



Name

Period

Date

SECTION 12.4 EARLY SINGLE-CELLED ORGANISMS Study Guide

KEY CONCEPT

Single-celled organisms existed 3.8 billion years ago.

VOCABULARY

cyanobacteria endosymbiosis

MAIN IDEA: Microbes have changed the physical and chemical composition of Earth.

- 1. What are two ways that early single-celled organisms changed Earth's surface?

\_\_\_\_\_

- 2. What have scientists inferred from fossil stromatolites?

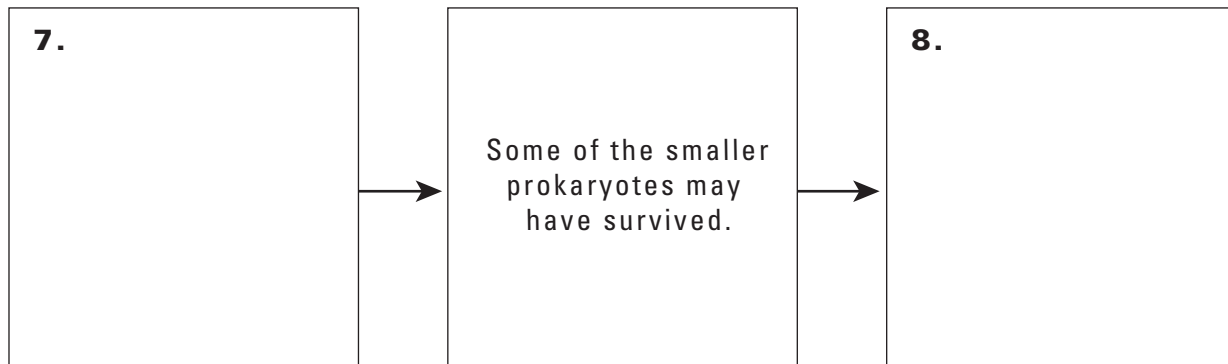
\_\_\_\_\_

MAIN IDEA: Eukaryotic cells may have evolved through endosymbiosis.

Fill in the blanks with the correct terms.

- 3. Although prokaryotes existed as long as 3.5 billion years ago, \_\_\_\_\_ arose about 1.5 billion years ago.
4. Eukaryotes have a \_\_\_\_\_ and membrane-bound organelles.
5. Eukaryotes are \_\_\_\_\_, which means they need oxygen to survive.
6. While the first eukaryotes were made of only one \_\_\_\_\_, later eukaryotes were made of many.

Use the sequence diagram below to summarize the theory of endosymbiosis.



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CHAPTER 12 The History of Life

## STUDY GUIDE, CONTINUED

9. Describe the role that cyanobacteria play in the theory of endosymbiosis.

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**MAIN IDEA:** The evolution of sexual reproduction led to increased diversity.

10. What is the main advantage of asexual reproduction?

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11. Sexual reproduction increases genetic variation in a population. Why might this be beneficial to the population?

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**Vocabulary Check**

12. Bacteria that can carry out photosynthesis are called \_\_\_\_\_ .

13. The mutually beneficial relationship in which one organism lives within the body of another is called \_\_\_\_\_ .

14. The term *endosymbiosis* can be broken down into parts. *Endo-* means “within.” What is another term you have heard that starts with *endo-*?

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15. The term *cyanobacteria* can be broken down into parts. *Cyan-* means “greenish blue,” because cyanobacteria are often blue-green in color. Not too long ago, cyanobacteria were known as blue-green algae. Why do you think they were considered algae?

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