Name: \_\_Key\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

MITOSIS STUDY GUIDE

Part A. The Cell Cycle

1. What are the two main parts of the cell cycle?

\_\_Interphase\_\_\_\_\_\_\_\_ and \_\_\_\_Cell Division \_\_\_\_\_\_\_

1. What are the three parts of interphase and what the cell is doing in each phase?
	1. \_\_\_G1\_\_\_\_ = \_\_cell is growing\_\_\_\_\_\_\_\_
	2. \_\_\_S\_\_\_\_\_\_ = \_\_DNA is replicating\_\_\_\_\_\_
	3. \_\_\_G2\_\_\_\_\_\_ = \_cell is preparing for mitosis\_\_\_\_\_\_\_\_\_
2. What are the two parts of the Cell Division Phase?
	1. \_Mitosis\_\_\_\_\_\_\_\_\_
	2. \_Cytokinesis\_\_\_\_\_\_\_\_\_\_\_
3. What are the four parts of mitosis in order? Figure 1.
	1. \_\_Prophase\_\_\_\_\_\_\_



* 1. \_\_Metaphase\_\_\_\_\_\_\_\_\_\_\_\_
	2. \_\_Anaphase\_\_\_\_\_\_\_\_\_\_\_
	3. \_\_Telophase\_\_\_\_\_\_\_\_\_\_\_\_\_
1. Label what A, B, C, and D represent in Figure 1.
	1. \_G1\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. \_S\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. \_G2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	4. \_Cell Division\_\_\_\_\_\_\_\_\_\_\_
2. Using Figure 1, what are A, B, and C collectively called?

\_\_\_\_\_Interphase\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Using Figure 1, what is happening in D?

\_\_The cell is dividing and splitting into two\_\_\_\_\_\_\_

1. Mitosis is the division of the cell’s \_\_nucleus\_\_\_\_\_\_\_\_\_, while cytokinesis is the division of the cell’s \_\_\_cytoplasm\_\_\_\_\_\_\_\_.

Part B: Mitosis

1. Put the following stages of mitosis in the correct order: telophase, metaphase, prophase, anaphase

\_\_prophase\_\_\_\_\_\_, \_\_\_metaphase\_\_\_\_, \_\_anaphase\_\_\_\_, \_\_\_telophase\_\_\_\_\_\_\_

1. Label each of the following pictures as to the correct phase of mitosis:



\_anaphase \_\_ \_interphase \_ \_metaphase\_ prophase\_\_ \_\_telophase\_\_\_

1. Match the following mitosis vocabulary:
	1. Spindle 7 1. DNA making a copy of itself during the S-phase of interphase.
	2. Chromatin 6 2. The 2 products of the process of cytokinesis.
	3. Chromosomes 9 3. Body cells, such as heart, skin, brain, etc that undergo mitosis
	4. DNA replication 1 4. Two chromosomes attached at the centromere
	5. Diploid number 10 5. Structure joining sister chromatids until they are separated
	6. Somatic cells 3 6. The form of disorganized DNA present in interphase
	7. Centromere 5 7. Structure made of microtubules; pulls chromosomes apart
	8. Centrioles 8 8. Attach to and anchor spindle fibers at the poles of the cell
	9. Sister chromatids 4 9. Visible, separate forms of DNA present during mitosis
	10. Daughter cells 2 10. (2n); having two sets of chromosomes in each cell
	11. Cleavage furrow 12 11. Plate that becomes the future cell wall between plant cells
	12. Cell plate 11 12. Pinching in of animal cells beginning cytokinesis
2. Label the different types of DNA as they exist in interphase and mitosis and their parts: chromatin, doubled chromosome, centromere, sister chromatids, single chromosome

centromere







Sister chromatids

A \_\_\_chromatin\_\_\_\_ B \_doubled chromosome E \_\_\_single chromosome

1. What kinds of cells do mitosis? \_\_\_somatic cells (all body cells except reproductive cells)
2. Why do cells these cells do mitosis? Growth of organism (adding new cells), repairing damaged cells, replacing dead cells
3. Write which phase of mitosis each of the following characteristics of cell division belong with: prophase, metaphase, anaphase or telophase.
	1. Spindle fibers form \_prophase\_\_\_\_\_
	2. Chromosomes line up along the center (equator) of the cell \_metaphase\_\_
	3. Nuclear membrane and nucleolus begin to disappear prophase\_\_\_\_\_\_\_\_\_
	4. Nuclear membrane and nucleolus begin to reappear \_\_\_telophase\_\_\_
	5. Sister chromatids are pulled apart toward the poles \_\_\_anaphase\_\_\_\_\_\_
	6. Chromatin forms distinct doubled chromosomes \_\_\_\_prophase\_\_\_\_\_
	7. Chromosomes that have been separated go back to chromatin \_\_telophase\_\_\_\_\_
	8. Spindle begins to break down \_\_telophase\_\_\_\_\_\_\_\_
	9. Cell membrane begins cleavage furrow in animal cells or cell plate in plant cells \_\_\_\_telophase\_\_\_\_
4. Why do cells not continue to grow larger and larger? Because it becomes difficult to move substances into and out of the cell and move enough of those substances to provide for the cell; it places too much of a demand on the DNA.

17. Write whether the following statements matches with sexual reproduction (A) or asexual reproduction (B).

1. One parent B\_ 5. Meiosis A\_\_ 9. Cloning B\_

2. Genetically identical offspring B\_ 6. Mitosis B\_\_ 10. Binary Fission B\_

3. Sperm and egg (gametes) A\_ 7. Somatic cells B\_ 11. Conjugation A\_

4. Two parents S\_ 8. Genetically different offspring A\_ 12. Genetic recombination A\_