

## ASSESSMENT

1. Define the following terms:

amino acid – a basic building block of protein molecules; always contains an amine group and a carboxyl group

carbohydrate – an organic compound, consisting of carbon, hydrogen, and oxygen; used by living organisms; includes sugar, starch, and cellulose.

carboxyl group – an organic chemical group composed of one carbon, two oxygen, and one hydrogen; acidic and found in amino acids and fatty acids.

disaccharide – a basic form of sugar formed from the linkage of two simple sugars; maltose (glucose + glucose), sucrose (glucose + fructose), and lactose (glucose + galactose) are some examples of disaccharides

glycerol – a sub-unit found in all lipids; consists of three carbons, which serve as the backbone of all lipids

hydroxyl group – a charged sub-unit composed of a hydrogen and an oxygen; found in many organic, as well as inorganic, compounds

lipid – an insoluble organic molecule containing a high amount of stored energy; include fatty acids, other fats, waxes, and steroids

monosaccharide – any sugar that cannot be broken down into smaller units

protein – any organic molecule constructed from peptide-linked amino acids; molecules always contain carbon, hydrogen, oxygen, nitrogen, and quite often, sulfur

2. Determine if the following statements are true or false. If the answer is false, correct the statement to make it true.

'In a carbohydrate, carbon, hydrogen and oxygen generally exist in a 2:1:2 ratio.'

**False.** Carbon, hydrogen, and oxygen generally exist in a 1:2:1 ratio in carbohydrates.

'Dehydration synthesis results in the formation of water in the synthesis of carbohydrates and proteins, but not in lipids.'

**False.** Dehydration synthesis results in the formation of water in the synthesis of carbohydrates, proteins, and lipids.

'Lipids are composed of the sub-units glycerols and fatty acids.'

**True.**

'All organic molecules contain carbon, hydrogen, and oxygen.'

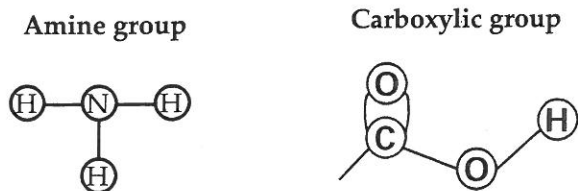
**False.** All organic molecules contain carbon.

'Due to the high hydrogen to oxygen ratio, lipids are the best source of energy.'

**True.**

3. What two functional groups are present in all amino acids? Name and diagram the functional groups below.

The two functional groups include the amine and carboxylic acid groups.



4. Arrange the following in terms of smallest to largest representative size.

triglyceride – disaccharide – carbon atom – protein – carboxylic acid

**carbon atom – carboxylic acid – disaccharide – triglyceride – protein**

5. Complete the following:

**1 glycerol molecule + 3 fatty acids  $\longrightarrow$  1 lipid + 3 water molecules**

6. In this activity, you constructed two simple amino acids, glycine and alanine. Using a reference source, research the structure of six different amino acids. Write the name and draw the structure of each below.

**Answers will vary.**

10. Complete the following concept map.

