

Today

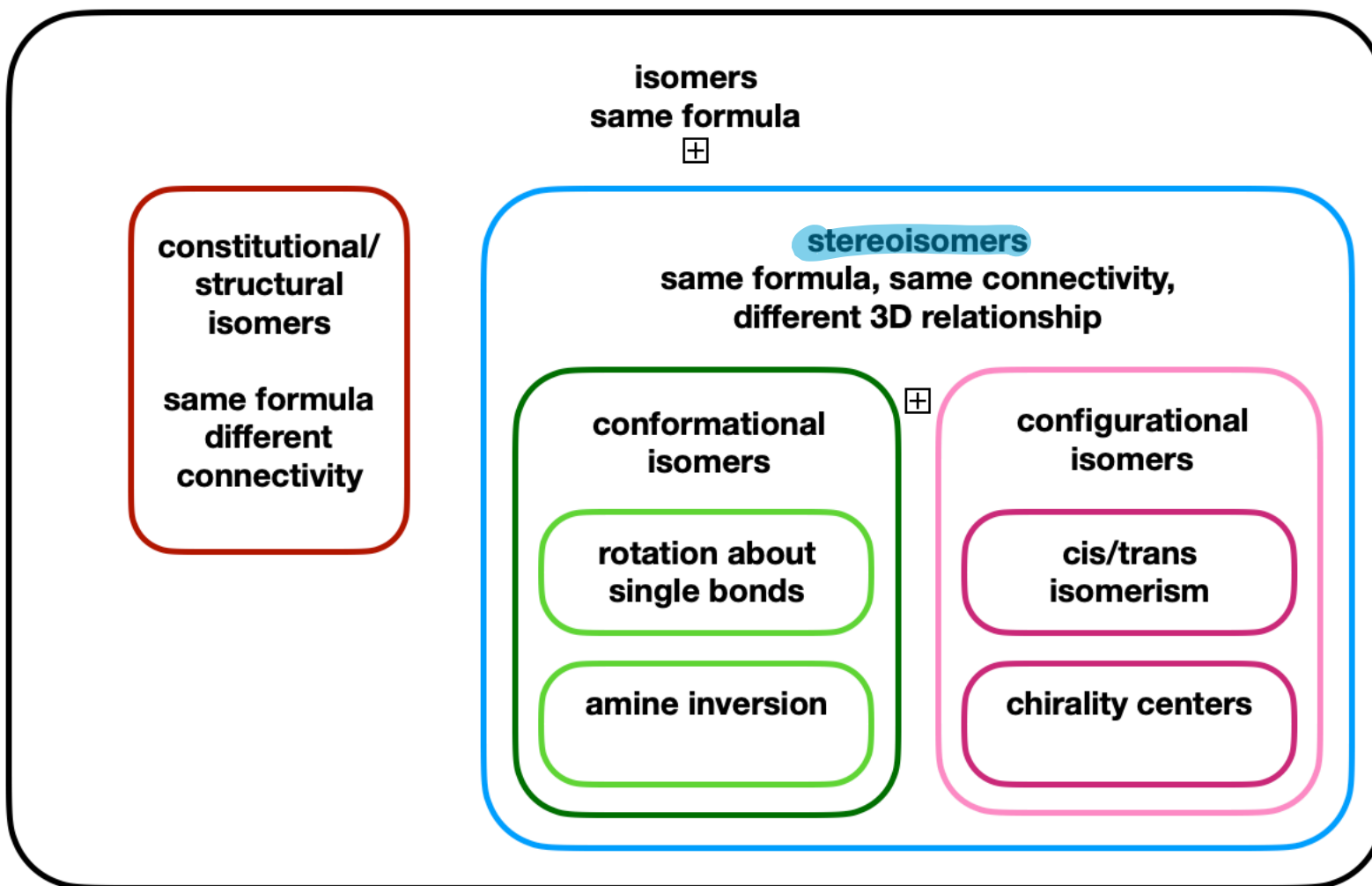
Next Class

Sections 4.3 - 4.8  
Chirality

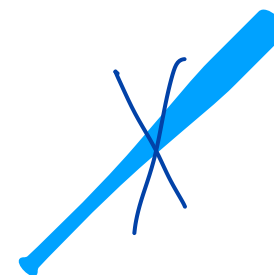
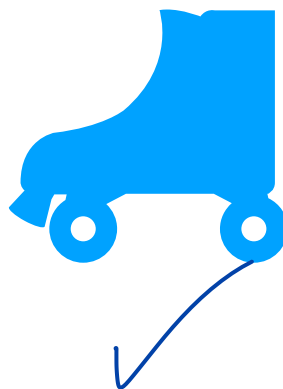
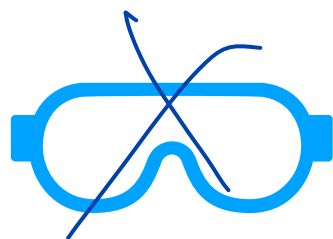
Sections 4.9-4.14  
Optical activity and compounds with more than one  
center of chirality

Rework test 1 by Oct 28. Answers questions that didn't receive full credit on a separate piece of paper. I do not need your test back

