

## Section 12–2 Chromosomes and DNA Replication (pages 295–299)

*This section describes how DNA is packaged to form chromosomes. It also tells how the cell duplicates its DNA before cell division.*

### DNA and Chromosomes (pages 295–296)

1. Circle the letter of the location of DNA in prokaryotic cells.  
a. nucleus    b. mitochondria    c. cytoplasm    d. vacuole
2. Is the following sentence true or false? Most prokaryotes contain a single, circular DNA molecule. \_\_\_\_\_
3. Eukaryotic DNA is generally located in the cell \_\_\_\_\_ in the form of a number of chromosomes.
4. Is the following sentence true or false? All organisms have the same number of chromosomes. \_\_\_\_\_
5. Is the following sentence true or false? The *E. coli* chromosome is longer than the diameter of an individual *E. coli* bacterium. \_\_\_\_\_
6. Circle the letter of each sentence that is true about chromosome structure.
  - a. The DNA in eukaryotic cells is very loosely packed.
  - b. Prokaryotic cells contain more DNA than eukaryotic cells.
  - c. A human cell contains more than 1 meter of DNA.
  - d. The DNA of the smallest human chromosome is nearly 10 times as long as many bacterial chromosomes.
7. Eukaryotic chromosomes contain both DNA and protein, packed together to form \_\_\_\_\_.
8. What are histones? \_\_\_\_\_  
\_\_\_\_\_
9. Why are individual chromosomes visible only during mitosis? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
10. Is the following sentence true or false? Changes in chromatin structure and histone-DNA binding are associated with changes in gene activity. \_\_\_\_\_
11. What do nucleosomes do? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_