

Name \_\_\_\_\_

### Mitosis Reading Guide (pages 222-225)

**Directions**— Answer the following questions in your notes. Keep this list of questions for your records.

1. What is the term for the duplicated and condensed genetic material that resulted from DNA duplication in S phase? Diagram the genetic material as it exists from prophase to metaphase in M phase of the cell cycle. Label and identify the structure that connects the duplicated genetic material.
2. What happens to the nuclear membrane during prophase and why must this occur (NOTE: the text does not directly explain this point, you need to think about it)
3. Diagram a cell in prophase with its mitotic spindle and be sure to include centrioles, spindle fibers, kinetochores, and spindle poles. At what point do spindle fibers connect to the duplicated chromosomes?
4. Diagram a cell in metaphase, be sure to label the metaphase plate. By what means are duplicated chromosomes moved to the “equator” of the cell.
5. Diagram a cell in anaphase, by what means are sister chromatids separated in this stage of the cell cycle. What term is used to describe the genetic material once the sister chromatids have separated?
6. Diagram a cell in telophase, how many nuclei are present in this cell?
7. By the end of mitosis (telophase, the last phase of mitosis) has the cell divided? What **has** divided?
8. Briefly describe the process of cytokinesis in plant cells.