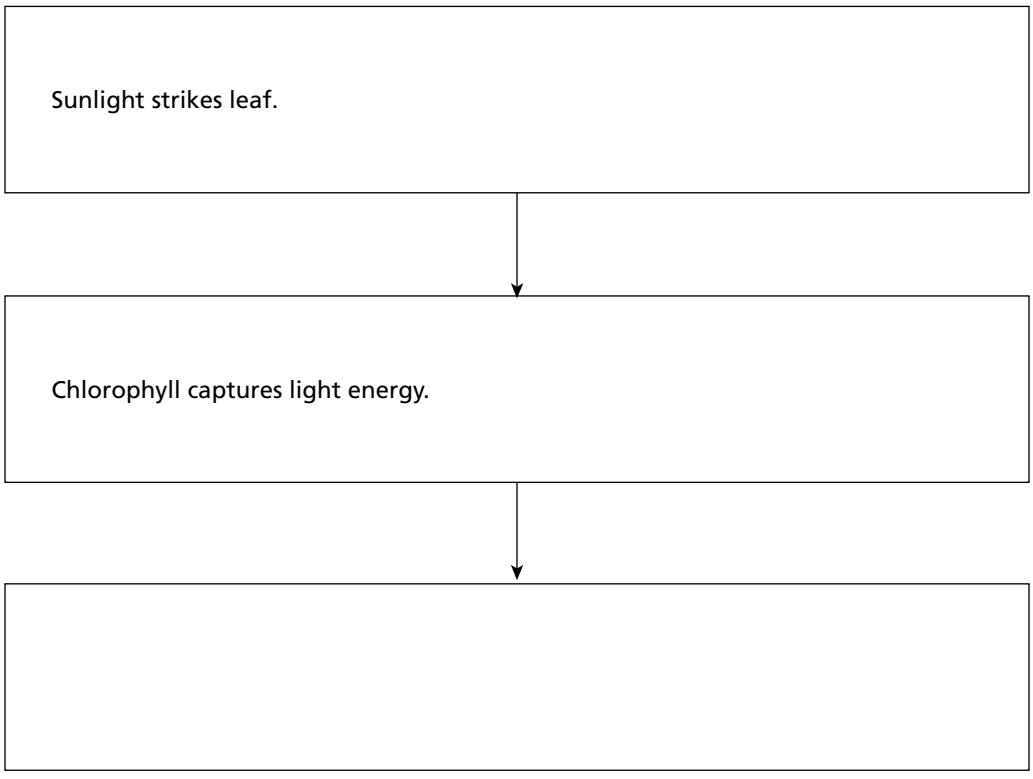
Photosynthesis

This section explains how plants make food by using the energy from sunlight.

Use Target Reading Skills

As you read, create a flowchart that shows the steps in photosynthesis. Put each step in a separate box in the flowchart in the order in which it occurs.

Steps in Photosynthesis



Sources of Energy

1. In the process of photosynthesis, plants use the energy in _____ to make food.

Photosynthesis *(continued)*

2. Complete the following table about how living things use the sun's energy.

How Living Things Use Energy From the Sun		
Living Thing	**Autotroph or Heterotroph?**	**Obtains Energy From the Sun Directly or Indirectly?**
Grass		
Zebra		
Lion		

The Two Stages of Photosynthesis

3. List the two stages in the process of photosynthesis.

a. _____

b. _____

4. The green pigment in chloroplasts, called _____, absorbs light energy from the sun.

5. Is the following sentence true or false? Besides the energy in sunlight, the cell needs water and carbon dioxide to make sugar. _____

6. What are stomata?

_____

_____

7. Circle the letter of each product of photosynthesis.

a. water
b. carbon dioxide
c. oxygen
d. sugars

8. Is the following sentence true or false? Photosynthesis produces the carbon dioxide that most living things need to survive. _____

The Photosynthesis Equation

9. Write the chemical equation for the process of photosynthesis.

_____

10. What word does the arrow in the chemical equation stand for?

_____

11. Circle the letter of each raw material of photosynthesis.

a. carbon dioxide
b. glucose
c. water
d. oxygen

12. Circle the letter of each sentence that is true about the products of photosynthesis.

a. Plant cells use the sugar for food.
b. Some of the sugar is made into other compounds, such as cellulose.
c. Some of the sugar is stored in the plant's cells for later use.
d. Extra sugar molecules pass out of the plant through the stomata.

Name _____ Date _____ Class _____

Photosynthesis

Understanding Main Ideas

Fill in the blanks in the photosynthesis equation below with the names of the missing compounds. Then answer the questions that follow in the spaces provided.

