

Living Things ▪ *Guided Reading and Study*

What Is Life? (pp. 34–60)

This section explains the characteristics of living things and what living things need to survive.

Use Target Reading Skills

Look at the section headings and visuals to see what this section is about. Then write what you already know about living things in the graphic organizer below. As you read, write what you learn.

What You Know
1. Living things grow.
2.

What You Learned
1.
2.

The Characteristics of Living Things (pp. 34–35)

1. What is an organism?

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What Is Life? *(continued)*

2. List six characteristics that all living things share.

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____

3. The basic building blocks of all organisms are _____.

4. Is the following sentence true or false? Most cells can be seen only with a microscope, a tool that magnifies small objects. _____

5. Is the following sentence true or false? An organism made of many cells is a unicellular organism. _____

6. Circle the letter of the most abundant chemical in cells.

- a. proteins
- b. carbohydrates
- c. water
- d. nucleic acids

7. Lipids and _____ are the building materials of cells.

8. Is the following sentence true or false? The cells of organisms use energy for growth and repair. _____

9. Circle the letter of a change in an organism's surroundings that causes the organism to react.

- a. growth
- b. response
- c. stimulus
- d. development

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10. Give one example of a stimulus and one example of a response.

Stimulus: _____

Response: _____

11. What is development?

12. All organisms can _____, or produce offspring that are similar to the parents.

Life Comes From Life (pp. 36–37)

13. Is the following sentence true or false? Flies can arise from rotting meat.

14. The idea that living things can come from nonliving sources is called _____.

15. What did Francesco Redi show in his experiment?

16. The factor that a scientist changes in a controlled experiment is the _____.

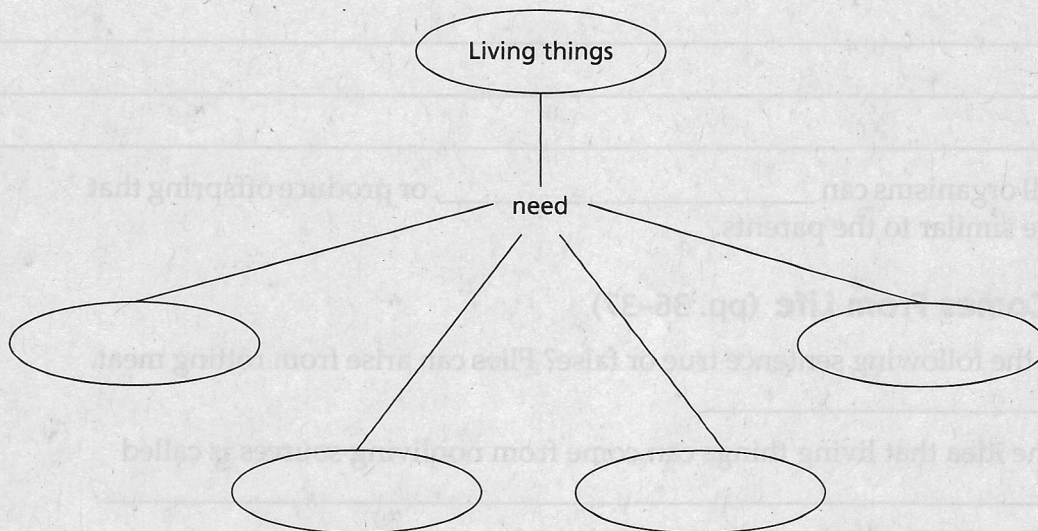
17. Is the following sentence true or false? Louis Pasteur used a controlled experiment to show that bacteria arise from spontaneous generation.

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What Is Life? (*continued*)

The Needs of Living Things (pp. 38–40)

18. Complete this concept map to show what living things need to survive.



19. Is the following sentence true or false? Living things use food as their energy source to carry out their life functions.

20. Organisms that make their own food are called _____. Organisms that cannot make their own food are called _____.

21. Is the following sentence true or false? Living things can live without water for long periods of time. _____

22. Why do living things need water?

23. Is the following sentence true or false? Organisms compete with each other for space to live. _____

24. Why must living things have homeostasis, or stable internal conditions?

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Classifying Organisms (pp. 42–49)

This section tells how scientists divide living things into groups. It also describes how living things are named.

