

CH 12 STUDY QUESTIONS, part 1: Chromosomes, the Cell Cycle, and Cell Division (12.1 – 12.2)

1) Compare and contrast the role / purpose of cell division in unicellular and multicellular organisms.

2) Distinguish between **somatic cells** and **gametes**. Which type of cell division produces each cell type?

3) Summarize the events of each phase of the cell cycle:

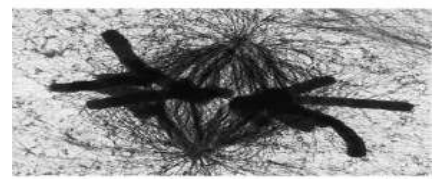
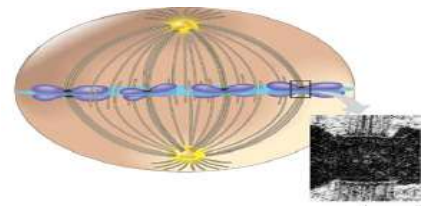
G1 phase	S phase	G2 phase	Mitosis	Cytokinesis

4) List the main events of the 5 phases of mitosis:

PROPHASE	PROMETAPHASE	METAPHASE	ANAPHASE	TELOPHASE

5) DEFINE the following terms and LABEL the diagram:

- Mitotic spindle
- Centrosome
- Microtubule organizing center
- Aster
- Kinetochore



6) Contrast cytokinesis in animal and plant cells.

7) Sketch and label a chromosome.

8) In an animal cell, when would a chromosome consist of 2 identical chromatids?

9) Somatic cells (body cells) in humans contain 46 chromosomes. Using what you know about the definition of a chromosome and the stages of the mitosis answer the following.

- How many **chromosomes** would you expect to find in a human somatic cell during prophase? _____
- How many individual **chromatids** would you expect to find in a human somatic cell during metaphase? _____
- How many individual **chromatids** would you expect to find in a human somatic cell during telophase? _____
- How many **chromosomes** would you expect to find in a human somatic cell during early interphase? _____
- How many **chromosomes** would you expect to find in a human somatic cell during anaphase? _____

10) Prokaryotes divide by a process called _____.

11) List three ways in which cell division in eukaryotes differs from cell division in prokaryotes.

12) **Read the “Inquiry” feature (Figure 12.9) on page 235.** Answer the following: (you may need to use an additional piece of paper & attach).

- Summarize how Gary Borisy & his colleagues determined that kinetochore microtubules were depolymerizing at the kinetochore end.
- What if?...if this experiment had been done on a cell type in which “reeling in” at the poles was the main cause of chromosome movement (as opposed to at the kinetochore end), how would the mark have moved relative to the poles? How would the microtubule lengths have changed?