

SECTION 10-1 REVIEW

CELL GROWTH

VOCABULARY REVIEW Define the following terms.

- 1. replicate _____

- 2. daughter cell _____

- 3. surface area to volume ratio _____

- 4. cell division _____

MULTIPLE CHOICE Write the correct letter in the blank.

- _____ 1. As a cell grows, it
 - a. places more demand on its DNA.
 - b. has trouble moving materials across its membrane.
 - c. Both a and b are correct.
 - d. Neither a or b are correct.
- _____ 2. Which of the following statements is incorrect?
 - a. Cell division reduces the original cell's volume.
 - b. Cell division increases the surface area of the original cell.
 - c. Cell division increases the mass of the original cell.
 - d. Cell division provides each of the daughter cells with its own copy of DNA.
- _____ 3. As a cell becomes larger, its
 - a. volume increases faster than its surface area.
 - b. surface area increases faster than its volume.
 - c. volume increases, but its surface area stays the same.
 - d. surface area stays the same, but its volume increases.
- _____ 4. The process by which a cell divides into two daughter cells is called
 - a. meiosis.
 - b. mitosis.
 - c. anaphase.
 - d. cell division.
- _____ 5. The rate at which materials enter and leave through the cell membrane depends on the cell's
 - a. volume.
 - b. mass.
 - c. weight.
 - d. surface area.

SHORT ANSWER Answer the questions in the space provided.

- Summarize what happens during the process of cell division. (p.243) _____

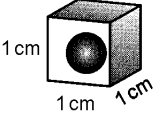
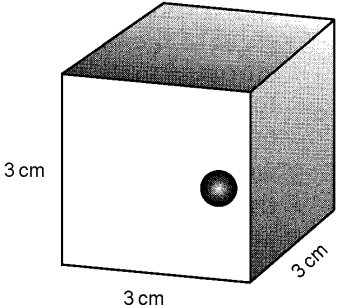
- Explain how a cell's DNA can limit the cell's size. (p.241) _____

- Describe what is meant by each of the following terms: cell volume, cell surface area, ratio of the surface area to volume. (p.242) _____

- Calculating Skills: Complete the following table by filling the missing values about cell size. (p.243)

Cells	Surface Area	Volume	Ratio of Surface Area to Volume
1	42 cm ²	a. _____	7:1
2	78 cm ²	13 cm ³	b. _____
3	c. _____	16 cm ³	5:1

STRUCTURES AND FUNCTIONS Use what you know about surface area to volume to complete the table below.

Cell		
What is the surface area? (length x width x 6)	_____ cm x _____ cm x 6 = _____ cm ²	_____ cm x _____ cm x 6 = _____ cm ²
What is the volume? (length x width x height)	____ cm x ____ cm x ____ cm = _____ cm ³	____ cm x ____ cm x ____ cm = _____ cm ³

- How many of the smaller cells could fit into the volume of one large cell? _____

SECTION 10-2 REVIEW

CELL DIVISION

VOCABULARY REVIEW Circle the term that does not belong in each of the following groups, and briefly explain why it does not belong.

1. G₁ phase, G₂ phase, S phase, telophase _____

2. **anaphase, interphase, metaphase, prophase** _____

3. plant cell, **cytokinesis, spindle**, cell plate _____

5. asexual reproduction, meiosis, bacteria, prokaryote _____

MULTIPLE CHOICE Write the correct letter in the blank.

- _____ 1. Sister chromatids are attached to each other at an area called the
a. centriole. b. spindle. c. centromere. d. chromosome.
- _____ 2. In eukaryotic cells, DNA is copied during a phase of the cell cycle called
a. M phase. b. S phase. c. G₁ phase. d. G₂ phase.
- _____ 3. The cytoplasm of a eukaryotic cell divides by a process called
a. mitosis. b. meiosis. c. replication. d. cytokinesis.
- _____ 4. If a cell has 46 chromosomes, how many chromosomes will each of its daughter cells have after undergoing mitosis?
a. 23 b. 46 c. 92 d. too many to count
- _____ 5. In the cell cycle, the period between divisions is called
a. interphase. b. G₃ phase. c. prophase. d. telophase.
- _____ 6. What phase of mitosis takes the longest period of time?
a. prophase b. metaphase c. anaphase d. telophase

SHORT ANSWER Answer the questions in the space provided.

1. List the five main phases of the cell cycle, and briefly explain what occurs during each phase. (p.245)

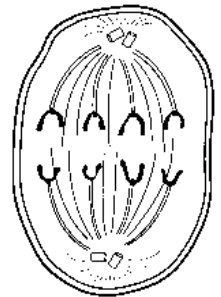
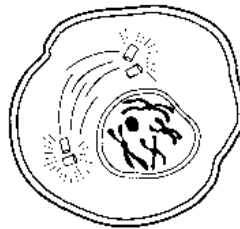
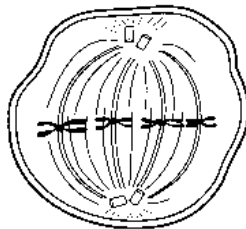
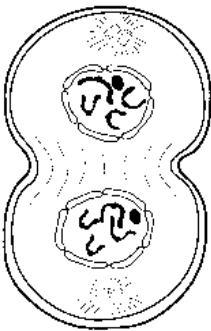
2. List the four phases of mitosis, and briefly explain what occurs during each phase. (pp.246-248)

3. Describe cytokinesis in a plant cell. (p.248)

4. What would happen to a cell and its offspring if the cells did not go through a G₁ phase during their cell cycle?

Explain your answer. (p.245)

STRUCTURES AND FUNCTIONS In the spaces provided below, label each figure with the phase of mitosis that it represents. (pp.246-247)



a. _____ b. _____ c. _____ d. _____

SECTION 10-3 REVIEW

REGULATING THE CELL CYCLE

VOCABULARY REVIEW Define the following terms.

