

Chapter 10, Cell Growth and Division (continued)

Section 10-2 Cell Division (pages 244-249)

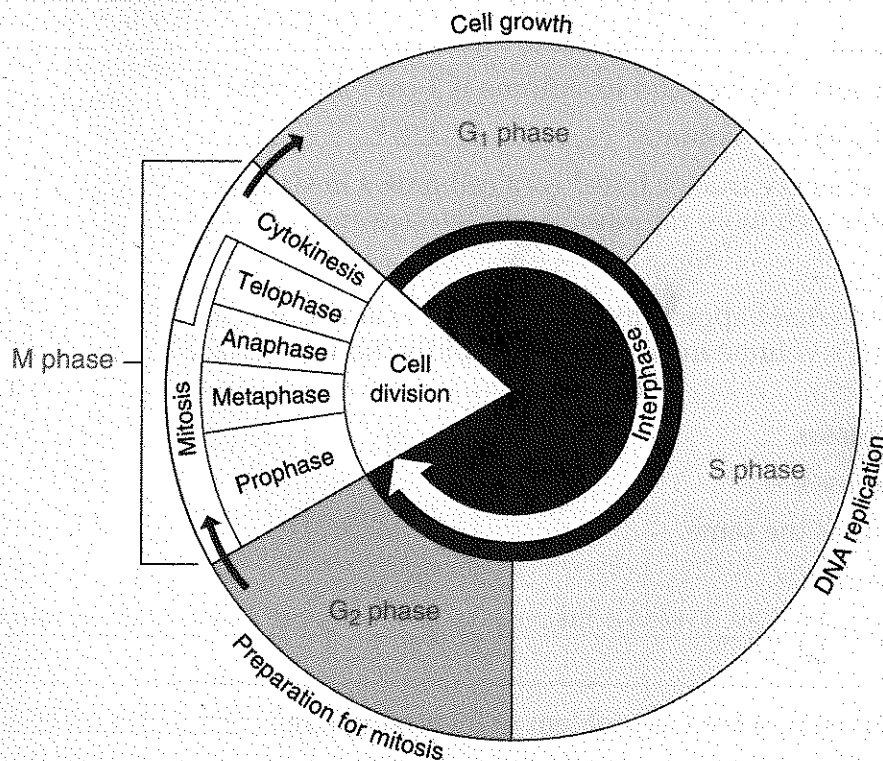
This section describes the main events of the cell cycle. It also explains what happens during mitosis, when cell division occurs.

Chromosomes (page 244)

1. Is the following sentence true or false? Chromosomes are not visible in most cells except during cell division.
true
2. When chromosomes become visible at the beginning of cell division, what does each chromosome consist of? Each chromosome consists of two identical sister chromatids.
3. Each pair of chromatids is attached at an area called the centromere.

The Cell Cycle (page 245)

4. The period of growth in between cell divisions is called interphase.
5. What is the cell cycle? The cell cycle is the series of events that cells go through as they grow and divide.
6. Complete the diagram of the cell cycle by writing the names of each of the four phases.



7. The division of the cell nucleus during the M phase of the cell cycle is called mitosis.

Events of the Cell Cycle (page 245)

8. Interphase is divided into what three phases?
 a. G₁ b. S c. G₂
9. What happens during the G₁ phase? Cells do most of their growing, increasing in size and synthesizing new proteins and organelles.
10. What happens during the S phase? Chromosomes are replicated and the synthesis of DNA molecules takes place. Also, key proteins associated with the chromosomes are synthesized.
11. What happens during the G₂ phase? Many of the organelles and molecules required for cell division are produced.

