

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period: \_\_\_\_\_\_\_Date: \_\_\_\_\_\_\_\_\_\_

1. **ROLE OF CARBON IN ORGANISMS:**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_= compounds that contain carbon and hydrogen

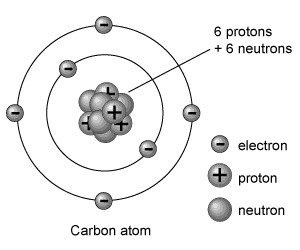
* + - * + Ex: Carbohydrates, lipids, proteins

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_= compounds that DO NOT contain carbon and hydrogen

* + - * + Ex: Vitamins, minerals, water

Carbon forms \_\_\_\_covalent bonds to become stable

Can join with other carbons to form straight\_\_\_\_\_\_\_\_\_\_, branches or\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



These structures may contain

\_\_\_\_\_\_\_\_\_\_\_\_\_\_carbon atoms

* + - * + This makes many

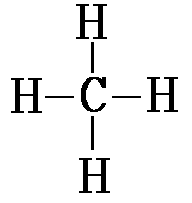
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_possible!

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_= the simplest carbon compound (CH4)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_= any molecule made ONLY of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and \_\_\_\_\_\_\_\_\_\_\_\_\_\_atoms!

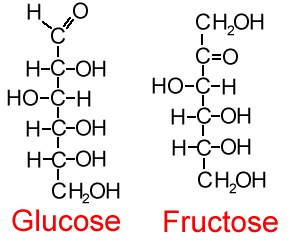
* + - * + Ex: Methane
        + Methane’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_or chemical formula is \_\_\_\_\_\_\_\_\_\_
        + Methane’s\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:

o Bonds are represented by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = compounds that have the same

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_but different \_\_\_\_\_\_\_\_\_\_\_\_\_\_



• Ex: Glucose & Fructose

o Formula- \_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_can range from

\_\_\_\_\_\_\_\_\_carbon atoms to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of carbon atoms

1. **THE DIGESTIVE SYSTEM:**

The digestive system breaks down organic compounds into their building blocks

(\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

Body cells take the monomers and put them together in the form the body can use

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_= extremely large compounds made of smaller ones.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_= large molecule formed when many smaller molecules

(monomers) bond together, usually in \_\_\_\_\_\_\_\_\_\_ chains

* + Ex: Carbohydrates, proteins, lipids, nucleic acids
  + Polymers and their monomers:

|  |  |
| --- | --- |
| **POLYMERS** | **MONOMERS (building blocks)** |
| **Carbohydrate** |  |
| **Protein** |  |
| **Lipid** |  |
| **Nucleic Acid** |  |

**WHAT PROCESS ALLOWS BODY CELLS TO MAKE LARGE COMPOUNDS FROM MONOMERS?**

* + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**\_or Condensation reactions**=
  + The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of \_\_\_\_\_and \_\_\_\_\_\_ (water) from the individual molecules so that a \_\_\_\_\_\_\_\_\_\_\_\_may form between them and result in a more

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_molecule

* This is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ process.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_organic molecules
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bonds = store energy

o Humans – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ production

* Plants – fruit & veggie production

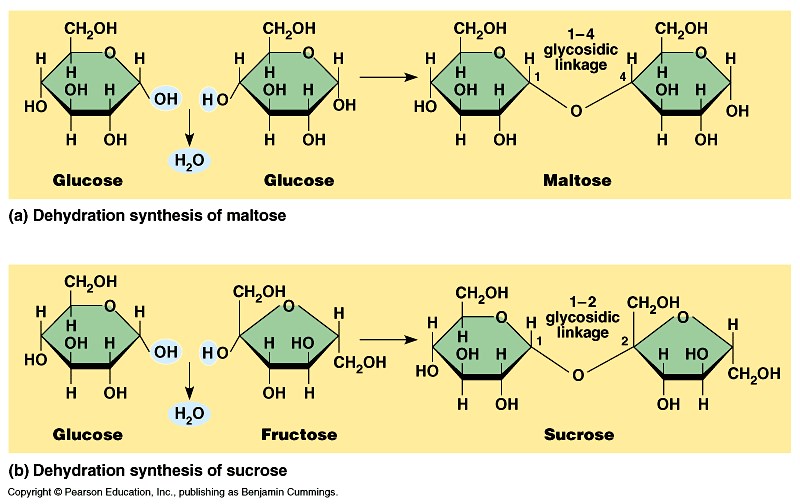
Dehydration synthesis represented by an equation:

Monomer + Monomer 🡪 Polymer + water

For example:

* + 1. Amino Acid + Amino Acid 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    2. Monosaccharide + Monosaccharide🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    3. Fatty Acids + Glycerol 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2**



**+**

**H**

**O**

**+**

**H**

**2**

**O**

**WHAT PROCESS ALLOWS THE DIGESTIVE SYSTEM TO BREAKDOWN NUTRIENTS?**

• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_= (hydro =\_\_\_\_\_\_\_\_\_\_\_\_\_\_, Lysis =\_\_\_\_\_\_\_\_\_\_)

* The breaking of a large compound (polymer) into smaller compounds (monomers)

through the addition of -H and –OH (water).

