Mitosis Worksheet

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Label the following diagram of mitosis of an animal cell.



2. During which stage of a cell’s cycle do the replicated chromosomes thicken and become visible? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. In animal cells, which structure is thought to produce the spindle fibers that help separate the sister chromatids during anaphase? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Is this structure found in plant cells? \_\_\_\_\_\_\_\_\_\_

5. The drawing below has been made from a photograph showing a cell undergoing mitosis. Based on the drawing, in what stage of mitosis must the cell have been in?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. The drawings A-E show stages of mitosis in a plant cell. These are not in order.

|  |  |
| --- | --- |
| (a) Which of the drawings A -E shows |  |
| (i) interphase \_\_\_\_\_\_\_\_ (**DNA** is replicated) |  |
| (ii) prophase \_\_\_\_\_\_\_\_ (**chromosomes** – 2 **sister chromatids** – shorten) |  |
| (iii) metaphase \_\_\_\_\_\_\_\_ (**sister chromatids** line up) |  |
| (iv) anaphase \_\_\_\_\_\_\_\_ (**sister chromatids** separate) |  |
| (v) telophase \_\_\_\_\_\_\_\_ (new nucleus forms at each end) |  |
| (vi) cytokinesis \_\_\_\_\_\_\_\_ (cell contents divided between 2 **daughter cells**) |  |

8. Using colored pens or pencils, show how 2 chromosomes are passed from mother cell to two daughter cells.



7. This drawing shows various stages of mitosis in a fast growing onion root tip.

 Look at each cell and identify what stage of mitosis it is in. Write the number of each on the line after the name of the phase below.



interphase \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

prophase \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

metaphase \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

anaphase \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

telophase \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Fill in the blank: Some will be used more than once.**

 **E.** Anaphase

 **C.** Telophase

 **D.** Metaphase

 **A.** Prophase

 **K.** Cell Plate

 **I.** Mitosis

 **J.** Spindle fiber

 **H.** Cytokinesis

 **G.** Chromatid

 **F.** Centromere

 **C.** Telophase

 **A.** Prophase

 **E.** Anaphase

 **D.** Metaphase

 **F.** Centromere

 **K.** Cell Plate

 **I.** Mitosis

 **J.** Spindle fiber

 **H.** Cytokinesis

 **G.** Chromatid

 **E.** Anaphase

 **J.** Spindle fiber

 **C.** Telophase

 **B.** Interphase

 **B.** Interphase

 **B.** Interphase

 **B.** Interphase

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_8. What phase are daughter cells in as a result of mitosis?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_9. During what phase of mitosis do centromeres divide and the chromosomes move toward their respective poles?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_10. What is the phase where chromatin condenses to form chromosomes?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_11. What is the name of the structure that connects the two chromatids?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_12. In a chromosome pair connected by a centromere, what is each individual chromosome called?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_13. What are the two parts of cell division? (two answers)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_14. What structure forms in prophase along which the chromosomes move?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_15. Which phase of mitosis is the last phase that chromatids are together?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_16. Which phase of the cell cycle is characterized by a non-dividing cell?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_17. What structure is produced when protein fibers radiate from centrioles?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_18. What forms across the center of a cell near the end of telophase?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_19. The period of cell growth and development between mitotic divisions?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_20. What is the phase where cytokinesis occurs?