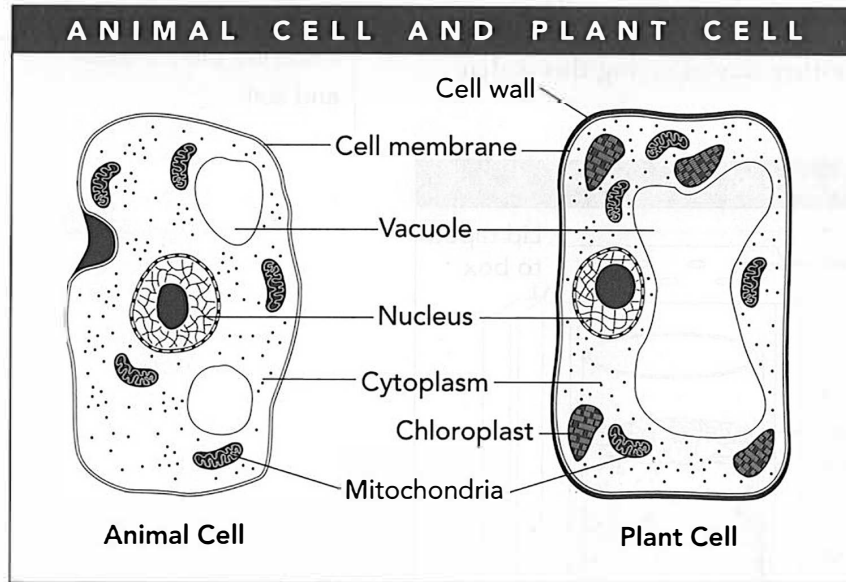


Practice

Living and Nonliving Things

Base your answers to questions 1–4 on the diagram below, which compares an animal cell with a plant cell.



Test Tip

Sometimes the drawings in a diagram share labels. A line may point to one or both illustrations. If it points to both, the two drawings have that same part in common.

There are more similarities between plant and animal cells than there are differences.

- 1 Which cell part is present in the plant cell but not in the animal cell?
 - 1 vacuole
 - 2 cell membrane
 - 3 chloroplast
 - 4 nucleus
- 2 Which activity do plant cells perform that animal cells do not perform?
 - 1 respiration
 - 2 photosynthesis
 - 3 reproduction
 - 4 locomotion
- 3 Which cell part is larger in plant cells than in animal cells?
 - 1 cell membrane
 - 2 vacuole
 - 3 cytoplasm
 - 4 nucleus
- 4 What is the substance that surrounds the nucleus of the cell?



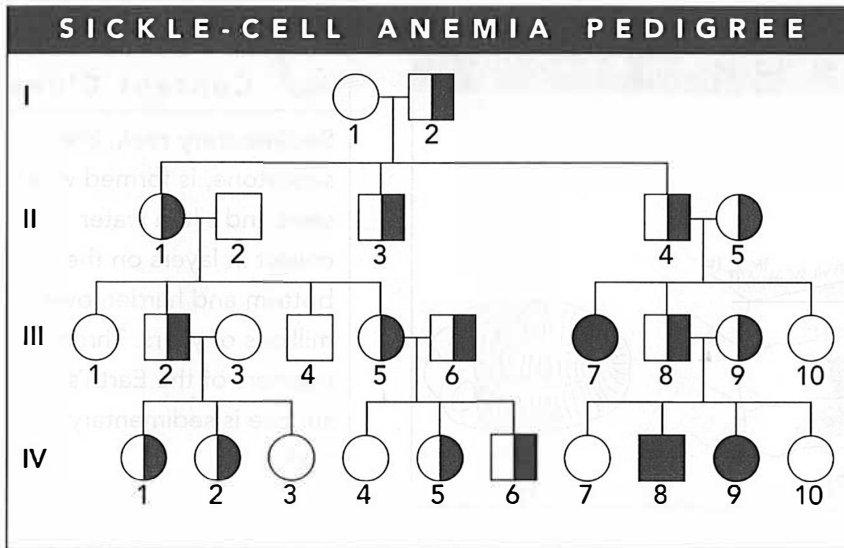
Content Clue

Remember that plants are **producers**. They use water, **carbon dioxide**, **chlorophyll**, and the **energy** in sunlight to make their own food.