1._____ + **2.**_____ $\xrightarrow{\text{sunlight}}$ **3.**_____ + **4.**_____

5. What are the raw materials of photosynthesis?

_____

6. What are the products of photosynthesis?

_____

7. Why is *sunlight* written above the arrow in the equation, rather than on either side of it?

_____

_____

_____

8. Where does photosynthesis occur?

_____

_____

Building Vocabulary

Fill in the blank to complete each statement.

9. The process by which a cell captures the energy in sunlight and uses it to make food is called _____.

10. _____ are colored chemical compounds that absorb light.

11. The main pigment found in the chloroplasts of plants is _____.

12. _____ are small openings on the undersides of leaves through which carbon dioxide enters a plant.

13. An organism that makes its own food is a(n) _____.

14. A(n) _____ is an organism that cannot make its own food.

Name _____ Date _____ Class _____

Respiration

In this section, you will learn how cells get energy from food.

Use Target Reading Skills

Before you read, write a definition of respiration in the graphic organizer. As you read, revise your definition based on what you learn.

What You Know
1. Definition of respiration:

What You Learned

What Is Respiration?

1. What happens during respiration?

_____

_____

_____

_____

2. Cells store energy in the form of _____.

3. How do cells "withdraw" energy?

_____

_____

4. Is the following sentence true or false? Respiration that takes place inside of cells is the same as breathing air in and out of the lungs.

_____

5. Use the table below to list the raw materials and products of respiration.

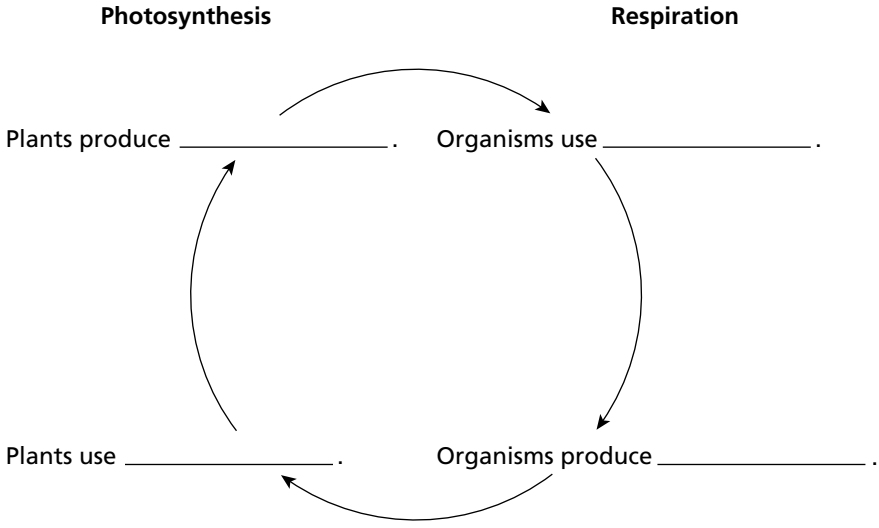
Respiration	
Raw Materials	**Products**

Match the events in respiration with the stages in which they occur. The items in the second column may be used more than once.

	Event in Respiration	**Stage of Process**
____	**6.** Takes place in the mitochondria	**a.** first stage
____	**7.** Takes place in the cytoplasm	**b.** second stage
____	**8.** Oxygen is involved.	**c.** both first and second stages
____	**9.** Energy is released.	
____	**10.** Glucose molecules are broken down.	

Respiration *(continued)*

11. Complete the cycle diagram below, which describes the relationship between photosynthesis and respiration.



Fermentation

12. What is fermentation?

_____

_____

13. Is the following sentence true or false? Fermentation releases more energy than respiration. _____

14. List the two types of fermentation and tell where each takes place.

a. _____

_____

b. _____

_____

Name _____ Date _____ Class _____

Respiration

Understanding Main Ideas

Fill in the blanks in the table below. Then answer the questions that follow in the spaces provided.

Respiration

Raw Materials	Products
1.	**3.**
2.	**4.**
	5.

6. Where in the cell does the first stage of respiration take place?

7. Where in the cell does the second stage of respiration take place?

8. How does fermentation differ from respiration?

9. Which type of fermentation occurs in yeast?

10. Which type of fermentation sometimes occurs in human muscle cells?

Building Vocabulary

If the statement is true, write true. *If it is false, change the underlined word to make it true.*

_____ **11.** The process by which cells "withdraw" energy from glucose is called photosynthesis.

_____ **12.** Respiration provides energy for cells without using oxygen.