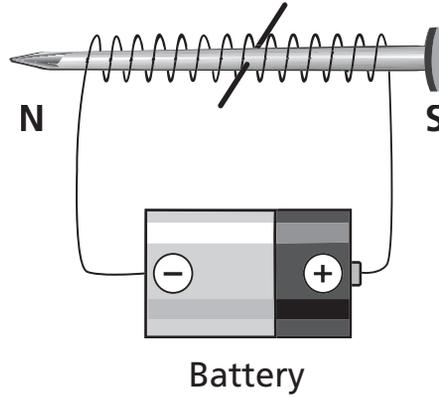
H



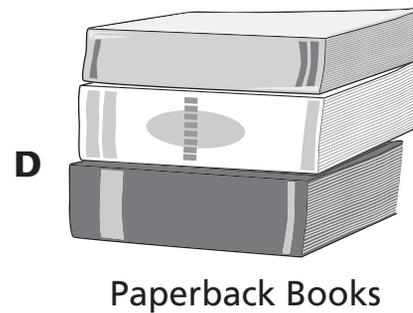
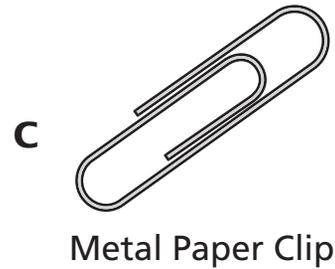
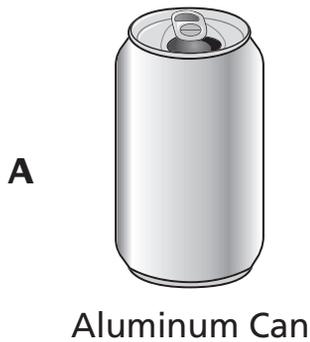
J



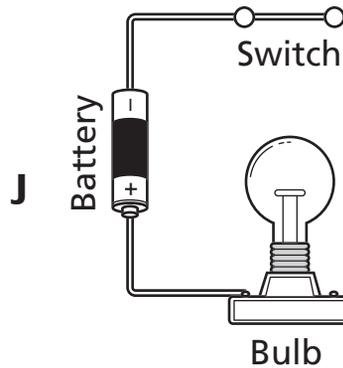
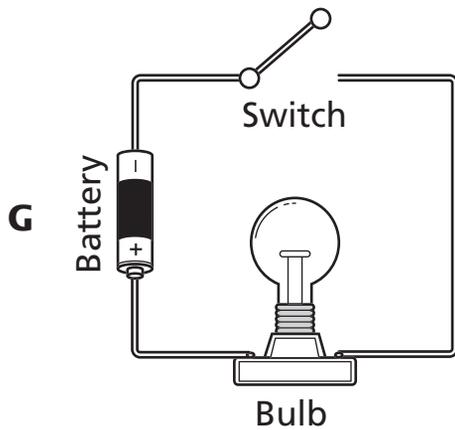
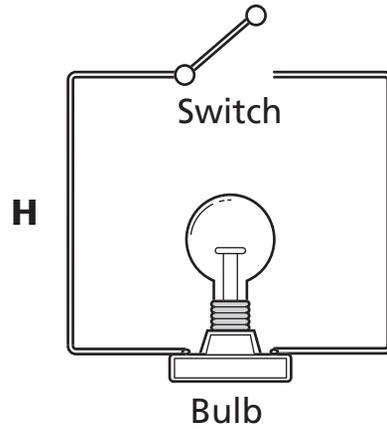
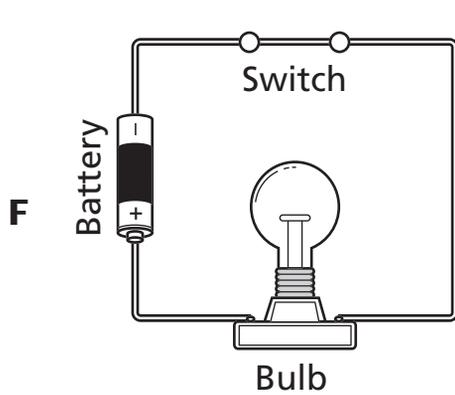
29 Students built the electromagnet below.



Which object would be attracted to the electromagnet?



30 Which diagram most likely shows a circuit that will light the bulb?



Science Answer Key

1	B
2	G
3	A
4	J
5	D
6	H
7	D
8	J

9	B
10	F
11	D
12	H
13	A
14	H
15	B
16	H

17	A
18	J
19	A
20	G
21	A
22	G
23	C
24	F

25	B
26	G
27	D
28	H
29	C
30	F



Tennessee Comprehensive Assessment Program

Achievement Test ~ Grade 4

Item Sampler