Respiration (pages 91–94)

What Is Respiration? (pages 91–93)

Key Concept: **During respiration, cells break down simple food molecules such as sugar and release the energy they contain.**

- **Respiration** is how cells get energy from sugar.
- Respiration takes place in both plant cells and animal cells. Respiration happens all the time because cells always need energy. Respiration has two stages.
- The first stage of respiration takes place in the cytoplasm of the cell. There, sugar from food is broken down into smaller particles. Just a little energy is released.
- The second stage of respiration takes place in the mitochondria. There, the small sugar particles from the cytoplasm are broken down into even smaller particles. These chemical reactions must have oxygen to take place. Oxygen comes from the air you breath.
- A lot of energy is released during the second stage of respiration. Carbon dioxide and water are also made. They are given off as wastes.
- Photosynthesis and respiration are the opposite of each other. Photosynthesis uses carbon dioxide, water, and energy and makes oxygen and sugar. Respiration uses sugar and oxygen and gives off carbon dioxide, water, and energy.
- Together, photosynthesis and respiration form a cycle that keeps the levels of oxygen and carbon dioxide about the same in Earth's atmosphere.

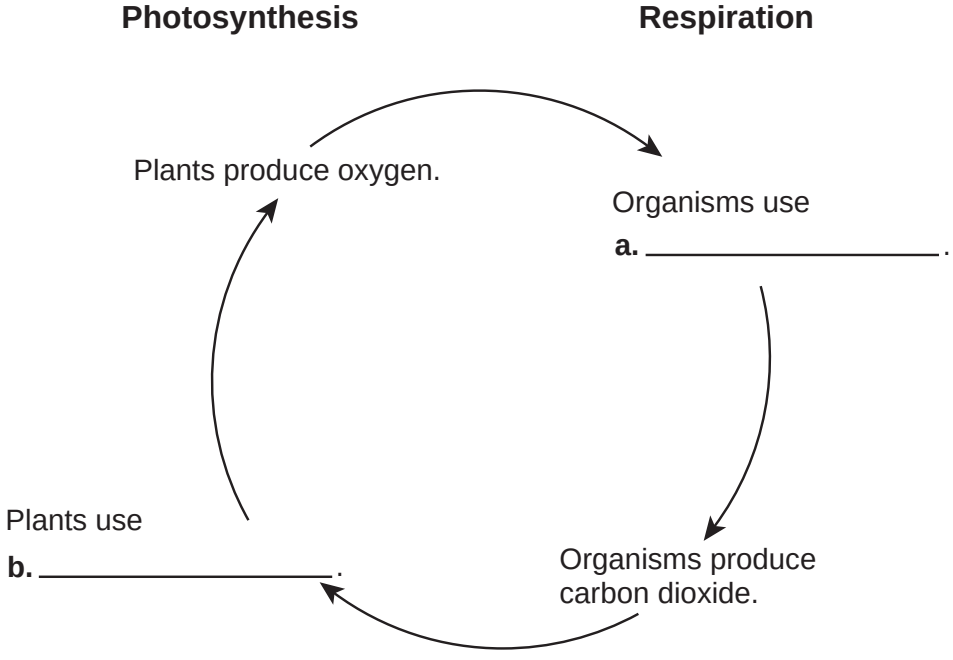
Answer the following questions. Use your textbook and the ideas on page 45.

1. Is the following sentence true or false? Respiration takes place only in animal cells. _____

2. Draw a line from each event in respiration to the stage of respiration in which it takes place. Stages and events of respiration may be used more than once.

Stage of Respiration	Event in Respiration
first stage	**a.** takes place in the mitochondria
second stage	**b.** takes place in the cytoplasm
	c. gives off energy
	d. must have oxygen

3. Fill in the cycle diagram about photosynthesis and respiration.



Fermentation (pages 93–94)

Key Concept: **Fermentation provides energy for cells without using oxygen.**

- **Fermentation** is when the energy from sugar is released without using oxygen.
- Fermentation produces less energy from sugar than respiration does.
- Fermentation takes place in yeast and some other single-celled living things. The products of fermentation are carbon dioxide gas, alcohol, and a little bit of energy.
- Bakers use fermentation to make bread. Yeast breaks down sugar, forming carbon dioxide. Carbon dioxide causes the bread dough to rise. When the dough is baked, the carbon dioxide leaves tiny holes in the bread.

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

4. Circle the letter of the best description of fermentation.

a. releases energy from sugar without oxygen

b. releases more energy than respiration

c. produces sugar and oxygen

5. Read each word in the box. In each sentence below, fill in the correct word or words.

carbon dioxide	energy	yeast

a. Fermentation takes place in some single-celled living things such as _____.

b. Bread dough rises because of the _____ given off during fermentation.