

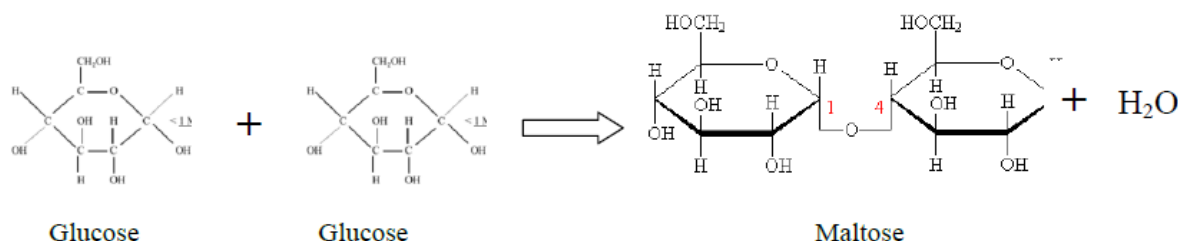
Hydrolysis vs. Dehydration Synthesis

1. Monosaccharides all have the same formula: $C_6H_{12}O_6$.

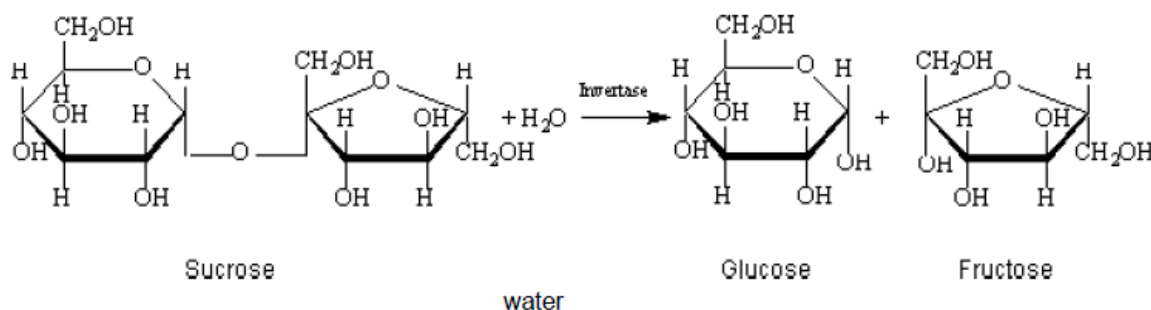
How can you write this formula in the simplest form that illustrates the proportion of elements in monosaccharides?

DEHYDRATION & HYDROLYSIS:

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. For example, when glucose and glucose combine by dehydration synthesis, they form maltose 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^- .



2. What are the products of the hydrolysis reaction? _____

3. What are the reactants of the dehydration synthesis reaction? _____

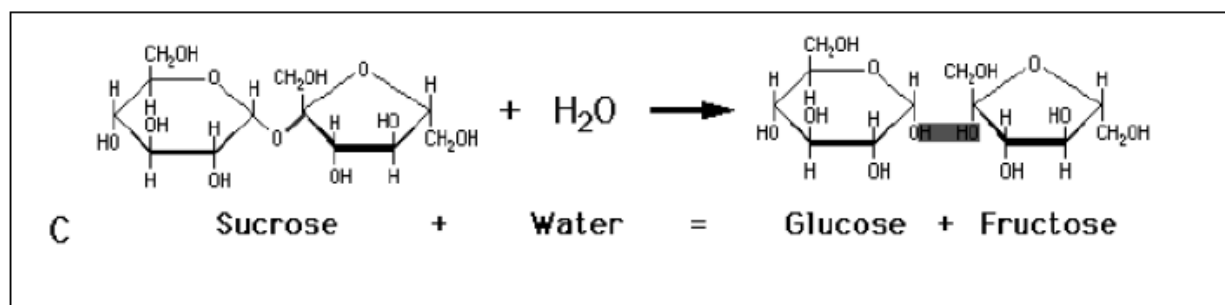
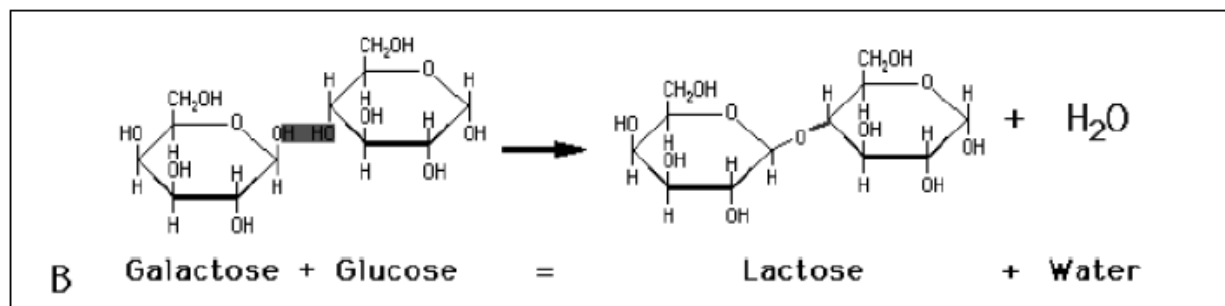
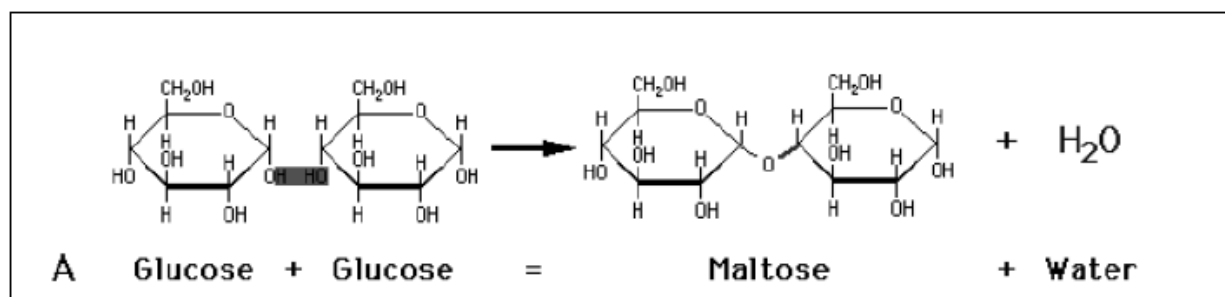
4. Compare and Contrast the reactions in #2 and #3: _____

5. Look at the three reactions below. In which reaction(s) is hydrolysis taking place? _____

How do you know?

6. Look at the three reactions below. In which reaction(s) is dehydration synthesis taking place? _____

How do you know?



7. What are polysaccharides? _____

8. What substance is a repeating unit/monomer that makes up glycogen? _____

Directions: Write each name or formula under the correct heading in the charts below. Use these items:

Sucrose Glucose Starch $C_6H_{12}O_6$ Cellulose Chitin
Maltose Fructose $C_{12}H_{24}O_{12}$ Lactose Glycogen Galactose

Monosaccharide	Disaccharide	Polysaccharide