* This is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ process.
* Breaks organic molecules \_\_\_\_\_\_\_\_\_\_\_\_\_
* Break bonds = release \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Occurs during \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_– release energy from food

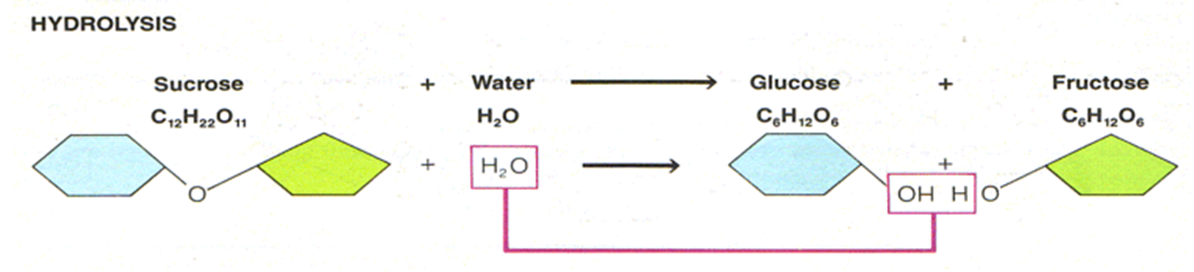
Hydrolysis represented by an equation:

Polymer + water 🡪 monomer + monomer

For example:

* + 1. Protein + water 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    2. Carbohydrate + water 🡪\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    3. Lipid + water 🡪\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**HYDROLYSIS OF SUCROSE:**



**WHAT DO ATHLETES EAT THE DAY BEFORE A BIG GAME?**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **CARBOHYDRATES:**

**Foods**: pasta, bread, fruits, veggies

Compounds used for \_\_\_\_\_\_\_\_\_\_\_\_\_\_and release of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Made of C, H, O atoms

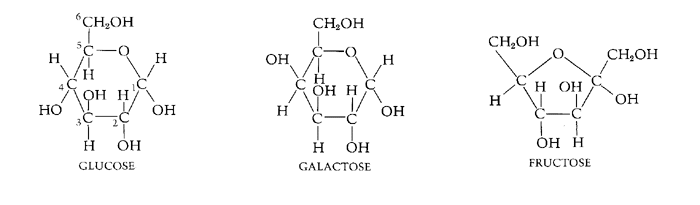
**Reduced** formula: \_\_\_\_\_\_\_\_\_\_\_\_\_

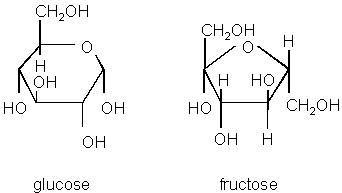
* H:O ratio is always \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**How do you identify a carbohydrate?**

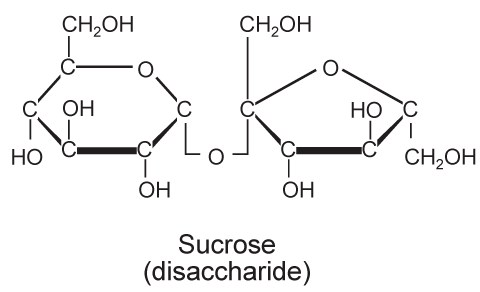
• Look at the kinds and number of atoms

* Ratio is \_\_\_Hydrogen atoms: \_\_\_Oxygen atom **always!**
* Rings of C, H, O (# of rings tells type of carb)



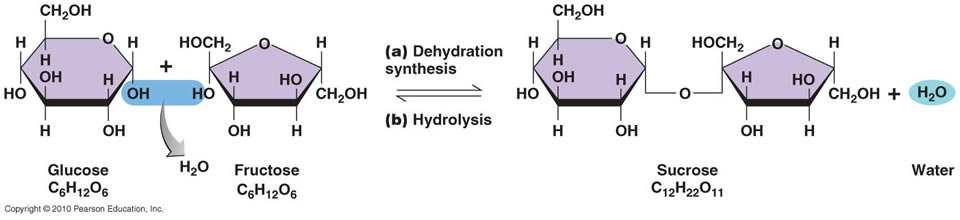
**3 types of carbohydrates:**

* 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_= C6H12O6
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_sugar (6 carbons)
  + Ex: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Glucose = veggies
* Fructose = fruits
* Galactose = milk sugar
* Only form our \_\_\_\_\_\_\_\_can use for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_
  1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**= C12H22O11



\_\_\_\_\_\_\_\_\_\_sugar made of 2 simple sugars (Monosaccharide + Monosaccharide)

* + - * Combined by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reaction



* + - * Used for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy supply; not instant.

