Name _____ Date _____ Class _____

CHAPTER 7 DIRECTED READING

Meiosis and Sexual Reproduction

▶ Section 7-1: Meiosis

Meiosis Forms Haploid Cells

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

1. What is meiosis?

2. Explain the difference between meiosis I and meiosis II.

3. List the stages of meiosis in the order that they occur.

4. What is crossing-over?

In the space provided, write the name of the stage of meiosis that is being described.

_____ **5.** The centromeres divide, and the chromatids, now called chromosomes, move to opposite poles of the cell.

_____ **6.** The homologous chromosomes separate. The chromosomes of each pair are pulled to opposite poles of the cell by the spindle fibers. The chromatids do not separate at their centromeres.

_____ **7.** The chromosomes condense, and the nuclear envelope breaks down. Homologous chromosomes pair all along their length and then cross over.

_____ **8.** After one division of the nucleus, a new spindle forms around each group of chromosomes.

_____ **9.** Individual chromosomes line up along the equator, attached at their centromeres to spindle fibers.

_____ **10.** A nuclear envelope forms around each set of chromosomes. Two cells undergo cytokinesis, forming haploid offspring cells.

_____ **11.** Individual chromosomes gather at each of the two poles. In most organisms, the cytoplasm divides, forming two new cells.

_____ **12.** The pairs of homologous chromosomes are moved by the spindle to the equator of the cell. The homologous chromosomes, each made up of two chromatids, remain together.

Meiosis Contributes to Genetic Variation

Mark each statement below T *if it is true or* F *if it is false.*

_____ **13.** Independent assortment occurs when each pair of chromosomes segregates (separates) independently.

_____ **14.** In meiosis and cytokinesis, one diploid cell divides to produce two haploid cells.

_____ **15.** Crossing-over refers to the movement of chromosomes to opposite parts of the cell.

_____ **16.** Random fertilization refers to the fact that gametes are produced independently.

_____ **17.** Meiosis and the joining of gametes generate genetic variation in offspring.

_____ **18.** Meiosis and the joining of gametes guarantee that the offspring will be identical to the parents.

_____ **19.** At the conclusion of crossing-over, genetic recombination has occurred.

Gamete Formation in Male and Female Animals Involves Meiosis

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

20. What are spermatogenesis and oogenesis?

21. What is the difference between undifferentiated sperm cells and sperm?

22. Why does meiosis produce four sperm cells but only one ovum?

► Section 7-2: Sexual Reproduction

Similarity to Parents Is Determined by the Type of Reproduction

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

1. asexual reproduction, sexual reproduction

2. clone, asexual reproduction

3. binary fission, budding

4. budding, fragmentation

_____

_____

_____

Mark each statement below T ***if it is true or*** F ***if it is false.***

_____ **5.** A disadvantage of sexual reproduction is that the organism uses energy to produce gametes and find mates.

_____ **6.** A disadvantage of asexual reproduction is that offspring may not be able to adapt to a changing environment.

_____ **7.** Asexual reproduction evolved from sexual reproduction.

_____ **8.** Many species of protists form diploid cells in response to stress in the environment.

Eukaryotes Have Three Kinds of Sexual Life Cycles

Mark each statement below T ***if it is true or*** F ***if it is false.***

_____ **9.** Whether the life cycle is haploid, diploid, or alternation of generations depends on the amount of time an organism has haploid cells and the amount of time the organism has diploid cells.

_____ **10.** In the haploid life cycle, the zygote is formed by fertilization.

_____ **11.** In the haploid life cycle, haploid cells occupy the major portion of the life cycle.

_____ **12.** In the diploid life cycle, the adults are haploid.

_____ **13.** In the diploid life cycle, the zygote is formed by fertilization.

_____ **14.** A sporophyte is the haploid stage of a plant.

_____ **15.** A gametophyte produces gametes by mitosis.