Practice

Genetic Information

The chart below shows sickle-cell anemia being passed through several generations of a family. Base your answers to questions 1–5 on this chart.



Content Clue

A **pedigree chart** is used to study inherited **diseases** or disorders. It is similar to a “family tree.” Other inherited disorders include color blindness and hemophilia.

KEY:

- Normal Male
- Normal Female
- Parents
- Has the disease
- Carries gene for disease
- Offspring
- I, II . . . Generation
- 1, 2, 3 . . . Offspring

1 How many generations are represented in this chart?

2 How many carriers of the sickle-cell trait are in each generation?

3 How many people in the family were born with the disease of sickle-cell anemia?

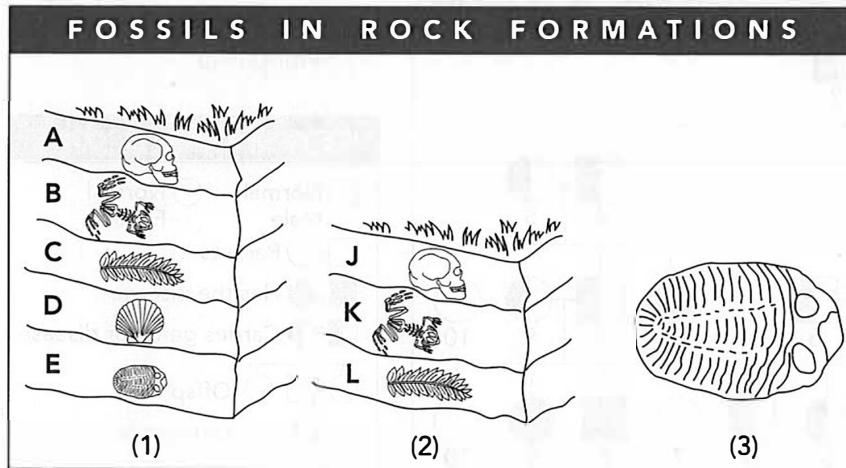
4 From which parent did the second-generation children inherit the sickle-cell gene?

5 In which generation did sickle-cell anemia first actually appear?

Practice

Change Over Time

The diagram below shows two undisturbed deposits of sedimentary rock that contain fossils. It also shows a fossil that might be found in a layer of this rock. Base your answers to questions 1–4 on this diagram.



Content Clues

Sedimentary rock, like sandstone, is formed when sand and silt in water collect in layers on the bottom and harden over millions of years. Three-quarters of the Earth's surface is sedimentary rock.

- 1 In rock formation (1), which layer was deposited first? How do you know?

- 2 Read each statement below. Based on the diagram, which one is accurate?

- 1 Fossils in Layer C are the same age as those in Layer L.
- 2 Fossils in Layer B are the same age as those in Layer J.
- 3 Fossils in Layer A were formed first.
- 4 Fossils in Layer L are the same age as those in Layer E.



Content Clue

The remains of **organisms** trapped in sedimentary rock often form **fossils**.

- 3 Which layers in rock formation (1) match the layers in rock formation (2)?

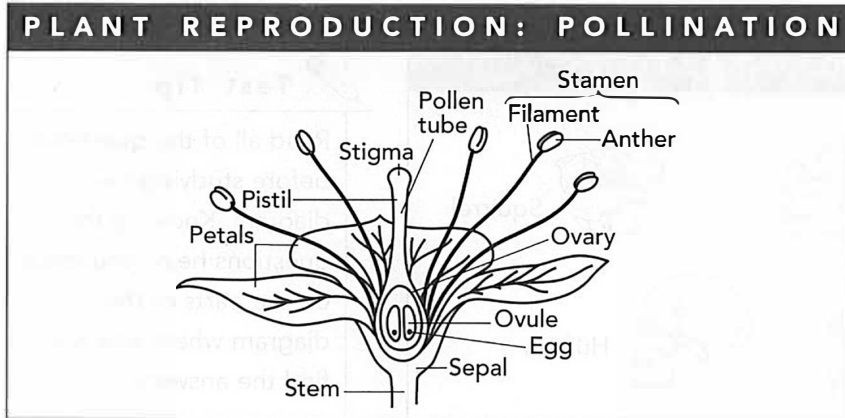
- | | |
|---------------|---------------|
| 1 A, B, and C | 3 C, D, and E |
| 2 B, C, and D | 4 A, C, and D |