Mitosis (pages 246–248)

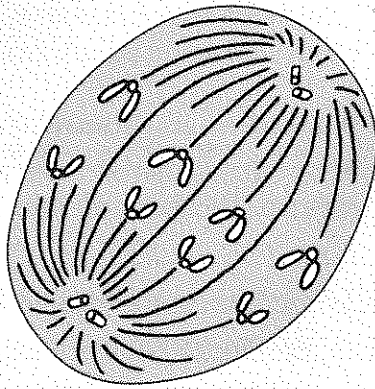
12. What are the four phases of mitosis?
 a. Prophase c. Anaphase
 b. Metaphase d. Telophase
13. Circle the letter of the name for the two tiny structures located in the cytoplasm near the nuclear envelope at the beginning of prophase.
 a. centrioles c. centromeres
 b. spindles d. chromatids
14. What is the spindle? The spindle is a fanlike microtubule structure that helps separate the chromosomes.

Match the description of the event with the phase of mitosis it is in. Each phase may be used more than once.

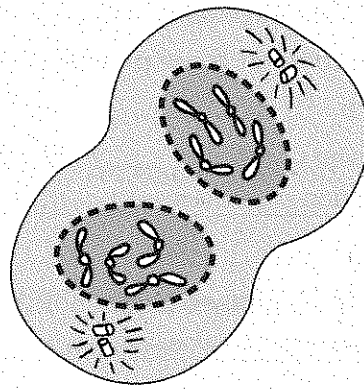
Event	Phase
<u>c</u> 15. The chromosomes move until they form two groups near the poles of the spindle.	a. Prophase
<u>a</u> 16. The chromosomes become visible.	b. Metaphase
<u>d</u> 17. A nuclear envelope re-forms around each cluster of chromosomes.	c. Anaphase
<u>a</u> 18. The centrioles take up positions on opposite sides of the nucleus.	d. Telophase
<u>b</u> 19. The chromosomes line up across the center of the cell.	
<u>d</u> 20. The nucleolus becomes visible in each daughter nucleus.	

Chapter 10, Cell Growth and Division (continued)

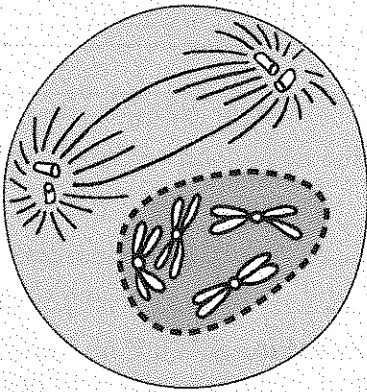
21. Identify each of the four phases of mitosis pictured below.



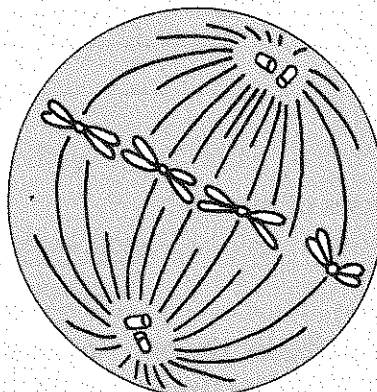
a. Anaphase



c. Telophase



b. Prophase



d. Metaphase

Cytokinesis (page 248)

22. What is cytokinesis? Cytokinesis is the division of the cytoplasm itself.
23. How does cytokinesis occur in most animal cells? The cell membrane is drawn inward until the cytoplasm is pinched into two nearly equal parts.
24. Circle the letter of what forms midway between the divided nucleus during cytokinesis in plant cells.
- a. cell nucleus
 - b. cytoplasm
 - ☒ c. cell plate
 - d. cytoplasmic organelles

Reading Skill Practice

You may sometimes forget the meanings of the vocabulary terms that were introduced earlier in the textbook. When this happens, you can check the meanings of the terms in the Glossary, which you can find at the end of the book just before the Index. Use the Glossary to review the meanings of all the vocabulary terms listed on page 244. Write their definitions on a separate sheet of paper.

The wording of the definitions in the Glossary is often slightly different than how the terms are defined in the flow of the text. Students should write the Glossary definition of each term.