Name _____ Date _____ Class _____

CHAPTER 6 DIRECTED READING

Chromosomes and Cell Reproduction

▶ Section 6-1: Chromosomes

New Cells Are Formed by Cell Division

In the space provided, explain how the terms in each pair differ in meaning.

1. cell division, gamete

2. gene, DNA

3. chromosomes, chromatids

Study the following steps of binary fission in a bacterium. Determine the order in which the steps take place. Write the number of each step in the space provided.

_____ **4.** New cell wall forms around the new membrane.

_____ **5.** New cell membrane is added to a point on the membrane between the two DNA copies.

_____ **6.** The bacterium is pinched into two independent cells.

_____ **7.** The growing cell membrane pushes inward and the cell is constricted in two.

_____ **8.** DNA is copied.

Chromosome Number and Structure Affect Development

Complete each statement by writing the correct term or phrase in the space provided.

9. Chromosomes that are similar in size, shape, and genetic content are called

_____ .

10. A cell, such as a somatic cell, that contains two sets of chromosomes is said to be

_____ .

11. Biologists use the symbol _____ to represent one set of chromosomes.

12. A fertilized egg cell, the first cell of a new individual, is called

a(n) _____ .

Read each question, and write your answer in the space provided.

13. What is the difference between an autosome and a sex chromosome?

_____

_____

_____

14. What is a karyotype?

_____

_____

_____

15. Describe the features of a person with Down syndrome.

_____

_____

_____

16. Describe four types of mutations resulting from the breakage of chromosomes.

_____

_____

_____

_____

▶ Section 6-2: The Cell Cycle

The Cell Cycle Describes the Life of a Eukaryotic Cell

Complete each statement by writing the correct term or phrase in the space provided.

1. The cell cycle is a repeating sequence of growth and _____ during the life of a cell.

2. The first three phases of the cell cycle are collectively called _____ .

In the space provided, write the letter of the description that best matches the term or phrase.

_____ **3.** first growth (G_1) phase

_____ **4.** synthesis (S) phase

_____ **5.** second growth (G_2) phase

_____ **6.** mitosis

_____ **7.** cytokinesis

a. nucleus divides into two nuclei
b. cytoplasm divides
c. preparations are made for the nucleus to divide
d. DNA is copied
e. cell carries out its routine functions

The Cell Cycle Is Carefully Controlled

Complete each statement by writing the correct term or phrase in the space provided.

8. Many _____ control the cell cycle.

9. The checkpoint that makes the key decision of whether the cell will divide is the _____ _____ checkpoint.

10. _____ contain the information necessary to make the proteins that regulate cell growth and division.

Read the question, and write your answer in the space provided.

11. Describe the role of checkpoints in the onset of cancer.

_____

_____

_____

12. What types of environmental influences can induce mutations?

_____

_____

_____

▶ Section 6-3: Mitosis and Cytokinesis

In Mitosis, Chromatids Are Pulled by Microtubules

Read each question, and write your answer in the space provided.

1. What function do spindles perform during mitosis?

_____

_____

_____

_____

2. What function do centrioles perform in animal cell mitosis?

_____

_____

_____

Mitosis and Cytokinesis Divide Cells

In the space provided, write the letter of the description that best matches the term or phrase.

_____ **3.** prophase

_____ **4.** telophase

_____ **5.** metaphase

_____ **6.** anaphase

a. chromosomes move to the center of the cell and line up along the equator

b. a nuclear envelope forms around the chromatids at each pole

c. chromosomes coil up and become visible

d. the two chromatids move toward opposite poles as the spindle fibers attached to them shorten

Study the following steps of mitosis. Determine the order in which the steps take place. Write the number of each step in the space provided.

_____ **7.** prophase

_____ **8.** telophase

_____ **9.** metaphase

_____ **10.** anaphase

Complete each statement by underlining the correct term or phrase in the brackets.

11. Cytokinesis begins [before / after] mitosis.

12. During cytokinesis in animal cells, the cell is pinched in half by [the cell wall / a belt of proteins].