- 4 On a separate sheet of paper, explain how the trilobite fossil (3) could be used to determine the age of the rock layers. Keep in mind that scientists know when trilobites lived.

Practice

Reproduction and Development

The diagram below shows the parts of a flower. Study the flower parts; then answer questions 1–6.



1 Which flower part is the male reproductive organ?

- | | |
|----------|----------|
| 1 pistil | 3 stamen |
| 2 seed | 4 ovary |

2 How many stamens does this flower have?

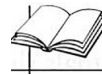
3 Which flower part is the female reproductive organ?

- | | |
|----------|----------|
| 1 pistil | 3 stamen |
| 2 pollen | 4 ovary |

4 Many flowers are pollinated by insects. What role do the flower's petals have in that process?

5 How many ovules does this flower have?

6 Name the parts of the stamen.



Content Clue

Pollen contains the male reproductive cell. It is produced in the anther.



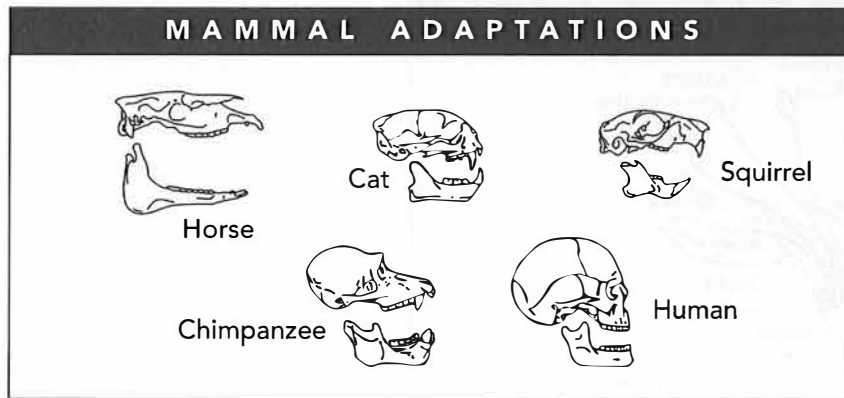
Content Clue

The **ovule** in seed-bearing plants is the container for the **egg**.

Practice

Meeting Daily Needs

The diagram below shows the skulls of several different animals. Study the teeth of these animals to answer questions 1–4 below.



Test Tip

Read all of the questions before studying the diagram. Knowing the questions helps you focus on the parts of the diagram where you will find the answers.

1 Which of the mammals shown have large canine teeth for tearing?

2 How are the teeth in the diagram appropriate for each mammal's diet? Use two specific examples from the diagram as part of your explanation.

3 Based on your answer to question 1 and what you already know, how would you classify humans?

- | | |
|--------------|---------------|
| 1 producers | 3 omnivores |
| 2 herbivores | 4 decomposers |

4 All the mammals in the diagram are

- | | |
|-------------|---------------|
| 1 producers | 3 omnivores |
| 2 consumers | 4 decomposers |



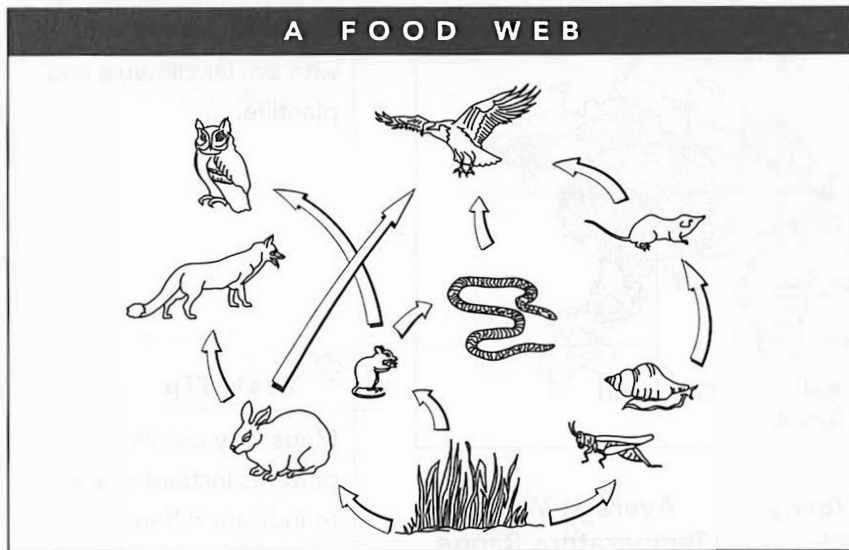
Content Clues

Herbivores eat only plants. **Carnivores** eat only meat. **Omnivores** eat both plants and meat.

Practice

Energy in Ecosystems

A food web shows feeding relationships among the species in a community. Study the food web diagram below, then answer questions 1–3.



Test Tip

The arrows in a **food web** diagram point toward the **consumers**.

1 Which of the following is a food chain within this food web?

- 1 grasshopper → grass → rabbit
- 2 snake → rabbit → hawk
- 3 grass → mouse → owl
- 4 mouse → hawk → snake



Content Clue

A food web is made up of many interconnected **food chains**.

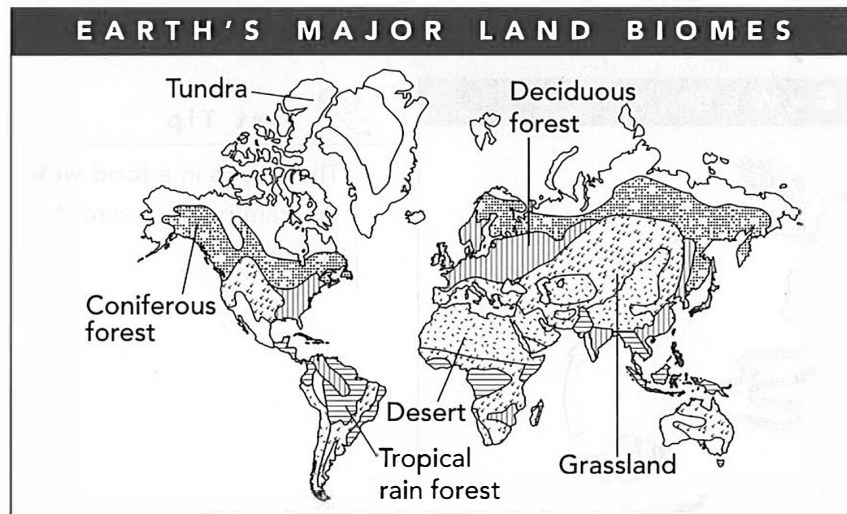
2 In which direction is energy flowing through this food web? Give an example that uses four of the organisms shown.

3 Explain what would happen in this food web if the grass became polluted. Assume that the pollutant does not kill the grass immediately. Which organisms will accumulate the most pollutant in their bodies?

Practice

Humans and the Environment

Study the map and table to answer questions 1–4.



Biome	Average Yearly Rainfall	Average Yearly Temperature Range
Tundra	less than 25 cm	–25°C–4°C
Coniferous Forest	25–75 cm	–10°C–14°C
Deciduous Forest	75–125 cm	6°C–28°C
Tropical Rain Forest	200–450 cm	25°C–28°C
Grassland	25–75 cm	0°C–25°C
Desert	less than 25 cm	24°C–40°C

1 Which type of biome is found in the northeastern United States?

2 Which type of biome is found in northern Africa? How much rain would you expect to fall yearly in this biome?

3 Which biome receives the most yearly rainfall?

4 Which biome has the highest average temperatures?



Content Clue

Biomes are major regions with similar climates and plantlife.



Test Tip

Maps may use line patterns instead of colors to indicate different areas.

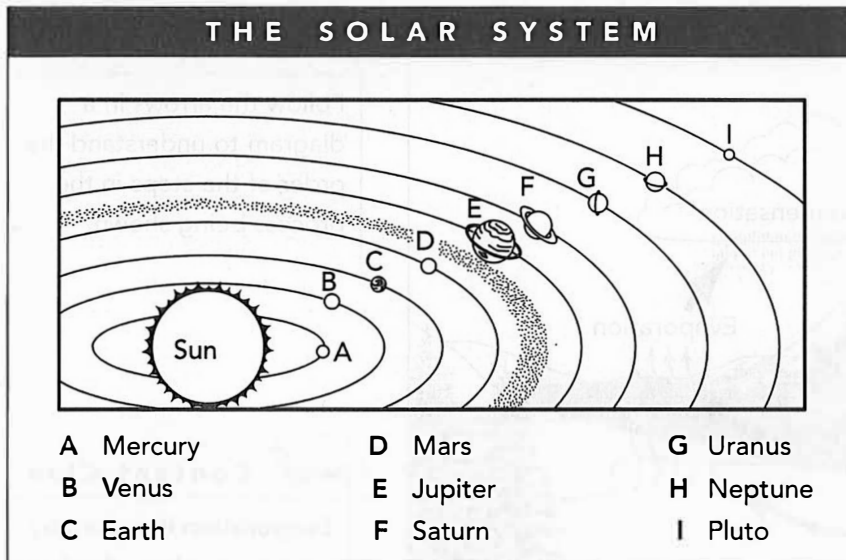
Test Tip

Diagrams are often accompanied by a chart that gives more information.

Practice

The Earth and Space

Base your answers to questions 1–6 on the diagram below, which shows the solar system.



Test Tip

Some diagrams have a *key*, or *legend*. The key is a list of labels set to one side or below the diagram.

1 Which is the largest planet?

- | | |
|---------|-----------|
| 1 Pluto | 3 Jupiter |
| 2 Earth | 4 Sun |

2 What is the star in this solar system called?

- | | |
|-----------|-----------|
| 1 Venus | 3 a comet |
| 2 the Sun | 4 Earth |

3 Which is the sixth planet from the Sun?

4 Which letter in the legend indicates the planet Earth?

5 Between which two planets is the asteroid belt found?

6 Which object contains most of the matter in the solar system?

- | | |
|-----------|-----------|
| 1 Jupiter | 3 Earth |
| 2 Mars | 4 the Sun |



Content Clues

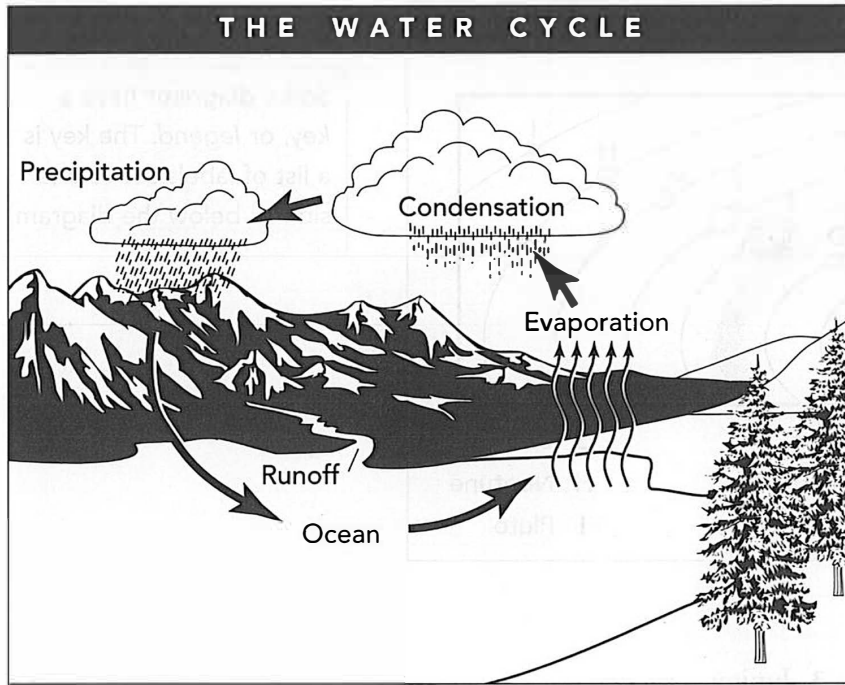
Use this to remember the order of the planets: "**M**y **V**ery **E**nchanting **M**other **J**ust **S**erved **U**s **N**ine **P**izzas." The first letter of each word stands for a planet. For example, the **M** in **M**y stands for Mercury.

