

Name: _____

Date: _____

Polymers, Dehydration Synthesis

and Hydrolysis Notes

How Do we build them up and how do we break them down? BUT FIRST...

BY THEM we mean compounds and/or molecules remember molecules make up compounds

What is a polymer- large molecule made of chain of repeating units

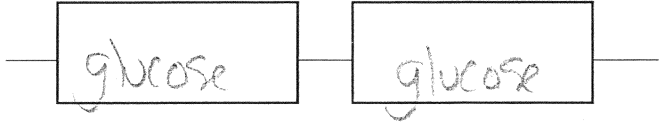
many/multiple

What are the sub-units of a choo-choo train?



A single car = a sub-unit or monomer

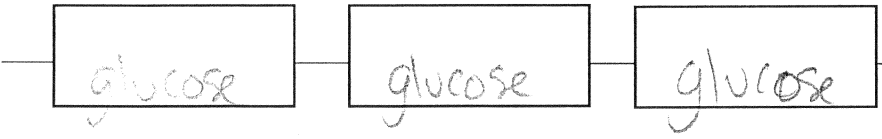
↳ one



Two sub-units = dimer

↳ 2

disaccharide
maltose, lactose, sucrose



3 sub-units or more = polymer

↳ many
polysaccharide

Polymer

Monomer (building blocks)

Complex carbohydrates aka polysaccharide -----> simple sugars ie glucose

Lipids (fats, Waxes and oils) not true polymers but quite large ----> glycerol and fatty acid

Proteins aka polypeptide -----> amino acid

Nucleic Acids (DNA & RNA) aka polynucleotides -----> nucleotides

Now how do we build them and how do we break them

Assistance from ENZYMES

Chemical Reactions = build and break compounds

Dehydration synthesis "dehydration" = lose water "synthesis" = to make/produce new compound

Combining of monomers with the removal of water

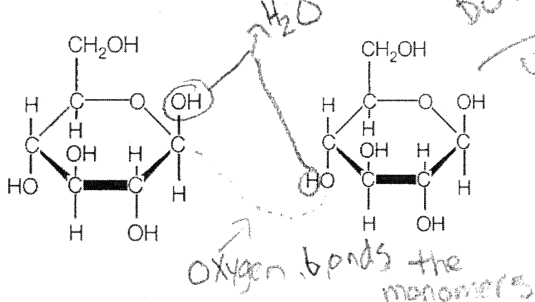
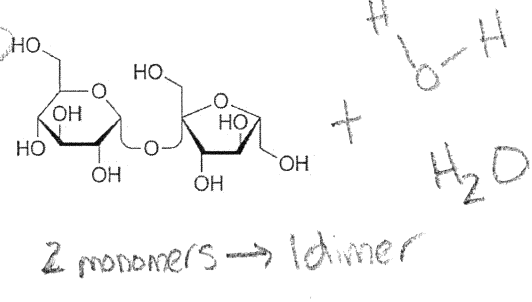
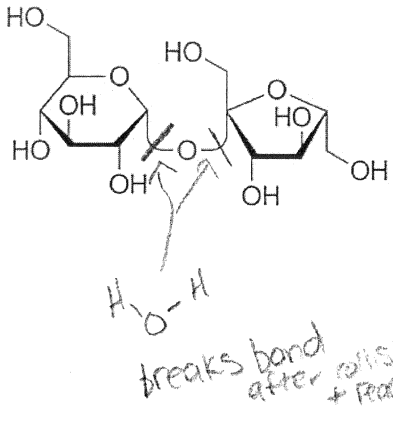
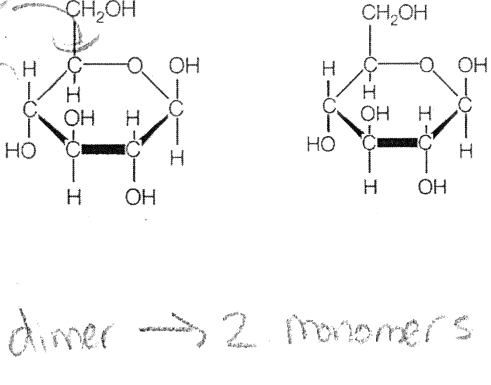
Hydrolysis "Hydro" = water "lysis" = to break

Breaking down of dimers + polymers with addition of water

helps speed up chemical rxns

Process	Starts with	Ends With	Example
Dehydration Synthesis	Small molecules (sub-units)	Larger molecules & water	Growth
Hydrolysis	Water and large molecules	Small molecules (sub-units)	Digestion

Examples

<p>Starts with (Dehydration synthesis) Glucose + glucose (needs energy)</p> 	<p>Ends With (Dehydration synthesis) Maltose and water</p> 
<p>(Hydrolysis) maltose and water</p> 	<p>(Hydrolysis) Glucose + glucose</p> 

Lactose intolerance = cannot digest (breakdown) lactose

↳ hydrolysis

why? lack the enzyme lactase