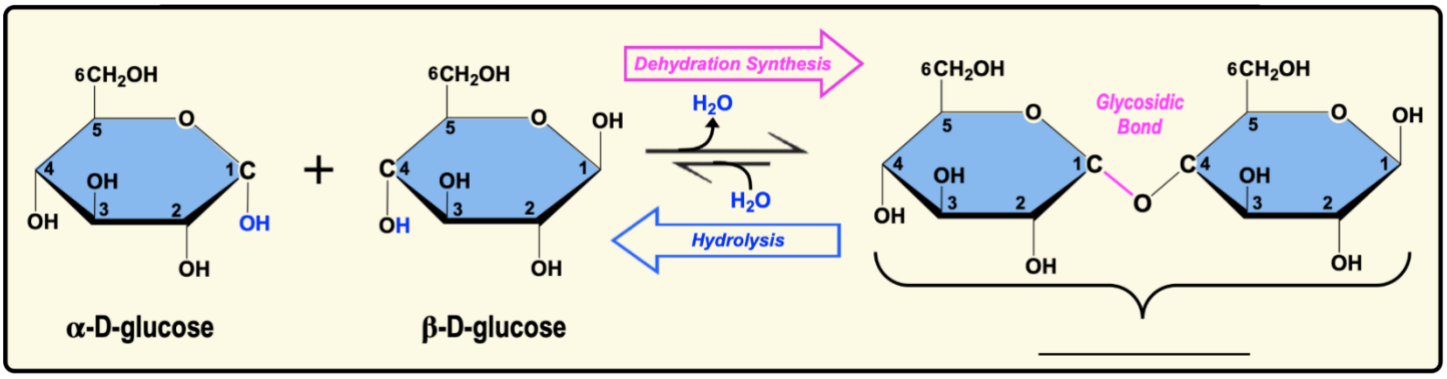
CONCEPT: GLYCOSIDIC BOND

●_____ *bond*: an acetal or ketal linkage between a sugar's anomeric carbon & another chemical group.

□ Form via _____ *synthesis* reactions.

□ _____: compounds containing glycosidic bonds.



PRACTICE: The molecular formula of glucose is $C_6H_{12}O_6$. What is the molecular formula for an oligosaccharide made by linking 10 glucose molecules together by dehydration synthesis? (Hint: Consider how many glycosidic bonds form).

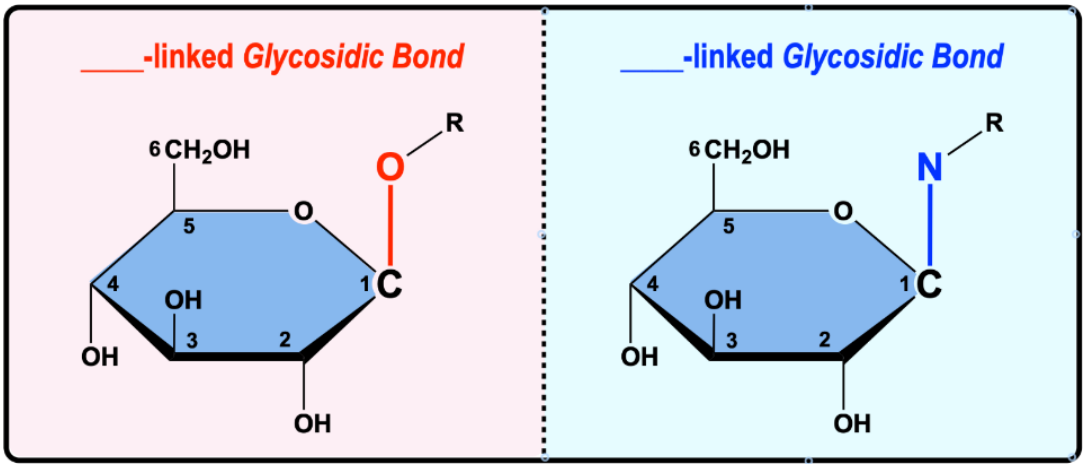
a) $C_{60}H_{120}O_{60}$. b) $(C_6H_{12}O_6)_{10}$. c) $C_{60}H_{102}O_{51}$. d) $C_{60}H_{100}O_{50}$.

O-Glycosidic Bonds & N-Glycosidic Bonds

●Among the many types of glycosidic bonds, there are _____ primary types:

1) _____-*Glycosidic Bond*: a glycosidic bond between an anomeric carbon & an _____ atom.

2) _____-*Glycosidic Bond*: a glycosidic bond between an anomeric carbon & a _____ atom.



CONCEPT: GLYCOSIDIC BOND

Naming Glycosidic Bonds

●Glycosidic bonds are named based on _____ criteria:

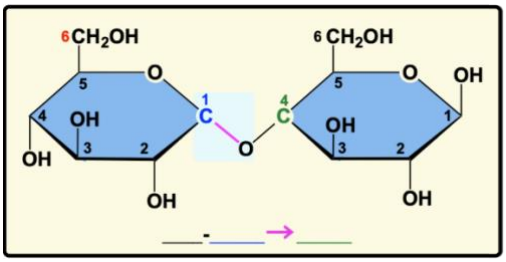
1) _____ of *anomeric carbon*(*s*) involved in the glycosidic linkage (either α or β).

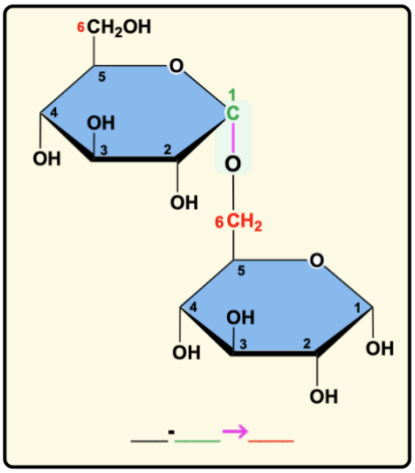
2) _____ of carbon atoms involved in the glycosidic linkage.

