CONCEPT: PYRANOSE CONFORMATIONS

●Cyclic monosaccharides can exist in a variety of _____ (potentially flexible 3D arrangements).

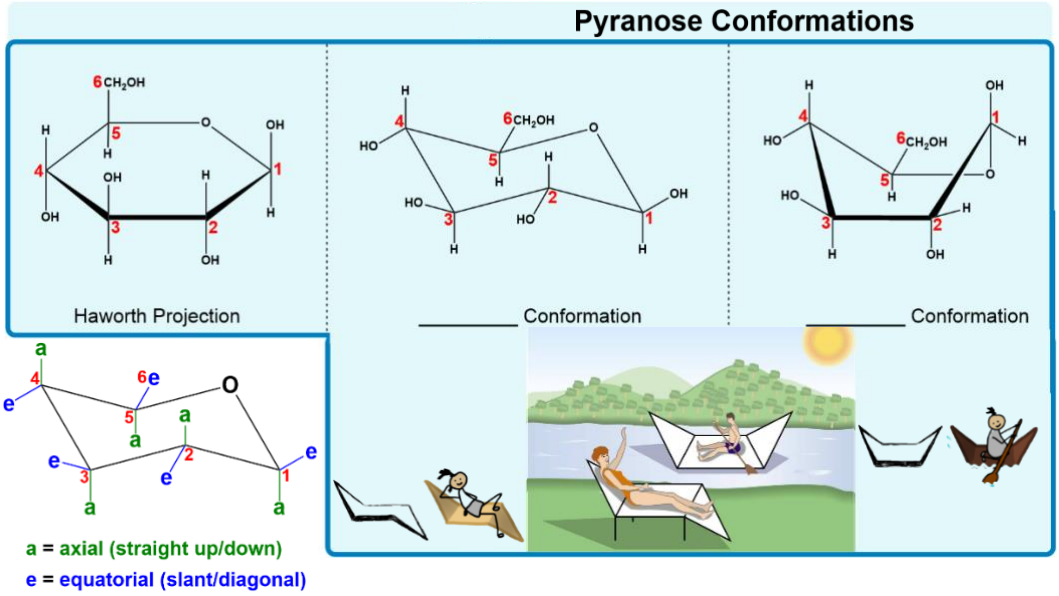
□ Recall: unlike *configurations*, *conformations* CAN change _____ breaking/reforming bonds.

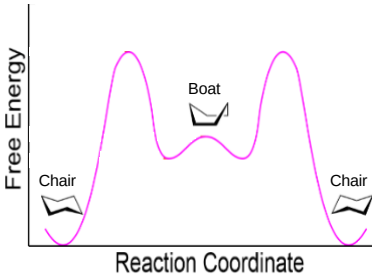
Pyranose Conformations

●Pyranose conformations include _____ & _____ conformations (just like cyclohexane).

□ Substituents can either occupy a *more crowded* _____ or a *less crowded* _____ position.

□ *Chair* is _____ *stable* and thus *predominates over* the boat.





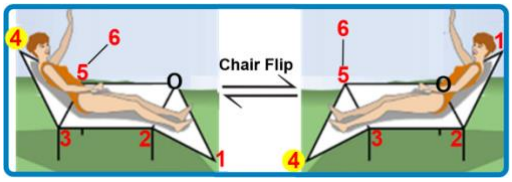
Chair Flip

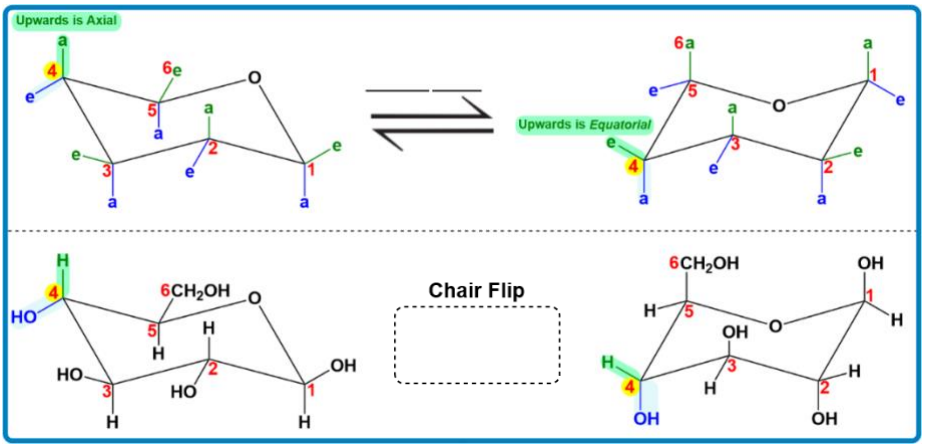
●Recall: pyranose rings can assume _____ chair conformations.

●*Chair* _____: process of converting one chair conformation to another.

□ Substituents *change* their _____/_____ positions, but *up/downwards* positions are _____.

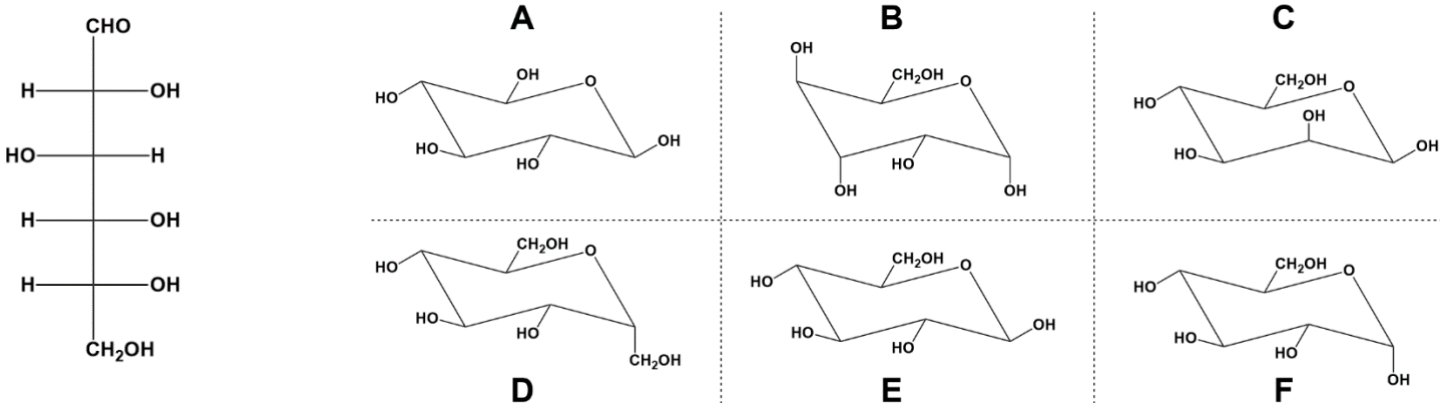
□ *Equatorial Preference*: most stable conformation has *bulky groups* in *less crowded* _____ positions.





CONCEPT: PYRANOSE CONFORMATIONS

PRACTICE: Circle the TWO chair conformations that could apply upon cyclization of the following linear monosaccharide:



β-Anomer of Glucose Predominates

- Glucose exists *predominantly* in its cyclic _____-D-glucopyranose anomer.
  - □ *Glucose composition*: ~64% ____ anomer, ~35% _____ anomer, & >1% linear chain.
  - □ Glucose β anomer is most *stable* due to _____ *preference*.
  - □ NOTE: *chair-flip* ≠ *mutarotation*.