

Chapter 5 - Polymers and Carbohydrates

Atoms -----> m_____ -----> M_____ m_____

Name the four main classes of biological molecules:

1. _____
2. _____
3. _____
4. _____

A long molecule consisting of identical building blocks linked by covalent bonds is called a(n) _____.

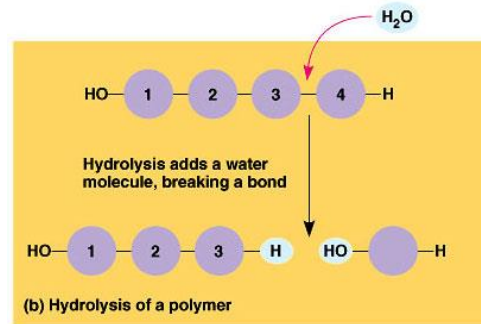
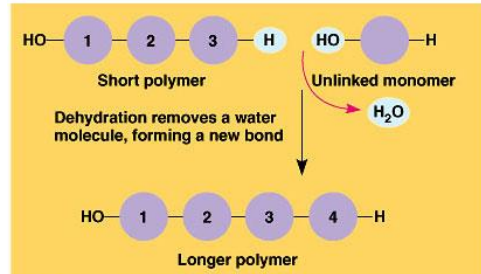
The repetitive units in these large molecules are called _____.

Most monomers are linked to one another during polymer construction through the loss of a molecule of _____. For this reason, the reaction is called a _____ reaction, or a _____ reaction.

The monomers are always added _____ (#) at a time, and each addition requires the presence of a(n) _____.

Disassembly of polymers into monomers requires the *addition* of a molecule of _____ and is called _____ ("to break by adding water").

The enzymes that regulate these reactions are named "hydrolytic enzymes" and they are very important in the _____ system.



Yes or No

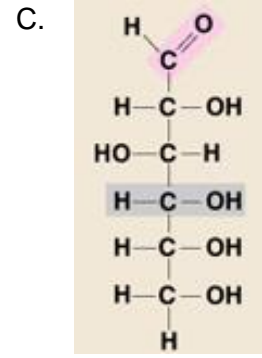
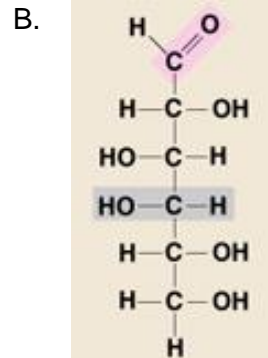
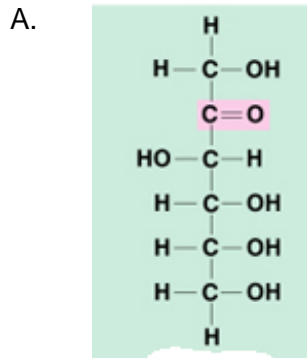
- _____ Do the same reactions occur in every cell in the body?
- _____ Are lipids composed of repetitive monomers?
- _____ Are there thousands of different monomers that make up biological (organic) molecules?
- _____ Do all life forms share the monomers that they use to sustain life?
- _____ Does molecular shape confer specific properties?

Carbohydrates

- _____ The simplest carbohydrates are called _____, AKA _____.
- _____ "Double sugars"
- _____ "Many sugars"
- _____ The most common monosaccharide.
- _____ The number of carbons in a monosaccharide can range from _____ to _____.
- _____ A monosaccharide with the carbonyl group on the end is called an _____ sugar.
- _____ A monosaccharide with the carbonyl group in the middle is called a _____ sugar.

Matching

1. _____ Glucose
2. _____ Galactose
3. _____ Fructose

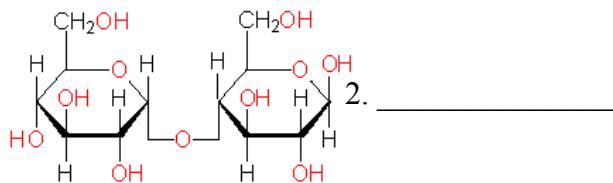
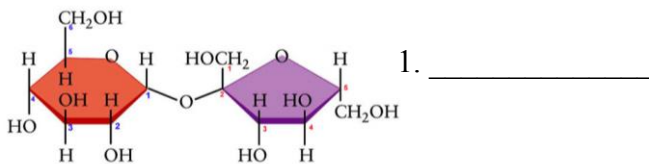


In aqueous solutions, glucose forms into a _____.

Glucose and other monosaccharides are the fuel for the fundamental cell process known as _____.

Can monosaccharides be used to synthesize other types of organic molecules (like fatty acids and amino acids)? _____

Name The Disaccharide



- _____ What type of reaction results in the formation of a disaccharide?
- _____ What is the name of the bond holding together monosaccharides in a disaccharide?
- _____ Is this an ionic or a covalent bond?
- _____ In what form do plants generally transport sugar?
- _____ A glucose monomer bonded to a galactose monomer is the milk sugar _____.

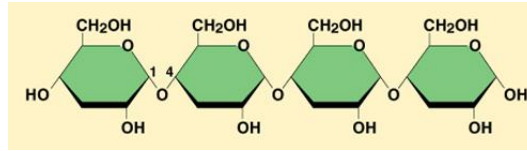
Polysaccharides

- _____ Polysaccharides are formed by many h_____ or even t_____ of monosaccharides.
- _____ The storage polysaccharide of plants is given the simple name _____.
- _____ The simplest (linear) form of starch is known as a _____.
- _____ The branched form of starch is called a _____.
- _____ / _____ Can plants hydrolyze their own starches? Can animals hydrolyze plant starches?
- _____ "Animal starch"
- _____ Glycogen is stored principally in _____ and _____ cells.

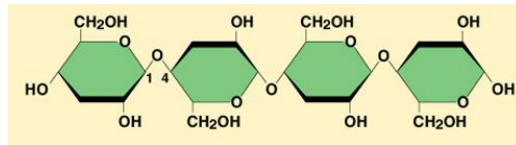
_____ The chief "structural" polysaccharide of plants is _____.
 _____ The most abundant organic molecule on the planet is _____.
 _____ In amylose, all glucose monomers are in the _____ configuration.
 _____ In cellulose, the glucose monomers are in the _____ configuration.

See if you can identify the polysaccharides shown below:

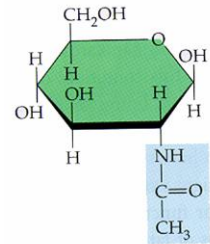
1. _____



2. _____



_____ The shape of an amylose molecule is mostly _____.
 _____ The shape of a cellulose molecule is straight and never branched, so the molecule can form hydrogen bonds with other cellulose molecules to form m_____.
 _____ Most of the cellulose-digesting organisms are _____.
 _____ The decay of cellulose usually occurs as a result of the activities of _____.
 _____ Chitin is a structural polysaccharide used by arthropods and fungi. It is unusual among carbohydrates due to its possession of the element _____.



Arrangement of Fibrils, Microfibrils, and Cellulose in Cell Walls

