

10.2 The Process of Cell Division

Chromosomes

For Questions 1–5, complete each statement by writing the correct word or words.

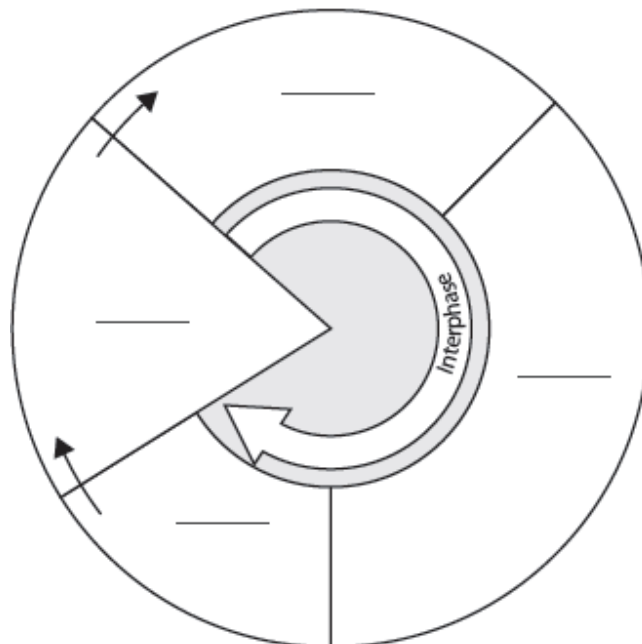
1. Cells carry genetic information in packages of DNA called _____.
2. Most _____ have only one circular strand of DNA.
3. In eukaryotic cells, the genetic structure consists of DNA and a tightly wound protein, which together form a substance called _____.
4. The beadlike structures formed by DNA wrapped around _____ molecules are called nucleosomes.
5. _____ make possible the precise separation of DNA during cell division.

The Cell Cycle

6. What is the name of the type of cell division that occurs in the prokaryotic cell cycle?

7. What happens during interphase?

8. Complete the cell cycle diagram by writing the correct name of a phase on each line.



9. In eukaryotic cells, what happens in the G_1 phase that differs from the G_2 phase?

10. In eukaryotic cells, what are the two main stages of cell division?

Mitosis

11. During prophase, when cell chromosomes become visible, what are the duplicated strands of DNA called? What is the name for the area in which these duplicated strands are joined?

12. What structures are spindle fibers attached to that help pull the paired chromosomes apart?

For Questions 13–16, match the description of the event with the phase of mitosis in which it occurs. Each phase may be used more than once.

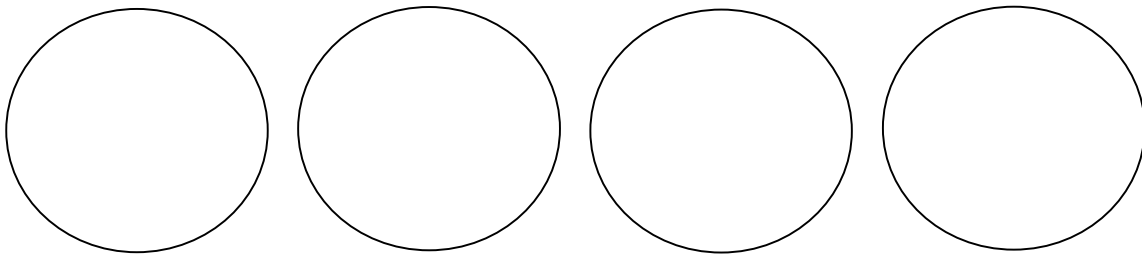
Event

- _____ 13. The chromosomes separate and begin to move to opposite sides of the cell.
- _____ 14. The chromosomes become visible. The centrioles take up positions on opposite sides of the nucleus.
- _____ 15. A nuclear envelope re-forms around each cluster of chromosomes. The nucleolus becomes visible in each daughter nucleus.
- _____ 16. The chromosomes line up across the center of the cell.

Phase of Mitosis

- A. Telophase
B. Prophase
C. Metaphase
D. Anaphase

17. The four circles below represent the cell going through mitosis. Draw four chromosomes as they go through each phase. Label each phase and describe what is happening to the DNA.



Cytokinesis

18. What is cytokinesis?