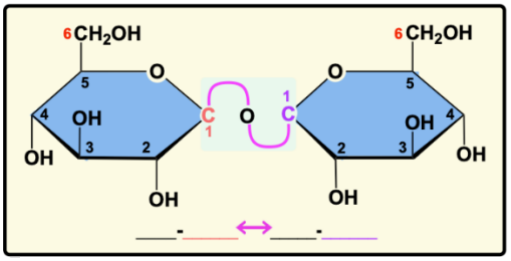
●Single-headed (→) & double-headed arrows (←→) respectively suggest ___ & ___ *anomeric carbon*(*s*) involved in bond.

□ *Commas* can also be used to replace arrows.

EXAMPLE: Name the following glycosidic bonds:







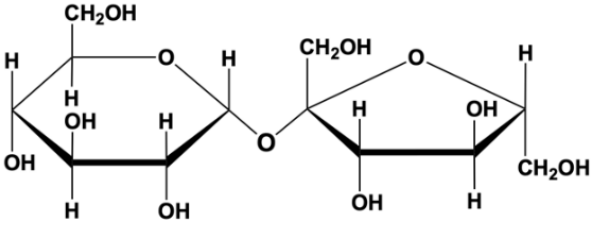
PRACTICE: What is the name for the glycosidic linkage in the following glycoside?

a) 1, 1 glycosidic linkage.

b) 1, 2 glycosidic linkage.

c) 1, 4 glycosidic linkage.

d) 1, 6 glycosidic linkage.



PRACTICE: Determine the name of the glycosidic bond of the following disaccharide.

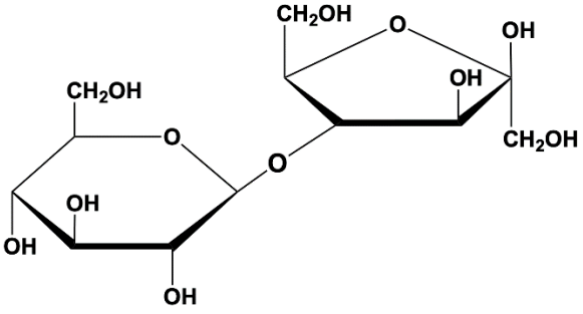
a) α-1,2-glycosidic bond.

b) β-1,3-glycosidic bond.

c) α-1,4-glycosidic bond.

d) β-1,4-glycosidic bond.

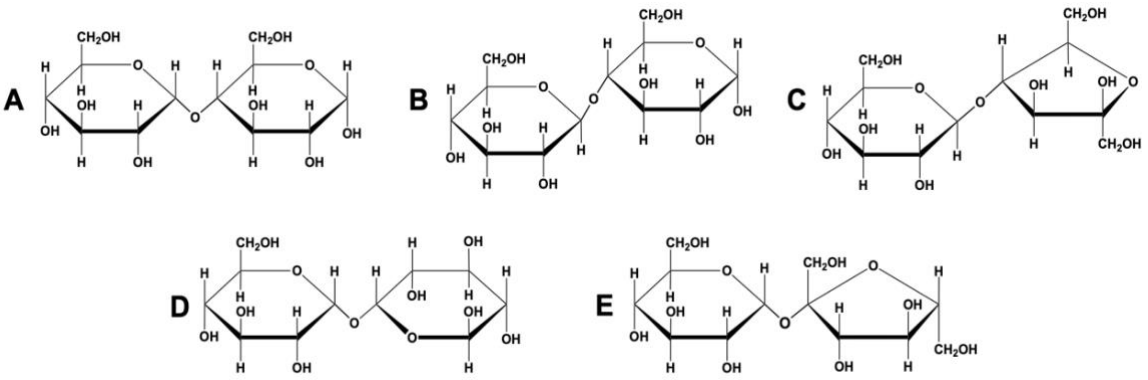
e) α,β-1,3-glycosidic bond.



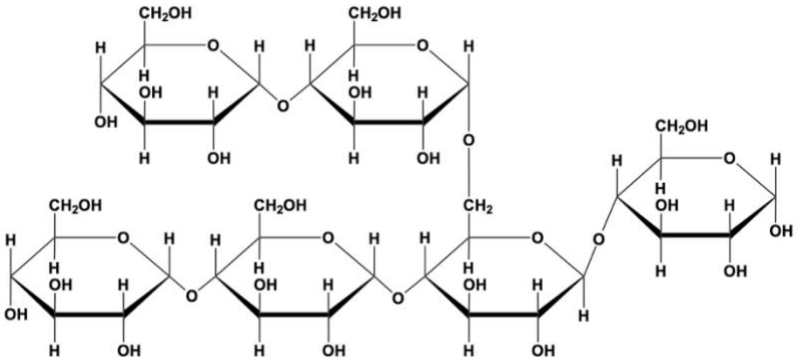
CONCEPT: GLYCOSIDIC BOND

PRACTICE: Which two molecules below do NOT contain a 1,4 glycosidic linkage?

a) A & B.
b) B & C.
c) C & A.
d) D & C.
e) E & D.



PRACTICE: Label & name every glycosidic bond in the branched oligosaccharide below:



PRACTICE: *Raffinose* is the most abundant trisaccharide in nature. Answer the questions based on its provided structure:

A) Is Raffinose a reducing or a non-reducing sugar? _____.

B) Identify the 3 monosaccharides that compose raffinose:

1) _____. 2) _____. 3) _____.

C) Name the TWO glycosidic linkages that connect the sugars in raffinose:

1) _____. 2) _____.