Use Target Reading Skills

Before you read, preview the red headings. In the graphic organizer below, ask a what, why, or how question for each heading. As you read, write the answers to your questions.

Classifying Organisms

Question	Answer
Why do scientists classify?	Scientists classify because...

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Classifying Organisms (continued)

Why Do Scientists Classify? (p. 43)

1. The process of grouping things based on their similarities is _____.
2. Why do biologists use classification?

3. The scientific study of how living things are classified is called _____.
4. Is the following sentence true or false? Once an organism is classified, a scientist knows a lot about that organism. _____

The Naming System of Linnaeus (pp. 44–45)

5. Is the following sentence true or false? Linnaeus placed organisms into groups based on their features that he could observe.

6. In Linnaeus's naming system, called _____, each organism is given a two-part name.
7. Is the following sentence true or false? A species is a group of similar organisms that can mate with each other and produce offspring that can also mate and reproduce. _____
8. *Felis concolor* is the scientific name for mountain lions. To which genus do mountain lions belong? What is the species?
Genus: _____ Species: _____
9. Circle the letter of each sentence that is true about binomial nomenclature.
 - a. A scientific name is written in italics.
 - b. Many scientific names are in Latin because Latin was the language of scientists during Linnaeus's time.
 - c. The genus name begins with a small letter.
 - d. Binomial nomenclature makes it easy for scientists to talk about an organism.

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Levels of Classification (pp. 45–46)

10. List the eight levels of classification used by modern biologists in order from the broadest level to the most specific level.

11. Is the following sentence true or false? The more classification levels that two organisms share, the more characteristics they have in common.

12. Look carefully at the figure *Classifying an Owl* in your textbook. What order does the great horned owl belong to?

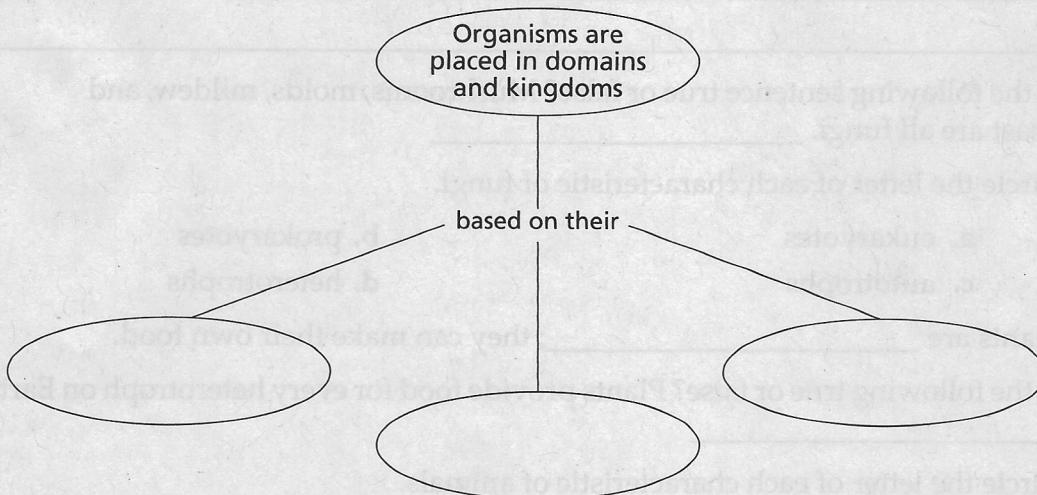
Domains and Kingdoms (p. 47)

13. List the three domains of living things.

a. _____ b. _____

c. _____

14. Complete the concept map to show how organisms are placed into domains and kingdoms.



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Classifying Organisms (continued)

- 15. Circle the letter of each sentence that is true about bacteria.
 - a. Bacteria can be either autotrophic or heterotrophic.
 - b. Bacteria are prokaryotes.
 - c. Bacteria have a cell nucleus.
 - d. Bacteria do not have nucleic acids.
- 16. A dense area in a cell that contains nucleic acids is a(n) _____.
- 17. Is the following sentence true or false? Archaea have a similar chemical makeup to bacteria. _____
- 18. Why are members of this domain called archaea, which comes from the Greek word for "ancient"?

