

Chapter Review

USING KEY TERMS

1. Use the following terms in the same sentence: *mutation* and *mutagen*.

The statements below are false. For each statement, replace the underlined term to make a true statement.

- _____ 2. The information in DNA is coded in the order of amino acids along one side of the DNA molecule.
- _____ 3. The “factory” that assembles proteins based on the DNA code is called a gene.

UNDERSTANDING KEY IDEAS

Multiple Choice

- _____ 4. James Watson and Francis Crick
- took X-ray pictures of DNA.
 - discovered that genes are in chromosomes.
 - bred pea plants to study heredity.
 - made models to figure out DNA’s shape.
- _____ 5. In a DNA molecule, which of the following bases pair together?
- adenine and cytosine
 - thymine and adenine
 - thymine and guanine
 - cytosine and thymine
- _____ 6. A gene can be all of the following EXCEPT
- a set of instructions for a trait.
 - a complete chromosome.
 - instructions for making a protein.
 - a portion of a strand of DNA.
- _____ 7. Which of the following statements about DNA is NOT true?
- DNA is found in all organisms.
 - DNA is made up of five subunits.
 - DNA has a structure like a twisted ladder.
 - Mistakes can be made when DNA is copied.

Chapter Review *continued*

- _____ **8.** Within the cell, where are proteins assembled?
- a.** the cytoplasm
 - b.** the nucleus
 - c.** the amino acids
 - d.** the chromosomes
- _____ **9.** Changes in the type or order of the bases in DNA are called
- a.** nucleotides.
 - b.** mutations.
 - c.** RNA.
 - d.** genes.

Short Answer

- 10.** What would be the complementary strand of DNA for the following sequence of bases?

C T T A G G C T T A C C A

- _____
- 11.** If the DNA sequence TGAGCCATGA is changed to TGAGCACATGA, what kind of mutation has occurred?

- _____
- 12.** Explain how the DNA in genes relates to the traits of an organism.

- _____
- 13.** Why is DNA frequently found associated with proteins inside of cells?

- _____
- 14.** What is the difference between DNA and RNA?

Chapter Review *continued*

CRITICAL THINKING

15. Concept Mapping Use the following terms to create a concept map: *bases, adenine, thymine, nucleotides, guanine, DNA, and cytosine.*

Chapter Review *continued*

16. Analyzing Processes Draw and label a picture that explains how DNA is copied.

17. Analyzing Processes Draw and label a picture that explains how proteins are made.

Chapter Review *continued*

18. Applying Concepts The following DNA sequence codes for how many amino acids?

T C A G C C A C C T A T G G A

19. Making Inferences Why does the government make laws about the use of chemicals that are known to be mutagens?

INTERPRETING GRAPHICS

The illustration below shows the process of replication of a DNA strand. Use this illustration to answer the questions that follow.



_____ **20.** Which strands are part of the original molecule?

- a. A and B
- b. A and C
- c. A and D
- d. None of the above

_____ **21.** Which strands are new?

- a. A and B
- b. B and C
- c. C and D
- d. None of the above

_____ **22.** Which strands are complementary?

- a. A and C
- b. B and C
- c. All of the strands
- d. None of the strands