CONCEPT: MONOSACCHARIDES

●Recall: monosaccharides are individual carbohydrate _____ & the simplest form of sugar.

□ Names generally end with the suffix "-_____" (ex. glucose).

□ Monosaccharides can be _____ in several different ways.

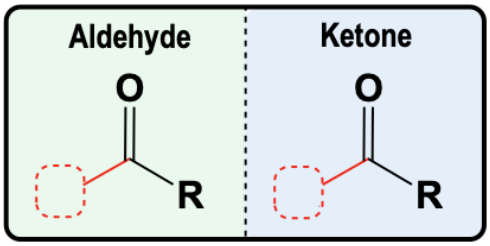
Aldoses or Ketoses

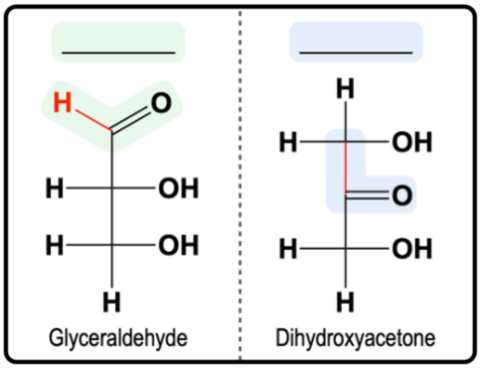
●Monosaccharides can be classified into _____ groups based on the nature of their *carbonyl group*:

1) _____: a sugar whose carbonyl group is an _____ (-CHO).

2) _____: a sugar whose carbonyl group is a _____.

EXAMPLE: Aldoses vs. Ketoses.





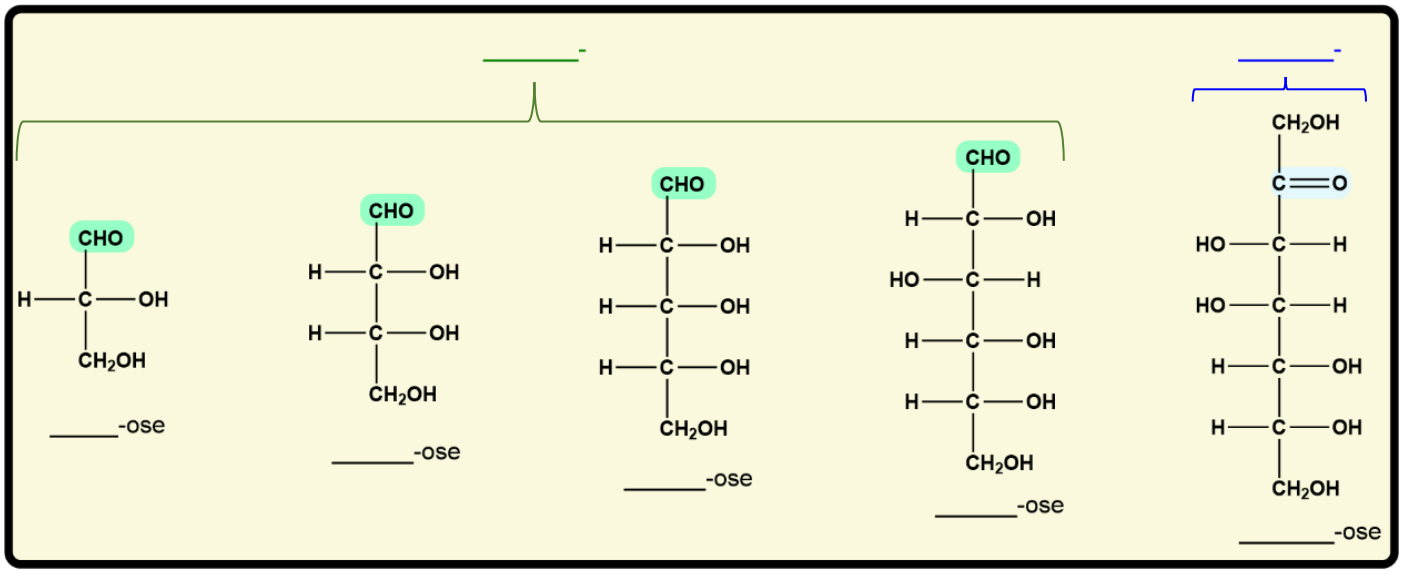
Monosaccharides Grouped By # of Carbons

●Monosaccharides are also grouped based on the *number* of their _____ *atoms*.

□ Monosaccharides with 3, 4, 5, & 6 carbons are respectively _____oses, _____oses, _____oses & _____oses.

□ These prefixes can be preceded by "_____-" or "_____-" to respectively indicate an aldose or ketose.

EXAMPLE: Classify the following monosaccharides based on their number of carbon atoms & carbonyl groups.

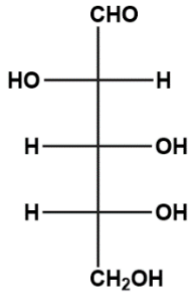


CONCEPT: MONOSACCHARIDES

PRACTICE: Select the appropriate label for each of the three following monosaccharides:

A) Arabinose:

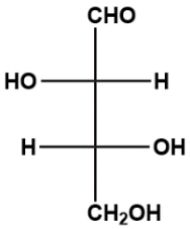
a) Aldopentose.
b) Ketopentose.
c) Aldotetrose.
d) Ketotetrose.



Arabinose

B) Threose:

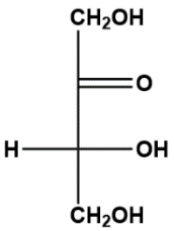
a) Ketohexose.
b) Aldopentose.
c) Aldotetrose.
d) Ketotetrose.



Threose

C) Erythrulose:

a) Aldotetrose.
b) Ketopentose.
c) Aldopentose.
d) Ketotetrose.



Erythrulose

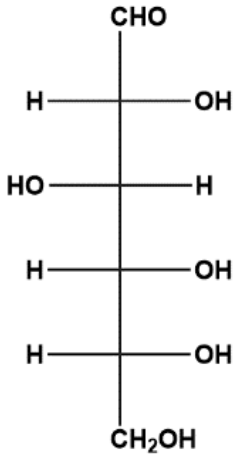
Assigning Numbers to the Carbons of Linear Monosaccharides

●Carbon atoms in linear monosaccharides are numbered based on positioning of the _____ group (aldehyde or ketone).

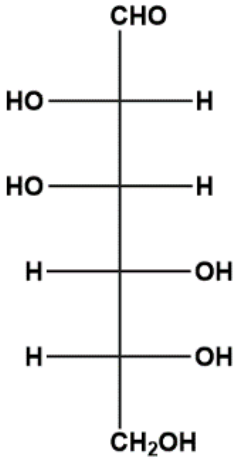
□ Carbonyl carbon atom part of the aldehyde or ketone should be assigned the _____ possible number.

□ Numbered carbons are designated as C-1, C-2, C-3, etc.

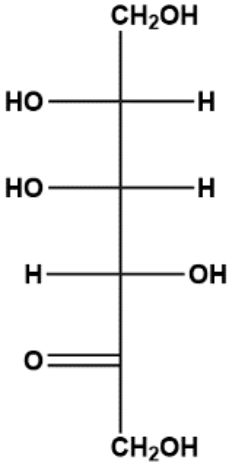
EXAMPLE: Appropriately number the carbon atoms in the following linear monosaccharides.



Glucose



Mannose



Fructose

PRACTICE: Number the carbon atoms in the following linear form of fructose below: