

Mitosis and Cytokinesis

1. Is the following sentence true or false? Chromosomes are visible in most cells except during cell division.

False

2. At the beginning of cell division, what does each chromosome consist of?

Each chromosome consists of two identical sister chromatids.

3. _____ is the area where each pair of chromatids is attached.

centromere

4. The period of growth in between cell divisions is called _____.

interphase

5. Write the names of each of the four phases of the cell cycle:

Cell growth = G1 phase

DNA replication = S phase

Preparation for mitosis = G2 phase

Mitosis and Cytokinesis = M phase

6. The division of the nucleus during the M phase of the cell cycle is called _____.

Mitosis

7. What happens during the G1 phase? Cells do most of their growing, increasing in size and synthesizing new proteins and organelles.

8. 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.

9. What happens during the G2 phase? Many of the organelles and molecules required for cell division are produced.

10. The name for the two tiny structures located in the cytoplasm near the nuclear envelope at the beginning of prophase in the blank to the left.

a. centrioles b. spindles c. centromeres d. chromatids

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

12. **c** The chromosomes move until they form two groups near the poles of the spindle.

13. **a** The chromosomes become visible.

14. **d** A nuclear envelope re-forms around each cluster of chromosomes

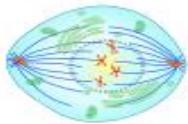
15. **a** The centrioles take up positions on opposite sides of the nucleus.

16. **b** The chromosomes line up across the center of the cell.

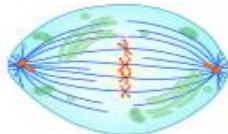
17. **d** The nucleolus becomes visible in each daughter nucleus.

18-21 Label each phase.

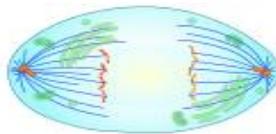
Prophase



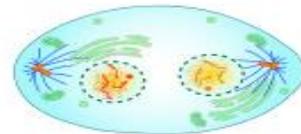
Metaphase



Anaphase



Telophase



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. Write the letter of what forms midway between the divided nucleus during cytokinesis in plant cells in the blank to the left.

a. cell nucleus b. cytoplasm **c. cell plate** d. cytoplasmic organelles