Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Pd: \_\_\_\_\_\_\_

**Mitosis Practice**

1. Draw and label a homologous pair of replicated chromosomes.
2. A human body cell has 46 chromosomes. Use this information to answer the following (4 pts):
How many chromatids in prophase? \_\_\_\_\_\_\_
How many centrioles in anaphase? \_\_\_\_\_\_\_\_
How many total chromosomes in telophase? \_\_\_\_\_\_
How many centromeres in metaphase? \_\_\_\_\_\_\_
3. A fruit fly cell has 8 chromosomes. Use this information to answer the following (4 pts):
How many chromatids in metaphase? \_\_\_\_
How many centromeres in prophase? \_\_\_\_
How many chromosomes in anaphase? \_\_\_\_
How many centrioles in telophase? \_\_\_\_\_\_
4. Do sister chromatids have identical genetic information? How do you know? (3 pts)
5. A cell with 6 chromosomes enters mitosis. Draw a picture of this cell at **anaphase** (4 pts). Label the **centrioles**, **spindle fibers**, and **chromosomes**.
6. Why is cytokinesis not technically a phase of mitosis? (2 pts)
7. Put the following events of mitosis in chronological order from 1-5:
Chromosomes line up in the middle of the cell \_\_\_\_\_
Spindle fibers attach \_\_\_\_\_\_\_\_\_\_\_\_\_
Centromeres divide and sister chromatids separate \_\_\_\_\_\_\_
Nuclear envelope dissolves \_\_\_\_\_\_\_
Nuclear envelope reforms \_\_\_\_\_\_\_\_\_
8. How are sister chromatids different from a homologous pair?
9. Two biologists are arguing about the phases of mitosis. They see the following cell under a microscope:

Brittany thinks this cell in in prophase but Nikki claims it is in metaphase. Who is correct and **how do you know**? (4 pts)
10. Identify the phase during which the following things happen (8 pts):
Centromeres divide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Nuclear envelope dissolves \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Chromosomes line up across the middle of the cell \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Spindle fibers form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Nuclear envelope reforms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Chromatids split apart \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Spindle fibers attach \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
DNA condenses into visible chromosomes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
11. Why are there zero chromatids during anaphase and telophase? (2 pts)
12. Would mitosis work without the spindle fibers? **Why or why not**? (3 pts)