

Warm-up: Write question and answers

1. For each pH determine if it is a strong acid, weak acid, neutral, weak base, or strong base
 - a. pH 2
 - b. pH 8
 - c. pH 13
 - d. pH 6
2. Determine whether each compound is inorganic or organic
 - a. $C_6H_{12}O_6$
 - b. H_2O
 - c. NH_4
 - d. CH_4
 - e. $CaCl_2$

Warm-up: **Answers**

1. For each pH determine if it is a strong acid, weak acid, neutral, weak base, or strong base
 - a. pH 2 - strong acid
 - b. pH 8 – weak base
 - c. pH 13 - strong base
 - d. pH 6 - weak acid

Warm-up: **Answers**

2. Determine whether each compound is inorganic or organic

a. $\text{C}_6\text{H}_{12}\text{O}_6$ Organic

b. H_2O Inorganic

c. NH_4 Inorganic

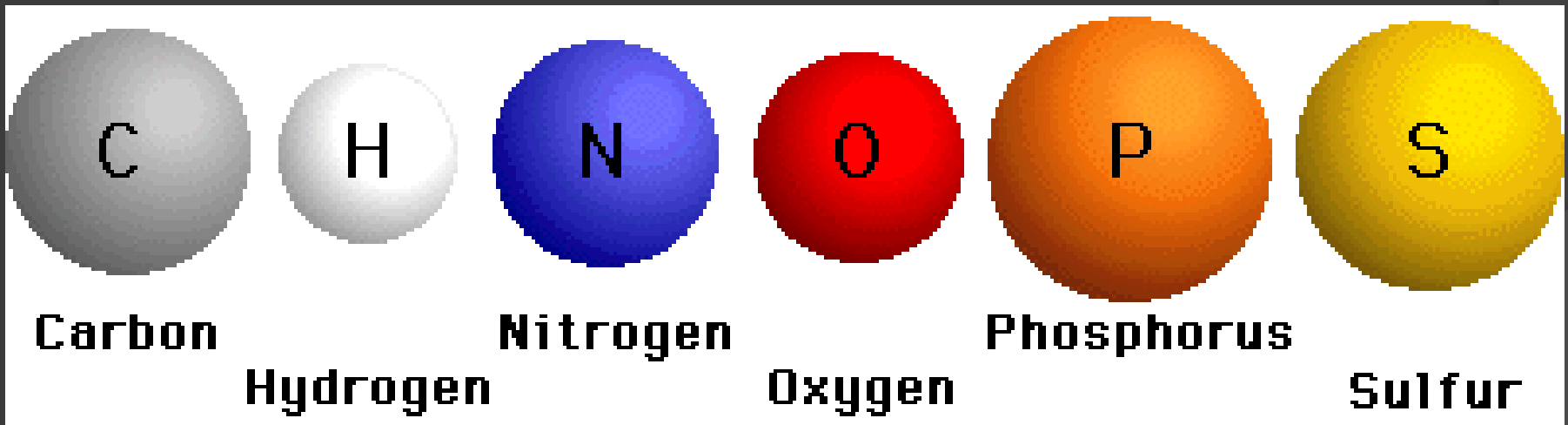
d. CH_4 Organic

e. CaCl_2 Inorganic

Recap: 6 Essential Elements

● CHNOPS

- Carbon, Hydrogen, Nitrogen, Oxygen, Phosphorus, Sulfur



Macromolecules

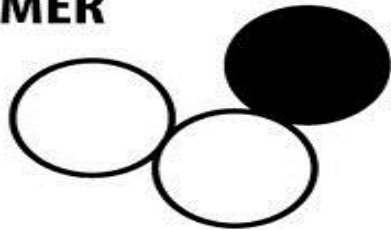
- ⦿ Large living cells, i.e. giant molecules
- ⦿ Made from thousands of smaller molecules
- ⦿ Formed by a process call polymerization
 - = small compounds are joined to make larger ones

Macromolecules

- Monomer = smaller units
- Polymer = monomers linked together

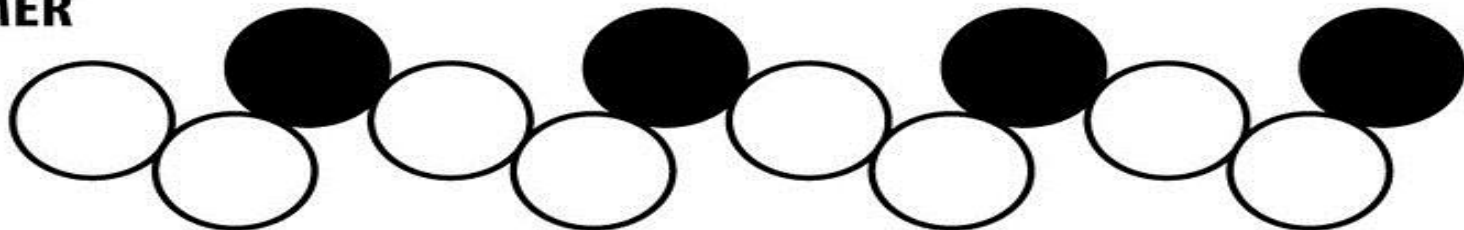
Structure of Monomers and Polymers

MONOMER



A monomer is a small molecule.