Domain Eukarya (pp. 48–49)

- 19. Is the following sentence true or false? Protists can be either unicellular or multicellular. _____
- 20. How do protists differ from bacteria and archaea?

- 21. Is the following sentence true or false? Mushrooms, molds, mildew, and yeast are all fungi. _____
- 22. Circle the letter of each characteristic of fungi.
 - a. eukaryotes
 - b. prokaryotes
 - c. autotrophs
 - d. heterotrophs
- 23. Plants are _____; they can make their own food.
- 24. Is the following true or false? Plants provide food for every heterotroph on Earth.

- 25. Circle the letter of each characteristic of animals.
 - a. unicellular
 - b. heterotrophs
 - c. eukaryotes
 - d. autotrophs
- 26. Is the following sentence true or false? All animals are multicellular.

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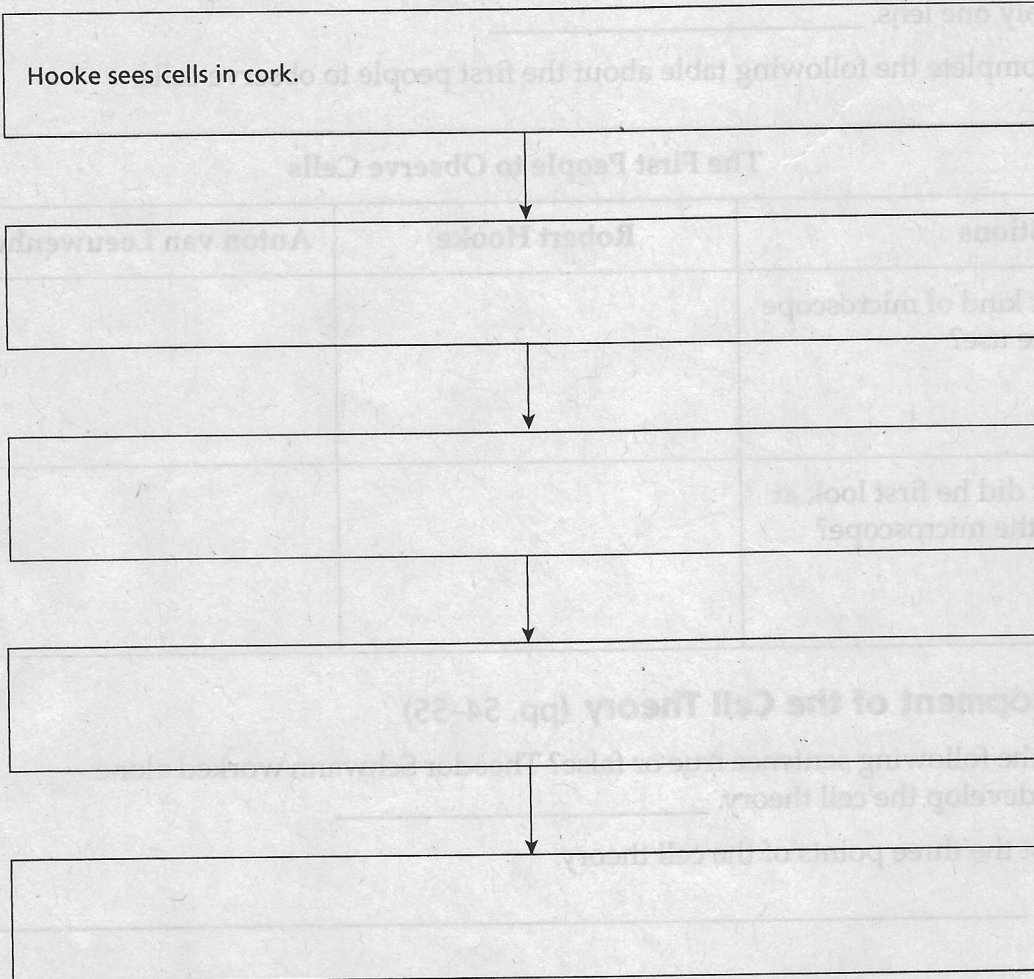
Discovering Cells (pp. 50–57)

This section describes how the invention of the microscope led to the development of a theory on cells. The section also explains how a light microscope works.

