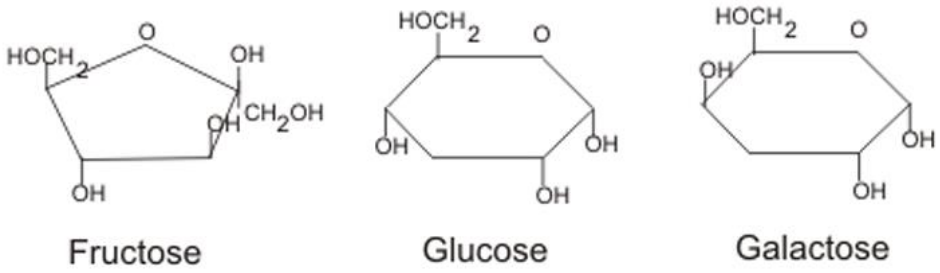
Name: _____ Date: _____ Period: _____

Unit 2: Topic 3 Identifying the Macromolecules Worksheet

Tips for Identifying Pictures of Macromolecules:

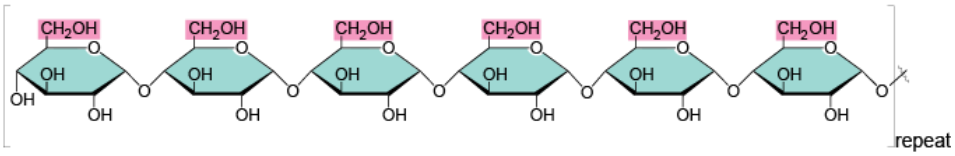
Carbohydrates

- Pictures of carbohydrate monomers (monosaccharides) have one ring of carbon atoms (looks like a pentagon or hexagon) with oxygen atoms and hydrogen atoms branching off the ring.



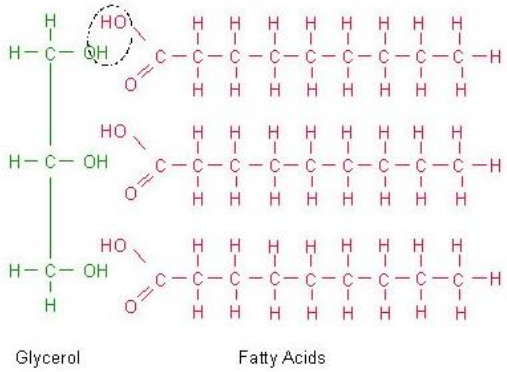
- Pictures of carbohydrate polymers (polysaccharides) have several rings of carbon atoms joined together by bonds.

starch



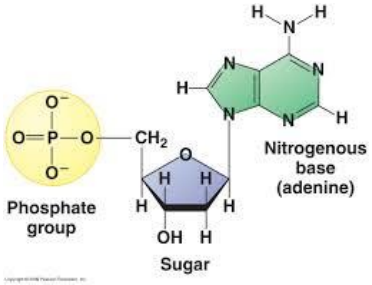
Lipids

- Pictures of lipid polymers (fats) have a glycerol molecule (three carbon atoms joined in a chain with oxygen and hydrogen atoms branching off) linked to one or more fatty acid molecules (long chains of carbon and hydrogen atoms)

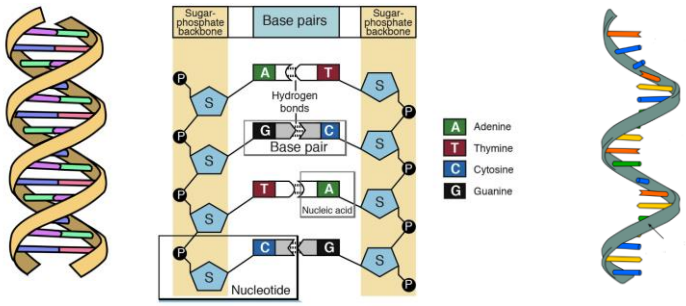


Nucleic Acids

- Pictures of nucleic acid monomers (nucleotides) have a phosphate group (with a phosphorus atom surrounded by four oxygen atoms, PO_4^{2-}), a 5-carbon sugar (looks like a pentagon), and a nitrogenous base (looks like one or two rings containing nitrogen atoms

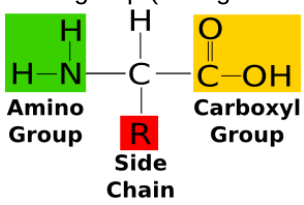


- Pictures of the nucleic acid polymer DNA have a double helix structure (a winding staircase) that is composed of two chains of nucleotides. Pictures of the nucleic acid polymer RNA show a single chain of nucleotides.When "untwisted" the DNA molecule looks like a ladder. The phosphate groups and 5-carbon sugars of each nucleotide are located in the sides of the ladder, and the nitrogen bases form the middle "rungs" of the ladder.

