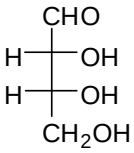
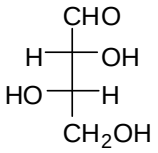
Recitation Questions *March 20, 2009*

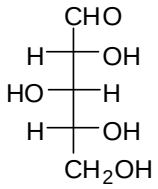
1. On the last recitation assignment, you were asked to cyclize these sugars and draw the structures without any concern for stereochemistry. Now, get really freaked out about stereochemistry and draw the cyclized forms of these sugars with stereochemistry indicated for all chiral centers.



erythrose



threose

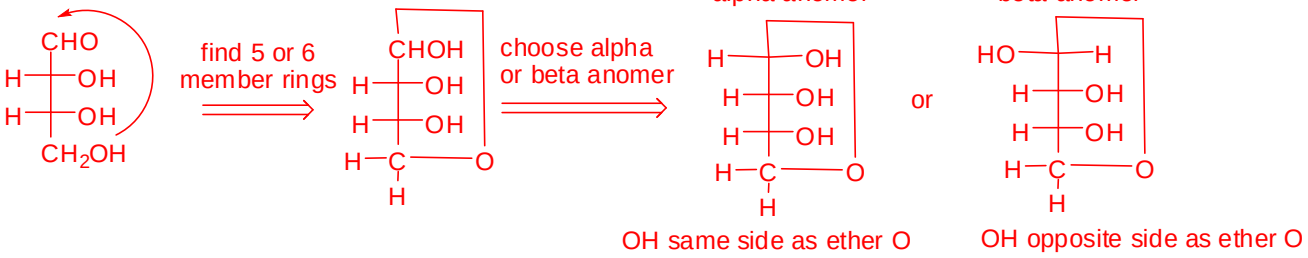


xylose

Cyclized with stereochemistry:

erythrose example:

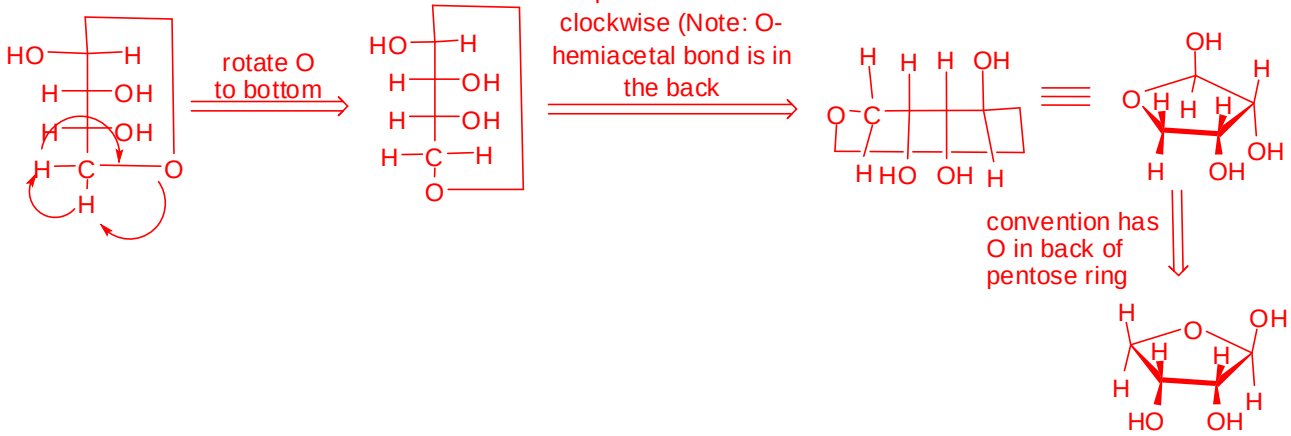
Note: vertices of C-O bond do NOT indicate C atom!!



OH same side as ether O

OH opposite side as ether O

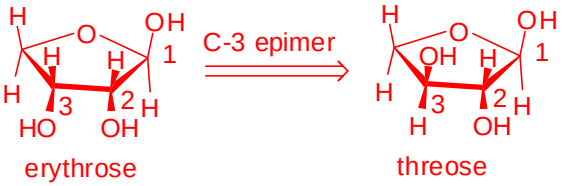
proceed with beta anomer



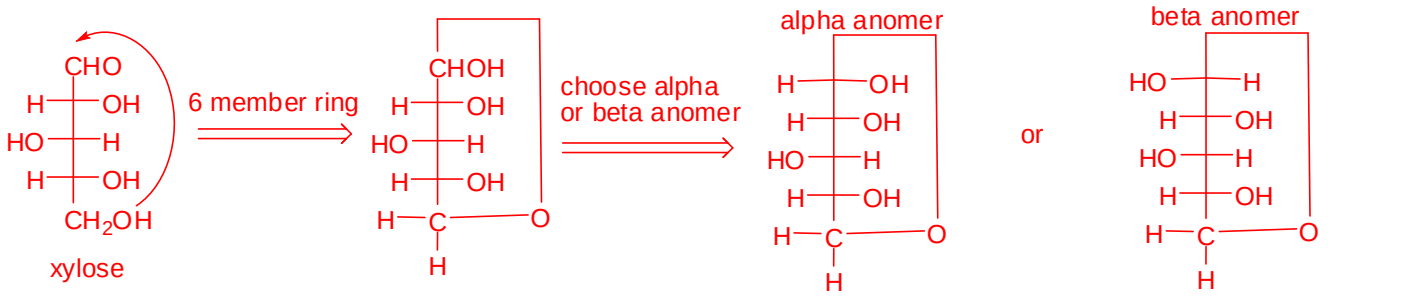
threose example:

-follow above with appropriate change at C-3 carbon.