Use Target Reading Skills

As you read, construct a flowchart showing how the work of Hooke, Leeuwenhoek, Schleiden, Schwann, and Virchow contributed to scientific understanding of cells.

Discovering Cells



An Overview of Cells (p. 51)

1. What are cells?

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Discovering Cells *(continued)*

First Observations of Cells (pp. 51–53)

2. What did the invention of the microscope make possible?

3. An instrument that makes small objects look larger is a(n) _____.
4. Is the following sentence true or false? A compound microscope has only one lens. _____
5. Complete the following table about the first people to observe cells.

The First People to Observe Cells		
Questions	Robert Hooke	Anton van Leeuwenhoek
What kind of microscope did he use?		
What did he first look at with the microscope?		

Development of the Cell Theory (pp. 54–55)

6. Is the following sentence true or false? Theodor Schwann worked alone to develop the cell theory. _____
7. List the three points of the cell theory.
 - a. _____
 - b. _____
 - c. _____

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Light and Electron Microscopes (pp. 55–57)

8. Is the following sentence true or false? Magnification is the ability to make things look larger than they are. _____
9. How do the lenses of a light microscope make an object look larger?

10. In a convex lens, the _____ of the lens is thicker than the _____.
11. What is resolution?

12. A microscope that uses a beam of electrons to examine a specimen is called a(n) _____.
13. Circle the letter of the microscope that has better resolution.
a. light microscope
b. electron microscope

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Looking Inside Cells (pp. 60–67)

This section describes cell structure and function in plant cells and animal cells, and explains how specialized cells are organized.

Use Target Reading Skills

Before you read, preview the figure Plant and Animal Cells in your textbook. Then write two questions that you have about the illustrations in a graphic organizer like the one below. As you read, answer your questions.

Plant and Animal Cells

<p>Q. How are animal cells different from plant cells?</p>
<p>A.</p>
<p>Q.</p>
<p>A.</p>

Introduction (p. 60)

1. What are organelles?

Enter the Cell (p. 61)

2. The rigid layer of nonliving material that surrounds plant cells is the _____.

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3. Circle the letter of each sentence that is true about the cell wall.
 - a. Cell walls are made of cellulose.
 - b. Plant cells have cell walls.
 - c. Animal cells have cell walls.
 - d. Water and oxygen cannot pass through the cell wall.
4. What does the cell wall do?
5. Where is the cell membrane located in cells that have cell walls?
6. Where is the cell membrane located in cells that do NOT have cell walls?
7. Is the following sentence true or false? The main function of the cell membrane is to control what comes into and out of a cell.

Sail On to the Nucleus (p. 62)

8. Circle the letter of each sentence that is true about the nucleus.
 - a. Materials pass in and out of the nucleus through pores in the nuclear envelope.
 - b. Chromatin contains the instructions that direct the functions of a cell.
 - c. The nucleolus is part of the nuclear envelope.
 - d. Ribosomes are made in the nucleolus.

Organelles in the Cytoplasm (pp. 63–66)

9. Circle the letter of the part of the cell that is the region between the cell membrane and the nucleus.
 - a. organelle
 - b. nucleus
 - c. cytoplasm
 - d. chromatin

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Looking Inside Cells *(continued)*

10. In the table below, describe the function of each organelle in the cytoplasm.

Organelles in Cytoplasm	
Organelle	Function
Mitochondria	
Endoplasmic reticulum	
Ribosomes	
Golgi bodies	
Chloroplasts	
Vacuoles	
Lysosomes	

Specialized Cells (p. 67)

11. In a many-celled organism, cells are specialized to perform different _____.

12. Circle the letter of each sentence that is true about specialized cells.

- a. In many-celled organisms, cells are often organized into tissues.
- b. An organ system is made up of similar tissues.
- c. A tissue is a group of cells that work together to perform a specific function.
- d. A group of organs that work together to perform a major function is called an organ system.