

Chapter 10 Cell Growth and Division

Section Review 10-1

Reviewing Key Concepts

Completion *On the lines provided, complete the following sentences.*

1. The larger the cell, the more trouble it has moving enough nutrients and wastes across the _____.
2. As the length of a cell increases, its volume increases faster than its _____.
3. To avoid growing too large, cells regulate their size by _____.

Short Answer *On the lines provided, answer the following questions.*

4. What can happen if a cell were to get too large for the amount of DNA it has?

5. What substances must pass through a cell's membrane for the cell to continue to function?

6. How does a cell's ratio of surface area to volume change as the cell grows larger?

7. Why do cells divide?

Reviewing Key Skills

Calculating *Complete the following table.*

Cell	Surface Area	Volume	Ratio of Surface Area to Volume
1	42 cm ²	8. _____	7:1
2	78 cm ²	13 cm ³	9. _____
3	10. _____	16 cm ³	5:1

Chapter 10 Cell Growth and Division **Section Review 10-2**

Reviewing Key Concepts

Short Answer *On the lines provided, answer the following questions.*

- 1. What are the four phases of the cell cycle?

- 2. What happens when the cell copies its chromosomes?

- 3. What happens during cytokinesis?

Classifying *On the line provided, label each event with one of the four phases of mitosis in which it occurs. A phase may be used more than once.*

- _____ 4. The chromosomes line up across the middle of the cell.
- _____ 5. Chromosomes become visible.
- _____ 6. Centrioles separate.
- _____ 7. Sister chromatids separate into individual chromosomes.
- _____ 8. Two new nuclear envelopes form.
- _____ 9. The nucleolus disappears and the nuclear envelope breaks down.
- _____ 10. Each chromosome is connected to a spindle fiber.
- _____ 11. The individual chromosomes move apart.

Reviewing Key Skills

- 12. **Applying Concepts** Explain why the terms *cell division* and *mitosis* should not be used interchangeably.

- 13. **Calculating** If a particular type of cell completes one cell cycle in 75 minutes, and you start with one cell, how many cells would be present after 7.5 hours?

- 14. **Inferring** Many plant cells have more than two complete sets of chromosomes in each cell. Explain how this might occur.

- 15. **Comparing and Contrasting** How does an animal cell differ from a plant cell during cell division?

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Chapter 10 Cell Growth and Division

Section Review 10-3

Reviewing Key Concepts

Short Answer *On the lines provided, answer the following questions.*

1. What is the function of cyclin in eukaryotic cells?

2. Explain the importance of internal regulators.

3. How do external regulators respond to events outside the cell?

4. What causes the abnormal growth of cancer cells?

Reviewing Key Skills

5. **Applying Concepts** Do all cells in the body have the same growth rate? Give examples.

6. **Posing Questions** Cyclin seems to regulate the cell cycle. What questions might scientists have asked following the discovery of cyclin?

7. **Comparing and Contrasting** What are the similarities and the differences between internal and external cell cycle regulators?

8. **Inferring** Describe a situation in the human body that would cause an increase in the rate of cell division of certain cells, followed by a return to the normal rate of division.