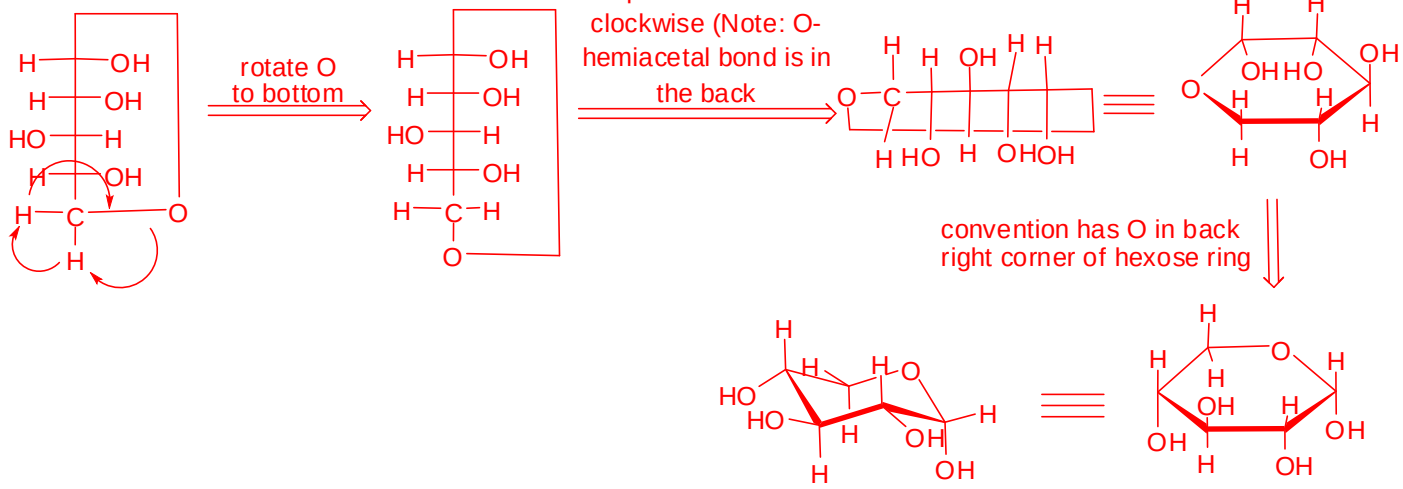
-since threose is just a C-3 epimer, then it's cyclized structure will look like…



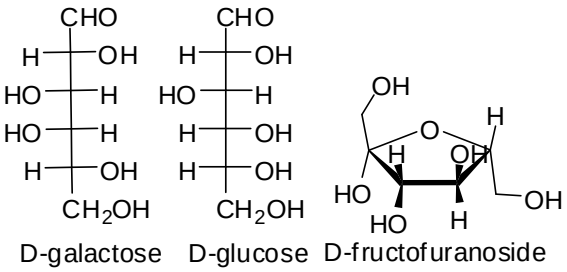
xylose 6 member ring example: Note: vertices of C-O bond do NOT indicate C atom!!



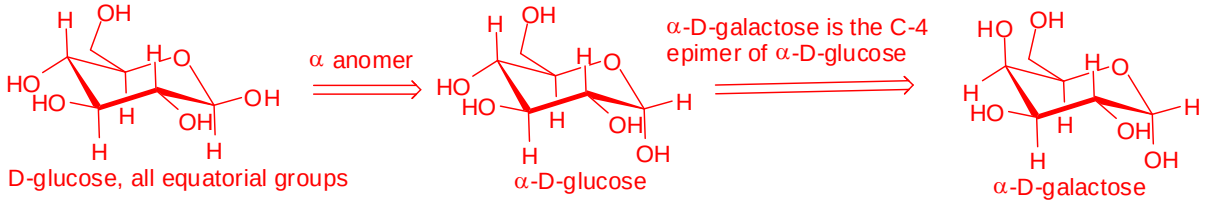
proceed with alpha anomer



2. Raffinose is a trisaccharide found in beans, cabbage, asparagus and broccoli. Because humans don't have the proper α-galactosidase enzyme to break down raffinose, it passes through to the lower intestine where gas producing bacteria ferment raffinose leading to the fragrant odors commonly associated with "bean-tooting". Raffinose has the structure, *O*-α-D-galactopyranosyl-(1→6)-*O*-α-D-glucopyranosyl-(1→2)-β-D-fructofuranoside. With the information below, draw raffinose.



1. Determine structures of α-D-glucopyranose and α-D-galactopyranose



2. Combine all the structures and find the connection points….