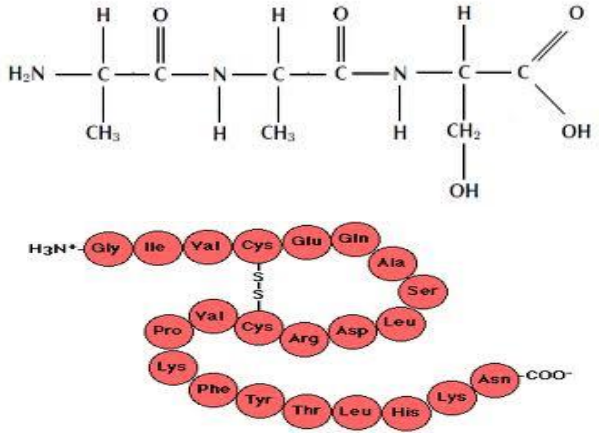


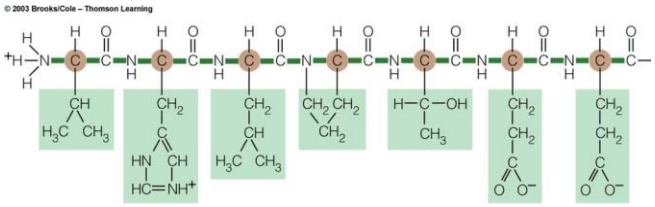
Proteins

- Pictures of protein monomers (amino acids) have a central carbon atom bonded to four things: a single hydrogen atom, an amino group (contains nitrogen and hydrogen atoms), a carboxyl group (contains a carbon atom that is double-bonded to an oxygen atom), and an R group (changes for each of the 20 different amino acids)

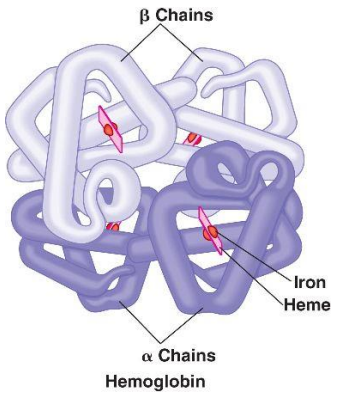


- Pictures of protein polymers (polypeptide) show a chain of amino acids, with the amino group of one amino acid bonded to the carboxyl group of the next amino acid in the chain.

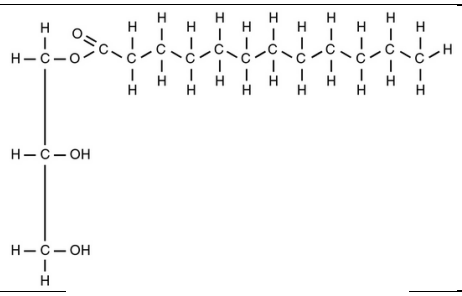
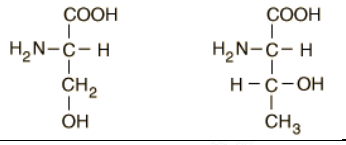
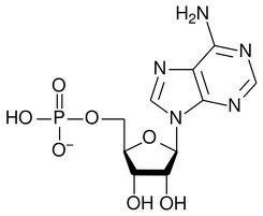
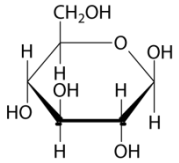
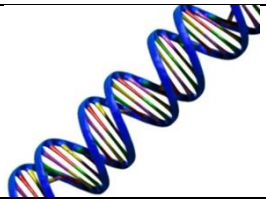
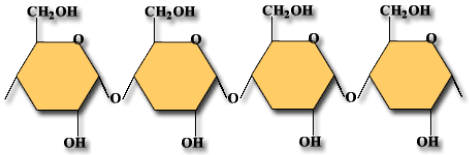


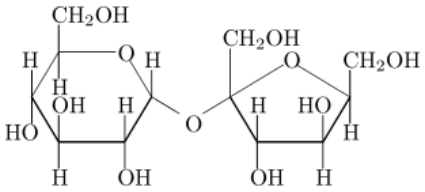
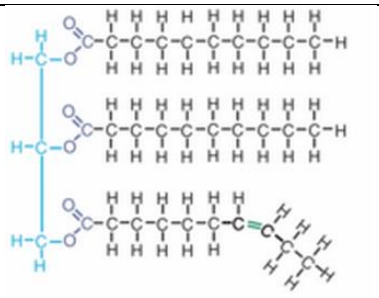
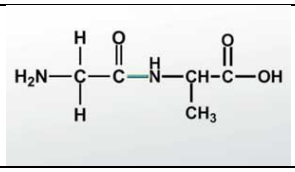
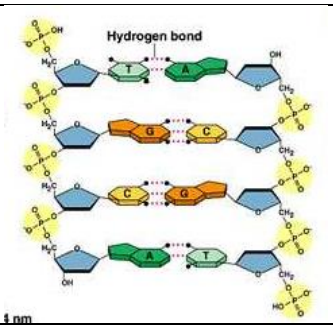


- Pictures of a "full protein" may show multiple polypeptide chains folded around one another.



Directions: *Place a check mark in the column of each kind of macromolecule that has each characteristic. Some may need more than one check*

Characteristics	Carbohydrate	Lipid	Protein	Nucleic Acid
				
				
				
				
Enzymes (molecules that speed up chemical reactions) are an example of this type of macromolecule				
Includes fats and oils				
Polymers formed from amino acids				
				
Always contains carbon and hydrogen				
				
DNA and RNA are examples of this type of macromolecule				`
Table sugar (sucrose) is an example of this type of macromolecule				

Characteristics	Carbohydrate	Lipid	Protein	Nucleic Acid
				
Stores genetic information				
Is a polymer				
Controls cellular activities				
				
The polymer of this macromolecule is called a polypeptide				
Is made of nucleotides				
Is an organic compound				
Includes starches				
Made up of monomers				
Is an organic compound				
				
Formed by dehydration synthesis				
Its monomers usually end in “ose”				
				
Breaks apart by hydrolysis				
Important for defense, structure, storage, and transport				