

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



TEKS FOCUS: 2C Analyze data; 4B Synthesis of new molecules; 6B Replication;
TEKS SUPPORT: 2D Communicate valid conclusions

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)

- Circle the letter of the location of DNA in prokaryotic cells.
a. nucleus b. mitochondria c. cytoplasm d. vacuole
- Is the following sentence true or false? Most prokaryotes contain a single, circular DNA molecule. _____
- Eukaryotic DNA is generally located in the cell _____ in the form of a number of chromosomes.
- Is the following sentence true or false? All organisms have the same number of chromosomes. _____
- Is the following sentence true or false? The *E. coli* chromosome is longer than the diameter of an individual *E. coli* bacterium. _____
- Circle the letter of each sentence that is true about chromosome structure.
 - The DNA in eukaryotic cells is very loosely packed.
 - Prokaryotic cells contain more DNA than eukaryotic cells.
 - A human cell contains more than 1 meter of DNA.
 - The DNA of the smallest human chromosome is nearly 10 times as long as many bacterial chromosomes.
- Eukaryotic chromosomes contain both DNA and protein, packed together to form _____.
- What are histones? _____

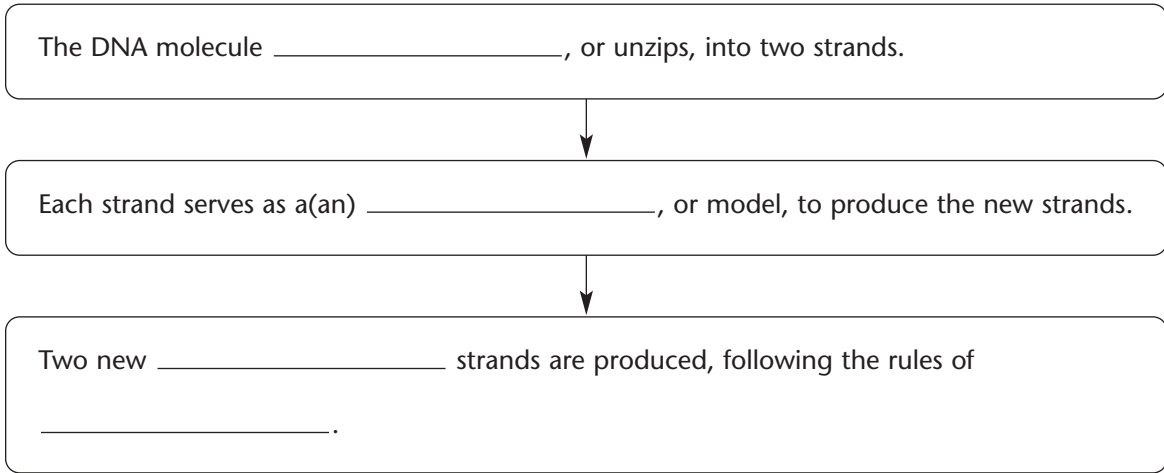
- Why are individual chromosomes visible only during mitosis? _____

- Is the following sentence true or false? Changes in chromatin structure and histone-DNA binding are associated with changes in gene activity. _____
- What do nucleosomes do? _____

DNA Replication (pages 297–299)

12. What occurs during the process of replication? _____

13. Complete the flowchart to describe the process of DNA replication.



14. Is the following sentence true or false? In eukaryotic chromosomes, DNA replication begins at a single point in the chromosome and proceeds in two directions.

15. The sites where DNA replication and separation occur are called _____.

16. What occurs when a molecule of DNA is “unzipped”? _____

17. What is the complementary strand of bases for a strand with the bases TACGTT?

18. Is the following sentence true or false? Each DNA molecule resulting from replication has one original strand and one new strand. _____

19. List two major roles of DNA polymerase in the process of DNA replication.

a. _____

b. _____

Reading Skill Practice

The illustrations in textbooks can help you better understand a difficult concept. Look at Figure 12–10 on page 297. List in order, beginning with DNA, the levels of organization of eukaryotic DNA to form chromosomes. Do your work on a separate sheet of paper.