Ex: sucrose, lactose, maltose

* + - * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: (table sugar) Glucose + Fructose🡪 sucrose + H2O
      * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: (milk sugar) Glucose + Galactose🡪 lactose + H2O

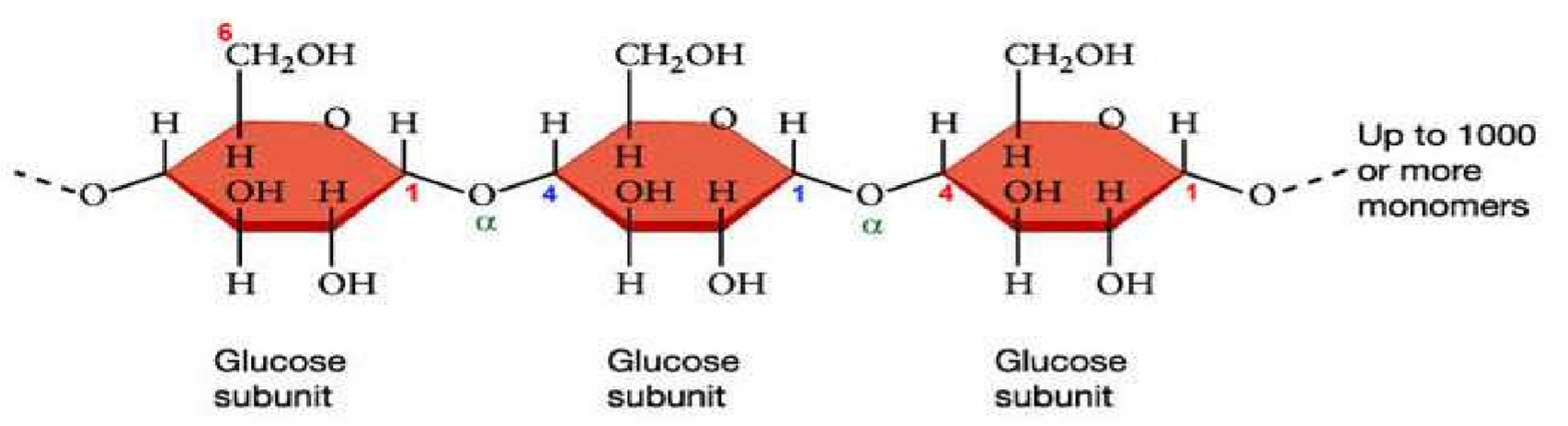
• \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: Glucose + Glucose + glucose 🡪 maltose + H2O

**3.** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_=

More than 2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ joined by dehydration synthesis

Ex:

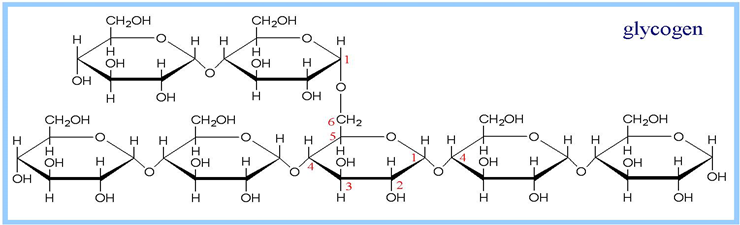
* + \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)- Plant’s energy storing molecule



**Starch**

* + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- Animal’s energy storing molecule

o Energy storage form of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

o Found in the liver and skeletal muscle

o When the body needs

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between

meals/physical activity, glycogen is broken down into glucose through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- provides structure in plant cell walls (cannot be digested by human body)

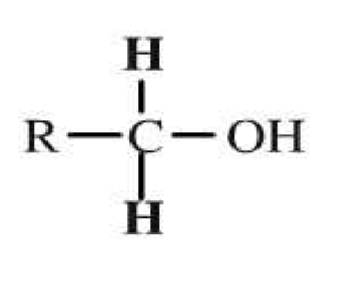
**What happens to CARBOHYDRATES in the body?**

* Broken down by the digestive system via HYDROLYSIS into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which are then absorbed into the body through the\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, where the body cells take the monosaccharides and produce \_\_\_\_\_\_\_\_\_\_\_\_\_.
* After the immediate energy requirements of all your body's tissues have been met, the excess glucose in your blood will be converted into a storage form of carbohydrate called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (found in your muscles and liver).
* If all of your glycogen stores are full and you still have excess glucose in your bloodstream, the remaining glucose will be converted to \_\_\_\_\_\_\_\_\_.

**IV. FUNCTIONAL GROUPS:**

Functional groups give a molecule \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_properties

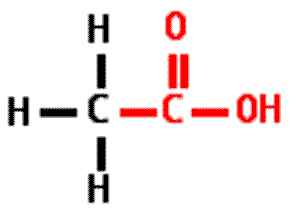
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: (-OH) allows molecule to be more soluble in water



***Alcohol***

***Group***

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: (-COOH) allows molecule to release H ions in water - therefore \_\_\_\_\_\_\_\_\_\_\_\_\_\_!

• There is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_between carbon and oxygen

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_: (-NH2) allows molecule to accept ions from an acid- therefore \_\_\_\_\_\_\_\_\_\_!

