Cell Processes and Energy • Adapted Reading and Study

Photosynthesis (pages 86–90)

Sources of Energy (page 87)

Key Concept: Nearly all living things obtain energy either directly or indirectly from the energy of sunlight captured during photosynthesis.

- **Photosynthesis** (foh toh SIN thuh sis) is what happens when cells take in the energy in sunlight and use it to make food.
- Plants make their own food by photosynthesis. Plants get energy directly from sunlight.
- Animals cannot make their own food. Animals get food by eating plants or by eating other animals that eat plants. So, animals get the sun's energy indirectly.

Answer the following questions. Use your textbook and the ideas above.

- 1. Circle the letter of what happens in photosynthesis.
 - a. Animals get food.
 - b. Plants make food using the sun's energy.
 - c. The sun shines on plants.
- 2. Look at the picture of the zebra eating grass. Which gets energy indirectly from the sun, the grass or the zebra?



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The Two Stages of Photosynthesis

(pages 88-90)

Key Concept: During photosynthesis, plants and some other organisms use energy from the sun to convert carbon dioxide and water into oxygen and sugars.

- In the first stage, or part, of photosynthesis, plants take in the energy in sunlight. Remember, plant cells have special organelles called chloroplasts. Chloroplasts absorb the energy in sunlight.
- In the second stage of photosynthesis, plant cells use the captured energy to make food. To do this, plant cells need water and carbon dioxide.
- Plants get water by absorbing it from the soil with their roots. Carbon dioxide gas enters the leaves through small openings on the leaves.
- Inside the chloroplasts, water and carbon dioxide go through a series of chemical reactions. The energy captured from the sun powers these reactions.
- One product of these chemical reactions is sugar. Plant cells use the energy from some of this sugar to carry out cell activities. Some of this sugar is changed to carbohydrates that make up plant structures. Any unused sugar is stored in the plant for later use.
- The other product of photosynthesis is oxygen. Oxygen goes out of the leaf through the same small openings that carbon dioxide entered the leaf.

Answer the following questions. Use your textbook and the ideas above.

3. Is the following sentence true or false? In the first stage of photosynthesis, plant cells make sugar.

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4. Draw a line from each event in photosynthesis to the stage of photosynthesis in which it occurs. Stages of photosynthesis may be used more than once.

| Stage of Photosynthesis | Event in Photosynthesis |
|----------------------------|---------------------------------|
| first stage | a. series of chemical reactions |
| second stage | b. oxygen released |
| | c. energy captured |

5. Fill in the concept map below about photosynthesis.

