Name _____ Class _____ Date _____

SECTION 8-1 REVIEW

# CHROMOSOMES

**VOCABULARY REVIEW** Distinguish between the terms in each of the following pairs of terms.

1. histone, nonhistone protein _____

2. chromatid, centromere _____

3. sex chromosome, autosome _____

4. diploid cell, haploid cell _____

**MULTIPLE CHOICE** Write the correct letter in the blank.

_____ 1. During cell division, the DNA in a eukaryotic cell is tightly packed and coiled into structures called

a. centromeres. b. histones. c. haploids. d. chromosomes.

_____ 2. Between cell divisions, the DNA in a eukaryotic cell is uncoiled and spread out; in this form it is called

a. chromatid. b. chromatin. c. histone. d. nonhistone.

_____ 3. The chromosomes of most prokaryotes consist of proteins and

a. a single circular DNA molecule.
b. a single linear DNA molecule.
c. a pair of linear DNA molecules joined in the center.
d. a pair of homologous, circular DNA molecules.

_____ 4. Humans have 46 chromosomes in all cells except sperm and egg cells. How many of these chromosomes are autosomes?

a. 2 b. 23 c. 44 d. 46

_____ 5. If an organism has a diploid, or $2n$, number of 16, how many chromosomes do its sperm cells or eggs cells contain?

a. 8 b. 16 c. 32 d. 64





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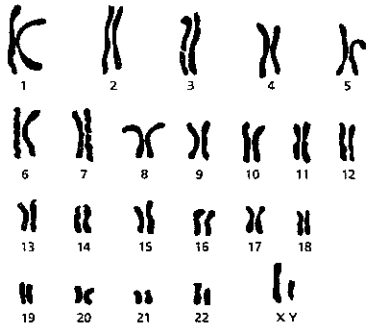
**SHORT ANSWER** Answer the questions in the space provided.

1. What role do proteins play in enabling the enormous amount of DNA in a eukaryotic cell to fit into the nucleus, and what are those proteins called? _____

2. In what ways are homologous chromosomes similar? _____

3. What is the picture below called, and how is it used to determine the sex of a person?




_____

_____

_____

_____

_____

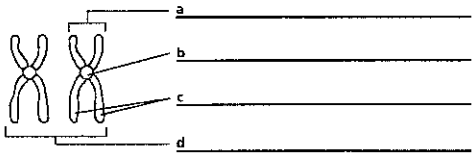
4. **Critical Thinking** Some relatively simple eukaryotes, such as the adder's tongue fern, may have many more chromosomes than a more complex eukaryote, such as a mammal. What might this suggest about the size and organization of chromosomes in different species?

_____

_____

_____

**STRUCTURES AND FUNCTIONS** The diagram below shows structures isolated from the nucleus of a dividing eukaryotic cell. Label each structure or pair of structures in the space provided.



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CHAPTER 8 ACTIVE READING WORKSHEETS

# CELL REPRODUCTION

## Section 8-1: Chromosomes

**Read the passage below, which covers topics from your textbook. Answer the questions that follow.**

Human and animal chromosomes are categorized as either sex chromosomes or autosomes. **Sex chromosomes** are chromosomes that determine the sex of an organism, and they may also carry genes for other characteristics. In humans, sex chromosomes are either X or Y. Females normally have two X chromosomes, and males normally have an X and a Y chromosome. All of the other chromosomes in an organism are called **autosomes.** Two of the 46 human chromosomes are sex chromosomes, while the remaining 44 chromosomes are autosomes.

Every cell of an organism produced by sexual reproduction has two copies of each autosome. The organism receives one copy of each autosome from each parent. The two copies of each autosome are called **homologous chromosomes,** or homologues. Homologous chromosomes are the same size and shape and carry genes for the same traits.

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

**SKILL:** Recognizing Similarities and Differences

1. What are the similarities and differences of the sex chromosomes of a male and a female?

_____

_____

2. How are homologues alike?

_____

_____

**Circle the letter of the word that best completes the analogy.**

3. In humans, sex chromosomes are to 2 as autosomes are to

   **a.** 46.
   **b.** 22.
   **c.** 44.
   **d.** 18.