The **asteroid** belt contains many thousands of rocklike objects that vary in size.

Practice

The Interaction of Air, Land, and Water

Base your answers to questions 1–4 on the diagram below, which shows the water cycle.



Water moves continuously between the atmosphere and the surface of the Earth.

- 1 As ocean water evaporates, it
- | | |
|-----------------|------------------------------|
| 1 falls as rain | 3 forms a river |
| 2 rises | 4 moves toward the mountains |

- 2 Clouds form by the process of
- | | |
|---------------|----------------|
| 1 evaporation | 3 condensation |
| 2 the ocean | 4 rain |

- 3 What happens in the water cycle after water vapor rises?

- 4 Explain the movement of water in the water cycle.

Test Tip

Follow the arrows in a diagram to understand the order of the steps in the process being shown.



Content Clue

Evaporation is caused by heat energy from the Sun.

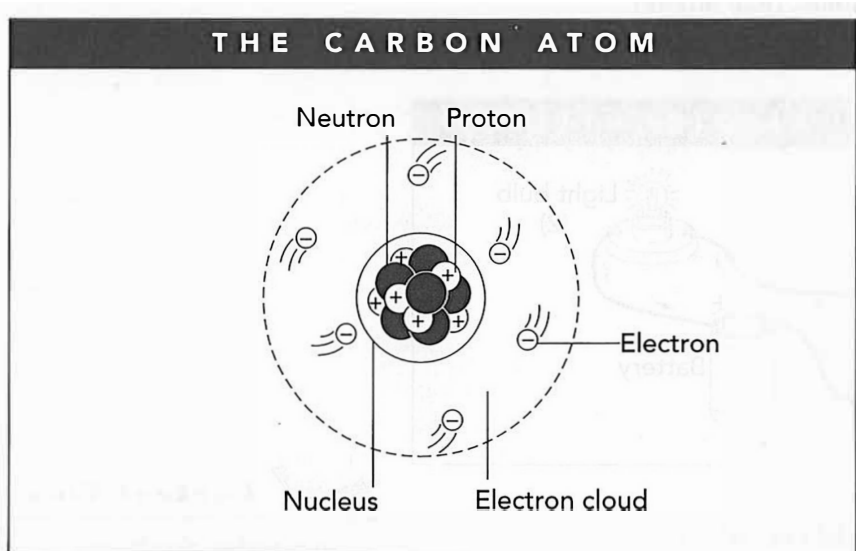
Test Tip

For a "short answer" question, if you are not sure how much to write, write at least one full sentence. Start your sentence by using part of the question in your answer. This is called "echoing the question."

Practice

Physical Properties of Matter

Base your answers to questions 1–5 on the diagram of the carbon atom shown below.



- 1 How many electrons does this atom have?
- 2 What is carbon's atomic number? How can you tell?
- 3 How many other elements have the same atomic number as carbon? Explain your answer.



Content Clue

Atomic number is the number of **protons** in an atom.

- 4 What is the mass number of carbon?
- 5 Compare the number of protons to the number of electrons in this atom. Is this atom neutral? Explain your answer.



