

Chapter 2 The Chemistry of Life

Section Review 2-3

**Reviewing Key Concepts**

**Identifying** On the lines provided, identify each statement as describing carbohydrates, lipids, nucleic acids, or proteins.

- |                     |   |
|---------------------|---|
| <u>Carbohydrate</u> | 1. the main source of energy for living things                |
| <u>Protein</u>      | 2. help carry out chemical reactions                          |
| <u>Lipid</u>        | 3. important parts of biological membranes                    |
| <u>Nucleic acid</u> | 4. contain hydrogen, oxygen, nitrogen, phosphorus, and carbon |
| <u>Protein</u>      | 5. transport substances in and out of cells                   |
| <u>Protein</u>      | 6. composed of amino acids                                    |
| <u>Carbohydrate</u> | 7. sugar and starches   |
| <u>Nucleic acid</u> | 8. store and transmit hereditary information                  |

**Completion** On the lines provided, complete the following sentences.

9. Lipids are made up of fatty acids and glycerol
10. Glucose, galactose, and fructose are carbohydrates called sugars
11. The two basic kinds of nucleic acids are DNA and RNA
12. Proteins are polymers of amino acids.
13. A fatty acid with the maximum number of hydrogen atoms possible is saturated

**Reviewing Key Skills**

14. **Applying Concepts** No other element can form the amount and variety of molecules that carbon can form. What characteristics does carbon have that explain this characteristic?

It has four valence electrons.

15. **Comparing and Contrasting** Plastics are synthetic, organic polymers. How are plastics similar to polysaccharides? How are they different?

They are both organic polymers

Polysaccharides are naturally occurring while plastics are synthetic made in factories or labs.

Name Key

## Macromolecules

1. Polymers are formed by polymerization, large compounds built by joining smaller ones together.
2. All macromolecules contain the element carbon.
3. The word mono- means one.
4. The four macromolecules are carbohydrates, lipids, proteins, and nucleic acids.
5. The monomer for proteins is amino acid.
6. The function of carbohydrates to provide energy for all living things.
7. An amino acid is a compound made up of an amino group on one end and a carboxyl group on the other.
8. A saturated fat is a fatty acid that contains the maximum amount of hydrogen atoms.
9. Large molecules formed from monosaccharides are called polysaccharides.
10. Examples of carbohydrates are bread and pasta.
11. The function of nucleic acids is to store & transmit genetic information.
12. For each of the following macromolecules, list the elements found in each.
  - a) proteins - C, H, O, N
  - b) lipids - C, H, O
  - c) nucleic acids C, H, O, N, P
  - d) carbohydrates - C, H, O
13. Which <sup>macromolecule</sup> element has a 1:2:1 ratio of carbon, hydrogen, and oxygen? carbohydrates
14. Lipids stores energy, makes up the cell membrane, and acts as a chemical messenger.
15. Dehydration Synthesis is the process of water leaving a molecule.
16. What are two functions of protein? build muscles and fight disease
17. A nucleotide is made up of a 5-carbon sugar, phosphate group, and a nitrogenous base.
18. Two examples of lipids are fats and oils.
19. The monomer of carbohydrates is monosaccharide.
20. Glycerol and fatty acids are the monomers of lipids.