

Name: _____

Date: _____

Period: _____

Cell Division Practice Worksheet

Instructions: Answer the following questions about cell division. For multiple choice, circle the correct letter. For short answer, write your response in the space provided. For labeling, use the diagram to identify the indicated structures.

1. Which of the following is the correct order of the phases of mitosis?

- a) Prophase, Metaphase, Anaphase, Telophase
- b) Metaphase, Prophase, Anaphase, Telophase
- c) Anaphase, Telophase, Prophase, Metaphase
- d) Prophase, Anaphase, Metaphase, Telophase

2. During which phase of the cell cycle does DNA replication occur?

3. Label the following stages of mitosis in the diagram below. Choose from: Prophase, Metaphase, Anaphase, Telophase.

Stage A: _____

Stage B: _____

Stage C: _____

Stage D: _____

4. What is the main difference between mitosis and cytokinesis?

5. Which of the following is true about sister chromatids?
- a) They are identical copies of each other
 - b) They are pulled apart during prophase
 - c) They are formed during telophase
 - d) They are only found in plant cells

6. Describe what happens during interphase. Include the three subphases.

7. The structure that forms across the middle of a plant cell during cytokinesis is called the _____.

8. If a cell has 46 chromosomes before mitosis, how many chromosomes will each daughter cell have after mitosis and cytokinesis? Explain your reasoning.

9. Which phase of mitosis is characterized by chromosomes lining up along the equator of the cell?
- a) Prophase
 - b) Metaphase
 - c) Anaphase
 - d) Telophase

10. Explain the role of spindle fibers during mitosis.

Answer Key

1. **a) Prophase, Metaphase, Anaphase, Telophase**
This is the correct sequence of mitotic phases.
2. **S phase (Synthesis phase) of interphase.**
DNA replication occurs during the S phase, which is part of interphase.
3. **Stage A: Prophase, Stage B: Metaphase, Stage C: Anaphase, Stage D: Telophase**
Prophase: chromosomes condense; Metaphase: chromosomes align at equator; Anaphase: sister chromatids separate; Telophase: nuclear membranes reform.
4. **Mitosis is the division of the nucleus (chromosomes), while cytokinesis is the division of the cytoplasm.**
Mitosis ends with two nuclei; cytokinesis completes cell division by splitting the cell into two daughter cells.
5. **a) They are identical copies of each other**
Sister chromatids are identical copies formed during DNA replication, held together at the centromere.
6. **Interphase consists of three subphases: G1 (cell growth and protein synthesis), S (DNA replication), and G2 (preparation for mitosis).**
During interphase, the cell grows, duplicates its DNA, and prepares for division.
7. **cell plate**
In plant cells, a cell plate forms at the equator and develops into a new cell wall.
8. **Each daughter cell will have 46 chromosomes.**
Mitosis produces two genetically identical daughter cells, each with the same number of chromosomes as the parent cell (46 in humans). The chromosomes are replicated during S phase, then separated equally.
9. **b) Metaphase**
During metaphase, chromosomes line up along the metaphase plate (equator) of the cell.
10. **Spindle fibers attach to the centromeres of chromosomes and help move them during mitosis.**
During prophase, spindle fibers form from centrosomes. In metaphase, they align chromosomes. In anaphase, they pull sister chromatids apart toward opposite poles.