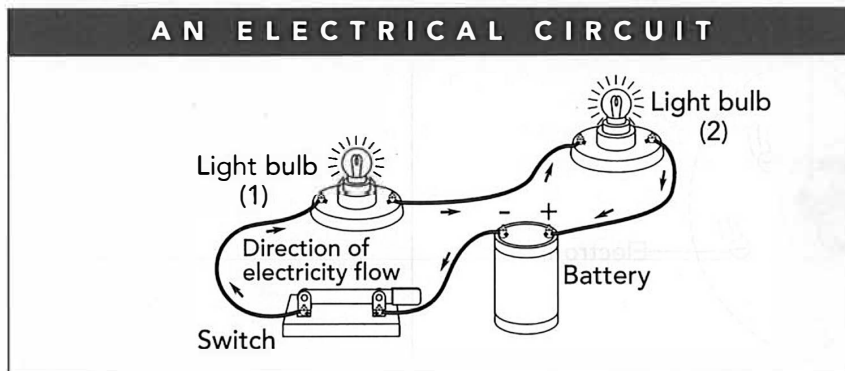
Content Clue

The **atomic mass** number is the total number of protons and **neutrons** in an atom.

Practice

Forms of Energy

The diagram below shows an electrical circuit, which is made up of a battery, a switch, two bulbs, and the wire connecting them. Study the diagram. Then answer questions 1–5 below.



- 1 Is this a series circuit or a parallel circuit?

- 2 If bulb (1) were to go out, bulb (2) would
 - 1 be brighter
 - 2 be dimmer
 - 3 remain the same
 - 4 go out
- 3 What would happen if you added a third bulb to this circuit?
 - 1 All the bulbs would give off less light.
 - 2 The circuit would overload and burn out.
 - 3 The battery would die.
 - 4 The circuit would be one-third brighter.
- 4 In which direction is the current flowing in this circuit?

- 5 What would happen to the bulbs if the switch were opened?



Content Clue

In a **series circuit**, the current flows through the components one after the other. In a **parallel circuit**, the current passes through all the parts at once.



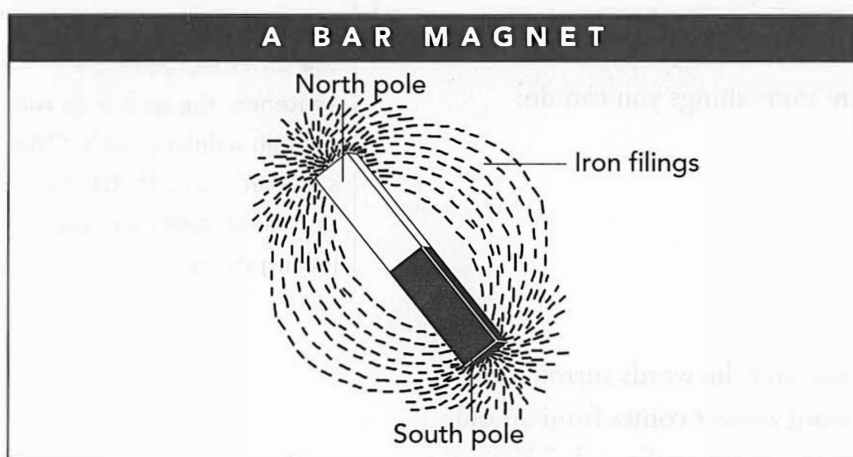
Content Clue

In a simple **circuit** such as this one, **electrical energy** is converted to **heat** and **light energy**.

Practice

Forces and Motion

The diagram below shows a magnet and the magnet's magnetic field. Study the diagram. Then answer questions 1–5.



Content Clue

Iron filings are often scattered around a **magnet** so that the **magnetic field** can be seen. Diagrams of magnetic fields show the pattern produced by the iron filings.

- 1 What do the iron filings around this magnet show?
- 2 A compass needle is a magnet that points to the Earth's North and South poles. How could you use a compass to find what direction you are facing?
- 3 Where near the magnet would you find the most lines of force?
- 4 Where is the magnetic field the strongest?
- 5 How could a wire and this magnet be used to produce an electric current?