- 1. **cyclin** _____

- 2. **cancer** _____

- 3. **tumor** _____

- 4. **p53 gene** _____

MULTIPLE CHOICE Write the correct letter in the blank.

- _____ 1. The timing of the cell cycle is believed to be controlled by a group of closely related proteins known as
 - a. chromatids.
 - b. cyclins.
 - c. centrioles.
 - d. histones.
- _____ 2. Which of the following explains why normal cells grown in a petri dish tend to stop growing once they have covered the bottom of the dish?
 - a. Most cells grown in a petri dish have defective p53 genes.
 - b. Contact with other cells stops cell growth.
 - c. The petri dish inhibits cell division.
 - d. The cells lack cyclin.
- _____ 3. Proteins that respond to events inside a cell are called
 - a. external regulators.
 - b. mitotic spindle fibers.
 - c. internal regulators.
 - d. cancerous growths.
- _____ 4. Cancer is a disorder in which some cells have lost the ability to control their
 - a. size.
 - b. spindle fibers.
 - c. growth rate.
 - d. surface area.
- _____ 5. What is the name for tumors that form and can cause damage to surrounding tissues?
 - a. cyclins
 - b. cancer
 - c. cytokinesis
 - d. mitosis

SHORT ANSWER Answer the questions in the space provided.

1. Describe how the skin cells near a cut behave. What role does contact with other cells have in the behavior of cells near a cut? (p.250) _____

2. What is the function of cyclin in eukaryotic cells? (p.251) _____

3. Explain the importance of internal regulators as they relate to the different stages of the cell cycle. (p.251)

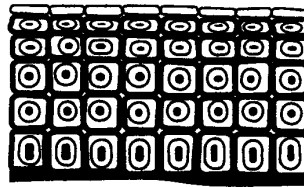
4. How do external regulators respond to events outside the cell? (p.251) _____

5. Complete the flowchart about cancer. (p.252)
 - a. Cancer cells don't respond to signals that regulate _____
 - b. Cancer cells form masses of cells called _____
 - c. Cancer cells break loose and spread throughout the _____

STRUCTURES AND FUNCTIONS Use the diagrams below to answer the following questions. (p252)



A



B

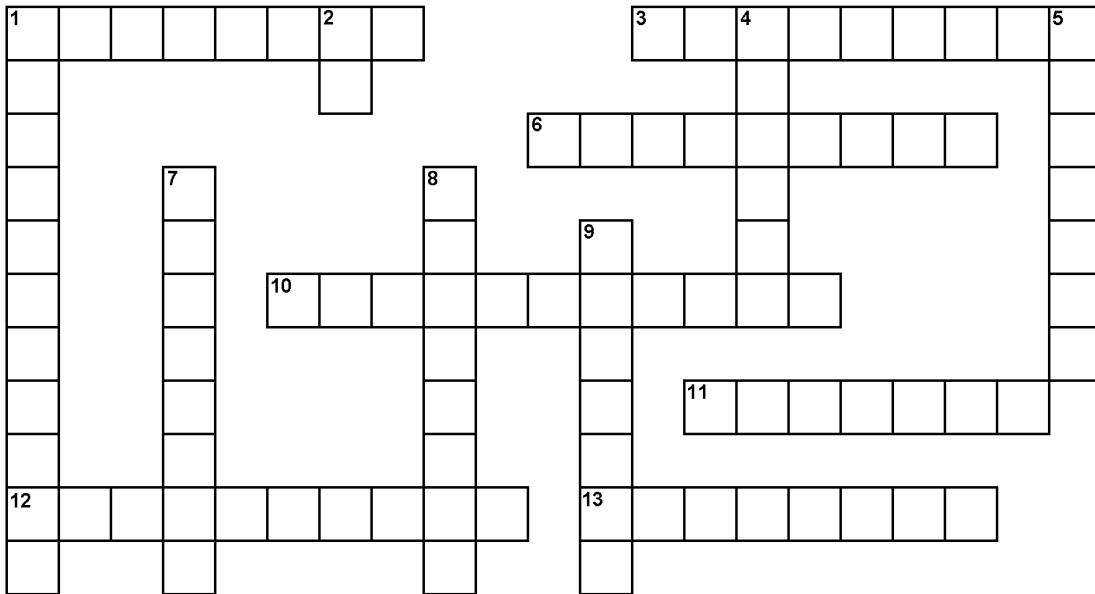
1. Which diagram shows cancer cells? How do you know? _____

2. What can happen if the cancer cells are left untreated? _____

3. Look up the meaning of metastasize. _____

VOCABULARY - CHAPTER 10

The crossword puzzle is a simple way to master some of the more important vocabulary terms in this chapter.



Across

1. cytokinesis in an animal cell produces a _____ furrow
3. the process of producing gametes in a female
6. thin, thread-like form of a chromosome; approximately 2" in length
10. the S phase is the period during which the _____ are copied
11. cell division that reduces the number of chromosomes to one half the original amount of the parent cell
12. time between cell divisions
13. sister chromatids are pulled apart at this time of mitosis

Down

1. the separation of the cytoplasm during cell division
2. a baby cell grows up
4. sex cell
5. the mitotic _____ is the structure that pulls sister chromatids apart
7. proteins that make up 60% of a eukaryote's chromosome
8. the first phase of mitosis when the chromosomes become visible under a light microscope
9. reproduction involving only one parent

The following terms are **not** used in this chapter but are found in this puzzle. Use a reference source and look up their meanings so you can complete this vocabulary puzzle. **histones, gamete, meiosis, oogenesis, and cleavage.**