POLYMER



A polymer is a long-chain molecule made up of a repeated pattern of monomers.

Organic Compounds:

4 Groups:

1. Carbohydrates
2. Lipids
3. Nucleic Acids
4. Proteins

Carbohydrates

- ⦿ Composition: carbon, hydrogen, and oxygen in a ratio of 1:2:1
 - Generic formula for carbs is $C_6H_{12}O_6$
- ⦿ Monomer: Glucose
- ⦿ Polymer: Starch

Carbohydrates

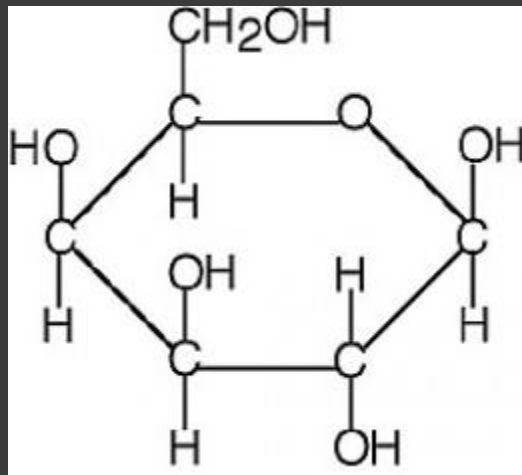
- ⦿ Monosaccharides – simple sugars
 - E.g. glucose
- ⦿ Polysaccharides – formed from linked monosaccharides
 - E.g. Plants – Starch or cellulose
 - E.g. Animals – Glycogen (animal starch)

Carbohydrates

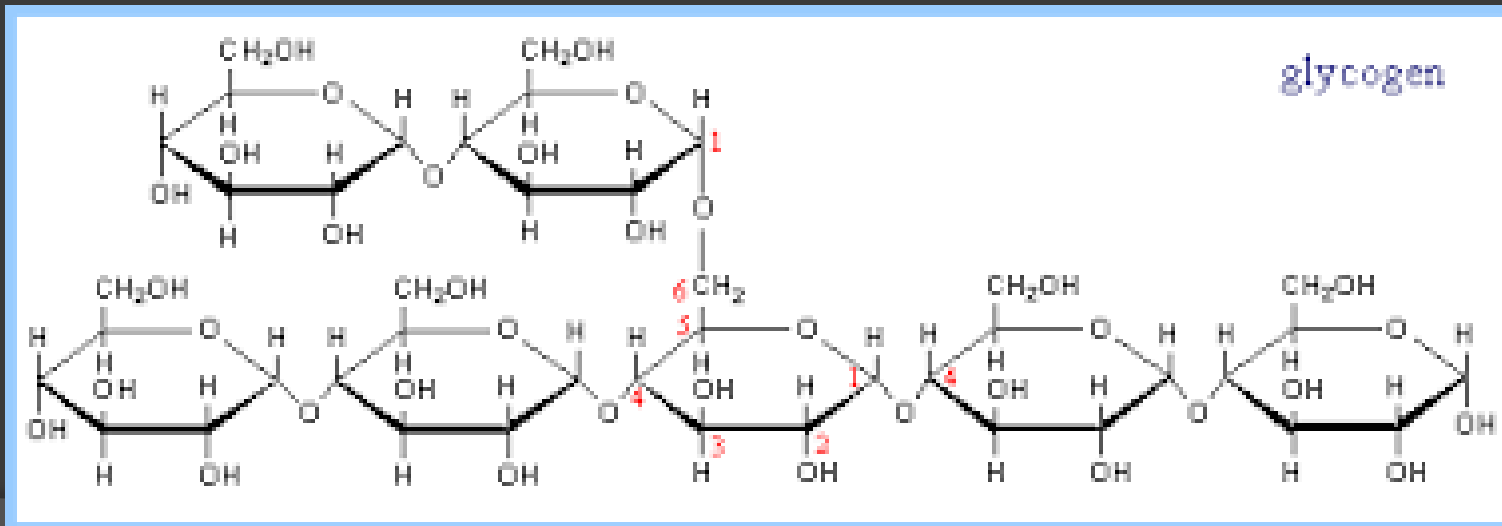
⦿ Functions:

1. Quick source of energy = digest carbs
 - Glucose is used in cellular respiration
2. Structure/support
 - Cellulose in cell walls of plants
3. Identifiers
 - Carb chains on surface of cell membranes

Carbohydrate Structure



Glucose



Lipids

- ⦿ Composition: Carbon, hydrogen, and oxygen – no specific ratio
- ⦿ Monomer: fatty acids and glycerol
- ⦿ Polymer: triglyceride

Lipids

- ⦿ Common categories: fats, oils, and waxes
- ⦿ Key Facts:
 - Insoluble in water
 - Lipids can be saturated (solid at room temp) or unsaturated (liquid at room temp)

Lipids

- ⦿ Phospholipids – make up most of the cell membrane
 - Contain a phosphate group
- ⦿ Steroids – lipid rings that help regulate the organism through cell communication
 - Act as hormones (chemical messengers)

Lipids

- Function: Store energy
- Structure:

