Name \_\_\_\_\_

## AP Biology Chapter 12 - The Cell Cycle

## Guided Reading Assignment Campbell's 10<sup>th</sup> Edition

## Essential Knowledge:

3.A.2 In eukaryotes, heritable information is passed to the next generation via processes that include the cell cycle and mitosis, or meiosis plus fertilization 3.C.2 Biological systems have multiple processes that increase genetic variation

LO 2.6 The student is able to use calculated surface area-to-volume ratios to predict which cell(s) might eliminate wastes or procure nutrients faster by diffusion.

LO 2.7 Students will be able to explain how cell size and shape affect the overall rate of nutrient intake and the rate of waste elimination.

LO 3.7 The student can make predictions about natural phenomena occurring during the cell cycle. LO 3.8 The student can describe the events that occur in the cell cycle.

- 1. Compare and contrast the role of cell division in unicellular and multicellular organisms.
- 2. Define the following terms:
  - a. Genome
  - b. Chromosomes
  - c. Somatic cells
  - d. Gametes
  - e. Chromatin
  - f. Sister chromatids
  - g. Centromere
  - h. Mitosis
  - i. Cytokinesis
  - j. Meiosis
- 3. List the primary activities of each part of the cell cycle:
  - a. Mitotic phase

- b. Interphase
- c. G1 phase
- d. G2 phase
- e. S phase
- 4. Define the following terms: a. Mitotic spindle
  - b. Centrosome
  - c. Microtubule organizing center
  - d. Aster
  - e. Kinetochore
  - f. Label each on the diagram:
- 5. Label the diagrams below:







6. Describe the experiment concerning the movement of microtubules during mitosis and its results.

- 7. Contrast cytokinesis in plant and animal cells.
- 8. Define binary fission and label the diagram:
- 9. Discuss the hypothetical evolution of mitosis.
- 10. What is the cell cycle control system and how do checkpoints play into this?
- 11. What is a cyclin and what does it activate?
- 12. What are Cdk's?
- 13. What does MPF stand for and what does it promote?



14. Label the diagram below illustrating the molecular control of the cell cycle?



- 15. What is a growth factor?
- 16. What is density-dependent inhibition?
- 17. What is anchorage dependence?
- 18. Define the following terms:a. Transformation
  - b. Benign tumor
  - c. Malignant tumor
  - d. metastasis



(b)

(a)