

## Section Summary

Nucleic acids are molecules made up of repeating units of nucleotides that direct cellular activities such as cell division and protein synthesis. Each nucleotide is made up of a pentose sugar, a nitrogenous base, and a phosphate group. There are two types of nucleic acids: DNA and RNA. DNA and RNA have both similarities and differences. They both perform unique functions that allow cells to survive.

## Exercises

1. The two strands of DNA are held together by what type of bond?
  - a. hydrogen
  - b. polar covalent
  - c. nonpolar covalent
  - d. ionic
2. The building blocks of nucleic acids are \_\_\_\_\_.
  - a. monosaccharides
  - b. amino acids
  - c. lipids
  - d. nucleotides
3. A nucleotide of DNA may contain \_\_\_\_\_.
  - a. ribose, uracil, and a phosphate group
  - b. deoxyribose, uracil, and a phosphate group
  - c. deoxyribose, thymine, and a phosphate group
  - d. ribose, thymine, and a phosphate group
4. What are the structural differences between RNA and DNA?

## Answers

1. (a)
2. (d)
3. (c)
4. DNA forms a double helix, whereas RNA is single-stranded. DNA uses the nitrogenous base thymine, and RNA uses the nitrogenous base uracil. DNA is composed of the sugar deoxyribose, and RNA uses the sugar ribose.

## Glossary

**deoxyribonucleic acid (DNA):** a double-stranded polymer of nucleotides that carries the hereditary information of the cell

**nucleic acid:** a biological macromolecule that carries the genetic information of a cell and carries instructions for the functioning of the cell

**nucleotide:** a monomer of nucleic acids; contains a pentose sugar, a phosphate group, and a nitrogenous base

**ribonucleic acid (RNA):** a single-stranded polymer of nucleotides that are involved in protein synthesis

**transcription:** the process of making RNA from DNA

**translation:** the process of making protein from mRNA

