

## Assessment

# Chapter Test

---

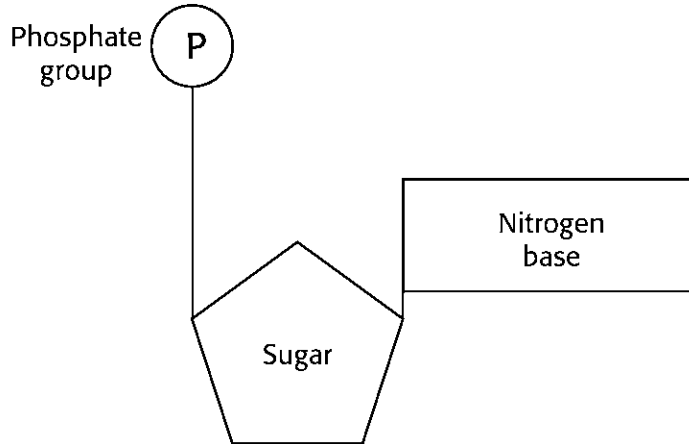
## DNA, RNA, and Proteins

In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

- \_\_\_\_\_ 1. Avery demonstrated that treating bacteria with DNA-destroying enzymes
- a. also inactivated proteins in the cells.
  - b. caused the bacteria to undergo transformation.
  - c. prevented harmless bacteria from transforming into deadly bacteria.
  - d. prevented DNA from transforming into protein molecules.
- \_\_\_\_\_ 2. The scientists credited with establishing the structure of DNA are
- a. Avery and Chargaff.
  - b. Hershey and Chase.
  - c. Mendel and Griffith.
  - d. Watson and Crick.
- \_\_\_\_\_ 3. The enzyme responsible for unwinding the DNA double helix is called DNA
- a. polymerase.
  - b. amylase.
  - c. anhydrase.
  - d. helicase.
- \_\_\_\_\_ 4. The process by which DNA polymerase is able to correct mismatched nucleotides is called
- a. proofreading.
  - b. replication.
  - c. transformation.
  - d. unwinding.
- \_\_\_\_\_ 5. The combined efforts of approximately 100 replication forks make it possible to replicate an entire human chromosome in about
- a. 18 hours.
  - b. 8 days.
  - c. 8 minutes.
  - d. 8 hours.
- \_\_\_\_\_ 6. The function of tRNA is to
- a. synthesize DNA.
  - b. synthesize mRNA.
  - c. form ribosomes.
  - d. transfer amino acids to ribosomes.
- \_\_\_\_\_ 7. The function of mRNA is to
- a. synthesize DNA.
  - b. carry information from genes to ribosomes.
  - c. form ribosomes.
  - d. transfer amino acids to ribosomes.

**Chapter Test *continued***

Questions 8 through 10 refer to the figure below.



- \_\_\_\_\_ 8. The molecule shown above is called a(n)  
a. amino acid. c. polysaccharide.  
b. nucleotide. d. pyrimidine.
- \_\_\_\_\_ 9. In DNA, four forms of this molecule each have a different type of  
a. phosphate group. c. nitrogenous base.  
b. sugar. d. hydrogen bond.
- \_\_\_\_\_ 10. The part of the molecule for which deoxyribonucleic acid is named  
is the  
a. phosphate group. c. nitrogenous base.  
b. sugar. d. None of the above

**Complete each statement by writing the correct term or phrase in the space provided.**

11. In Griffith's experiments, R bacteria were mixed with heat-killed S bacteria, and as a result, the harmless R bacteria became disease-causing bacteria. This changing of the genotype of the organisms is called \_\_\_\_\_.
12. The process by which DNA copies itself is called DNA \_\_\_\_\_.
13. During DNA replication, the enzyme \_\_\_\_\_  
\_\_\_\_\_ adds complementary nucleotides to each DNA strand, forming two double helices.

Chapter Test *continued*

---

**Complete each statement by writing the correct term or phrase in the space provided.**

14. Wilkins and Franklin developed photographs of the DNA molecule using a method called X-ray \_\_\_\_\_.
15. Watson and Crick determined that DNA molecules have the shape of a(n) \_\_\_\_\_.
16. The circular DNA molecules in prokaryotes usually contain \_\_\_\_\_ replication forks during replication, while linear eukaryotic DNA contains many more.
17. Chargaff's observations established \_\_\_\_\_ rules, which describe the specific pairing between bases on DNA strands.
18. The strict arrangement of base-pairings in the double helix results in two strands of nucleotides that are \_\_\_\_\_ to each other.
19. Errors made during the replication process are corrected by DNA polymerase's ability to \_\_\_\_\_ the new DNA strand.
20. Nucleotide sequences of tRNA that are complementary to codons on mRNA are called \_\_\_\_\_.
21. Nucleotides that make up RNA contain the nitrogen bases adenine, guanine, cytosine, or \_\_\_\_\_.
22. In RNA cytosine pairs with \_\_\_\_\_.
23. The information contained in a molecule of mRNA is used to make proteins during the process of \_\_\_\_\_.

**Chapter Test *continued***

---

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

24. Summarize the experiments performed by Hershey and Chase that indicated that DNA was probably the genetic material.

---

---

---

---

25. Identify the major discoveries that led to Watson and Crick's development of the double helix model for DNA.

---

---

---

---

26. Describe how a molecule of DNA is replicated.

---

---

---

---

---

27. Explain how during DNA replication, errors in the nucleotide sequence are corrected.

---

---

---

28. What is the difference between transcription and translation?

---

---

---