

Dehydration Synthesis and Hydrolysis Practice

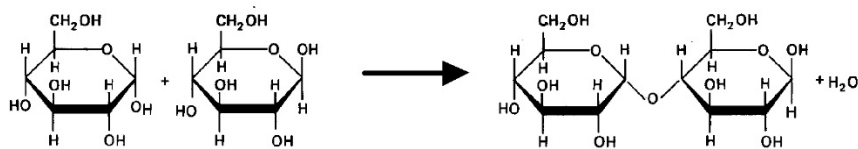
A. Match the correct prefix or suffix or definition to its meaning/word below.

DEHYDRATE HYDRO- SYNTHESIS -LYSIS MONOMER POLYMER

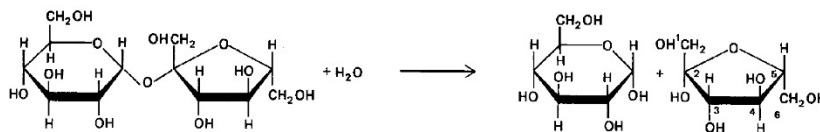
1. To split or break apart; release _____
2. To make something _____
3. Many monomers hooked together make a _____
4. Means to lose or remove water; to take water away _____
5. Means water (as in gaining water) _____
6. Building block or single unit of a polymer is a _____

B. Examine each example. Indicate if each of the following is an example of dehydration synthesis or hydrolysis.

Reaction #1: _____



Reaction #2: _____



Reaction #3: _____

Protein, carbohydrate, or lipid synthesis

Reaction #4: _____

Digestion of proteins, carbohydrate, or lipid

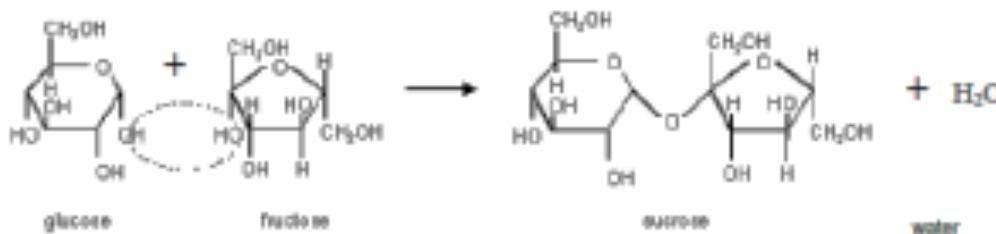
C. Explain in your own words: How can you tell if a chemical equation represents:

1. Dehydration synthesis? _____
2. Hydrolysis? _____

D. Analyze the following diagrams to answer the questions that follow.

Below is an example of dehydration synthesis. In dehydration synthesis, a hydrogen atom from one molecule joins with a hydroxyl group (-OH) from another molecule to form water, leaving two molecules bonded to the same oxygen atom.

sucrose
and
water.



Below is an example of hydrolysis. Complex organic molecules are broken down by the addition of the components of water – H⁺ and OH⁻.



1. What are the reactants of the dehydration synthesis reaction? _____
2. What are the products of the hydrolysis reaction? _____
3. How are these two reactions related? _____

Summary Review:

1. The JOINING of two monomers causes a water molecule to be lost. This joining to make a polymer is called _____.
2. The SPLITTING apart of two organic molecules in a polymer and adding back the water parts to make individual monomers again is called _____.
3. The organic molecules that serve as a source of energy for us are commonly called _____. In what organ of your body would the splitting apart (hydrolysis) of these be occurring at a high rate right now? _____
4. How many water molecules are lost when you join together 114 amino acids together? _____
5. During dehydration synthesis if 42 water molecules were made how many monosaccharides were joined together to make the complex carbohydrate? _____

