

Assessment

Chapter Test

Cell Growth and Division

Complete each statement by writing the correct term or phrase in the space provided.

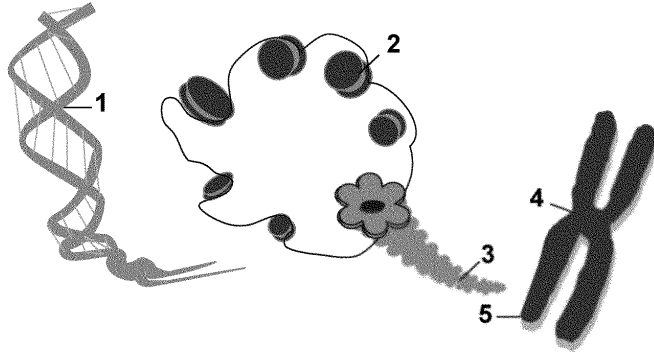
1. A DNA molecule contains thousands of hereditary units called _____ . DNA and its associated proteins form a substance called _____ .
2. Collectively, the time a cell spends in G_1 , S, and G_2 is called _____ .
3. During cell division in a eukaryotic cell, the movement of chromosomes is aided by an organelle called the _____ .
4. Three checkpoints help ensure that a cell does not divide unless it is ready to go on to the next phase of the _____ .
_____ . If conditions are favorable and the cell is healthy, it enters the synthesis phase after passing the _____ checkpoint. The cell only passes the _____ checkpoint if there are no mistakes in the copied DNA. During the _____ checkpoint, the cell makes sure the chromosomes are properly attached to the _____ .

In the space provided, write the letter of the phrase that best answers each question.

- _____ 5. Which of these would *not* be a problem if multicellular organisms grew by cell enlargement rather than cell division?
 - a. The cells would not have the right DNA to make essential proteins.
 - b. The cells would not be able to take in enough nutrients.
 - c. The cells would not be able to excrete wastes quickly enough.
 - d. The cells would not be able to produce enzymes quickly enough.
- _____ 6. Cells in your stomach lining are dividing to repair a tear. What causes the cells to stop dividing?
 - a. contact with food entering the stomach
 - b. contact with cells from the esophageal lining
 - c. contact with other cells that make up the stomach lining
 - d. Both (a) and (c)

Chapter Test *continued*

Questions 7–10 refer to the figures below.



- _____ 7. What is Structure 1?
 a. DNA
 b. RNA
 c. a gene
 d. a histone protein
- _____ 8. Which structure is a histone core?
 a. Structure 2
 b. Structure 3
 c. Structure 4
 d. Structure 5
- _____ 9. What is Structure 5 called?
 a. a centrosome
 b. a centromere
 c. a nucleosome
 d. a nucleosome cord
- _____ 10. The diagram illustrates how DNA is
 a. condensed in prokaryotes.
 b. condensed in eukaryotes.
 c. replicated in prokaryotes.
 d. replicated in eukaryotes.
- _____ 11. If conditions are favorable for cell division during the first gap phase, what will happen next?
 a. The chromosomes will begin to uncoil.
 b. The nuclear envelope will begin to dissolve.
 c. Spindle fibers will attach to the centromeres.
 d. Proteins will stimulate the cell to copy its DNA.
- _____ 12. Which of these have chromosomes in the form of a twisted loop?
 a. eukaryotes
 b. prokaryotes
 c. multicellular organisms
 d. All of the above
- _____ 13. Which phase of the cell cycle occupies most of the cell's life?
 a. G₁
 b. mitosis
 c. G₂
 d. S
- _____ 14. Which type of structure is found only in animal cells?
 a. telomeres
 b. microtubules
 c. centrioles
 d. looped domains

Chapter Test *continued*

- _____ 15. How does cytokinesis differ from mitosis?
- a. In cytokinesis, the nucleus divides in two, whereas in mitosis, the cell enters a resting phase.
 - b. In cytokinesis, the cell enters a resting phase, whereas in mitosis, the nucleus divides in two.
 - c. In cytokinesis, the nucleus divides in two, whereas in mitosis, daughter cells are formed.
 - d. In cytokinesis, daughter cells are formed, whereas in mitosis, the nucleus divides in two.

In the space provided, match each statement with the phase of cellular division it describes. Write *a* if the statement describes cytokinesis in animal cells, write *p* if it describes cytokinesis in plant cells, or write *b* if it describes cytokinesis in both.

- _____ 16. The cytoplasm of the cell divides in half.
- _____ 17. Two genetically identical cells are formed.
- _____ 18. A belt of protein threads pinches the cell in half.
- _____ 19. Vesicles full of cell wall material line up along the midline of the cell.
- _____ 20. A cell plate forms across the cell's middle.
- _____ 21. A cell wall forms on both sides of the cell plate.

Determine the order in which the following stages of mitosis take place. Write the number of each step on the line before each term. On the line after each term, describe the main event or events of this stage.

- _____ 22. metaphase _____

- _____ 23. telophase _____

- _____ 24. prophase _____

- _____ 25. anaphase _____

Chapter Test *continued*

Read each question, and write your answer in the space provided.

26. Describe the three phases of interphase.

27. List four events or circumstances that take place in a multicellular organism, such as a deer, which require cell division.

28. How does cell division in prokaryotes differ from cell division in eukaryotes?

29. What happens if cells no longer respond to signals and controls related to cell growth? Discuss two possibilities. Describe general treatments for each.