# Isomers



Look down



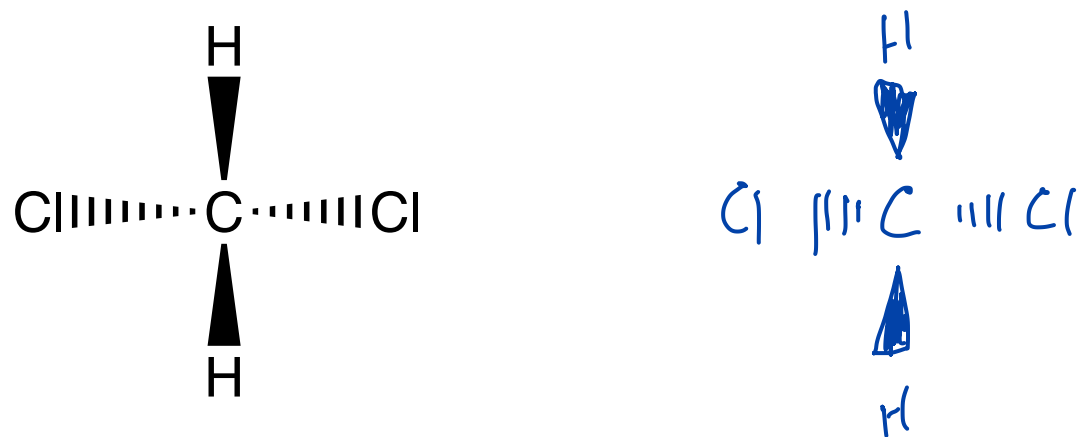
What makes your feet chiral?

A chiral object has a non-superposable mirror image

An achiral object has a superposable mirror image

Superposable mean that when you superimpose the two objects everything lines up.

*dichloromethane is achiral*



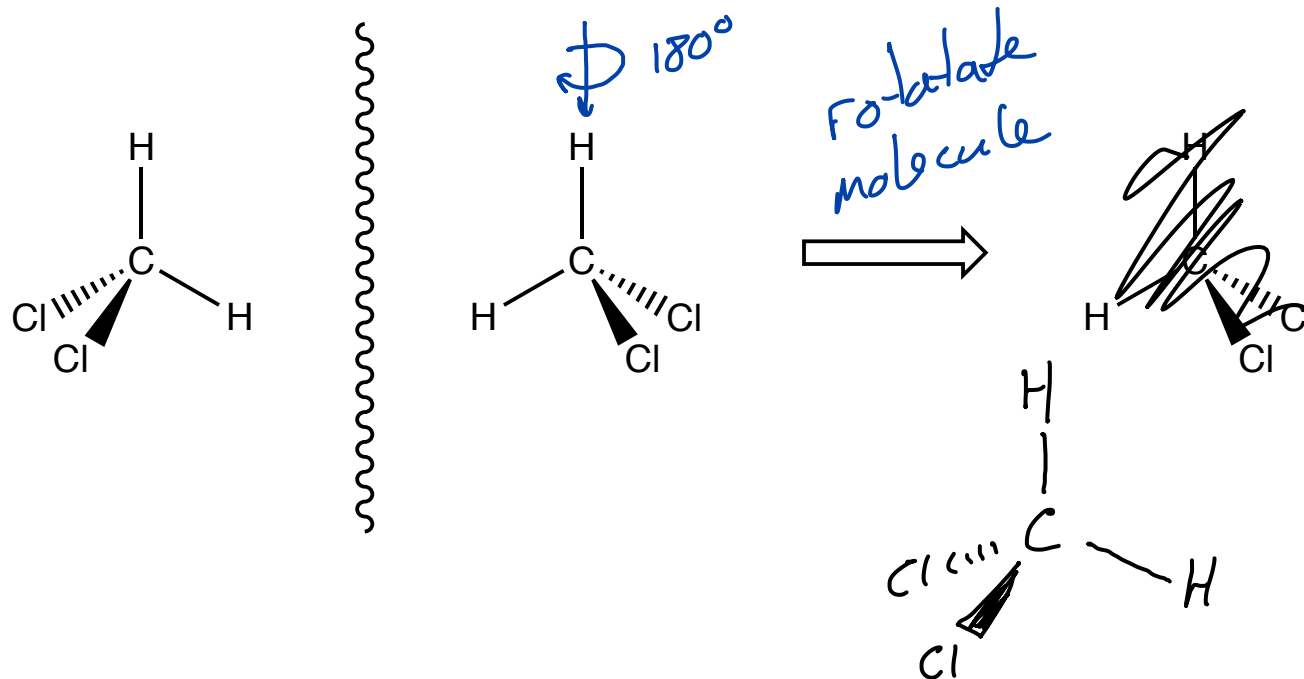
*it doesn't have handedness associated with it. It's mirror image is superposable*

What makes your feet chiral?

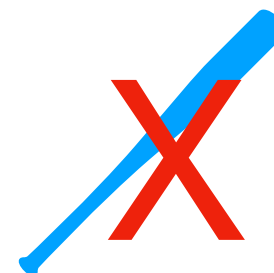
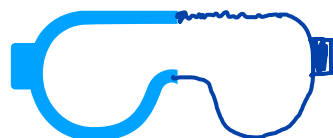
A chiral object has a non-superposable mirror image

Superposable mean that when you superimpose the two objects everything lines up.

*left-right mirror*



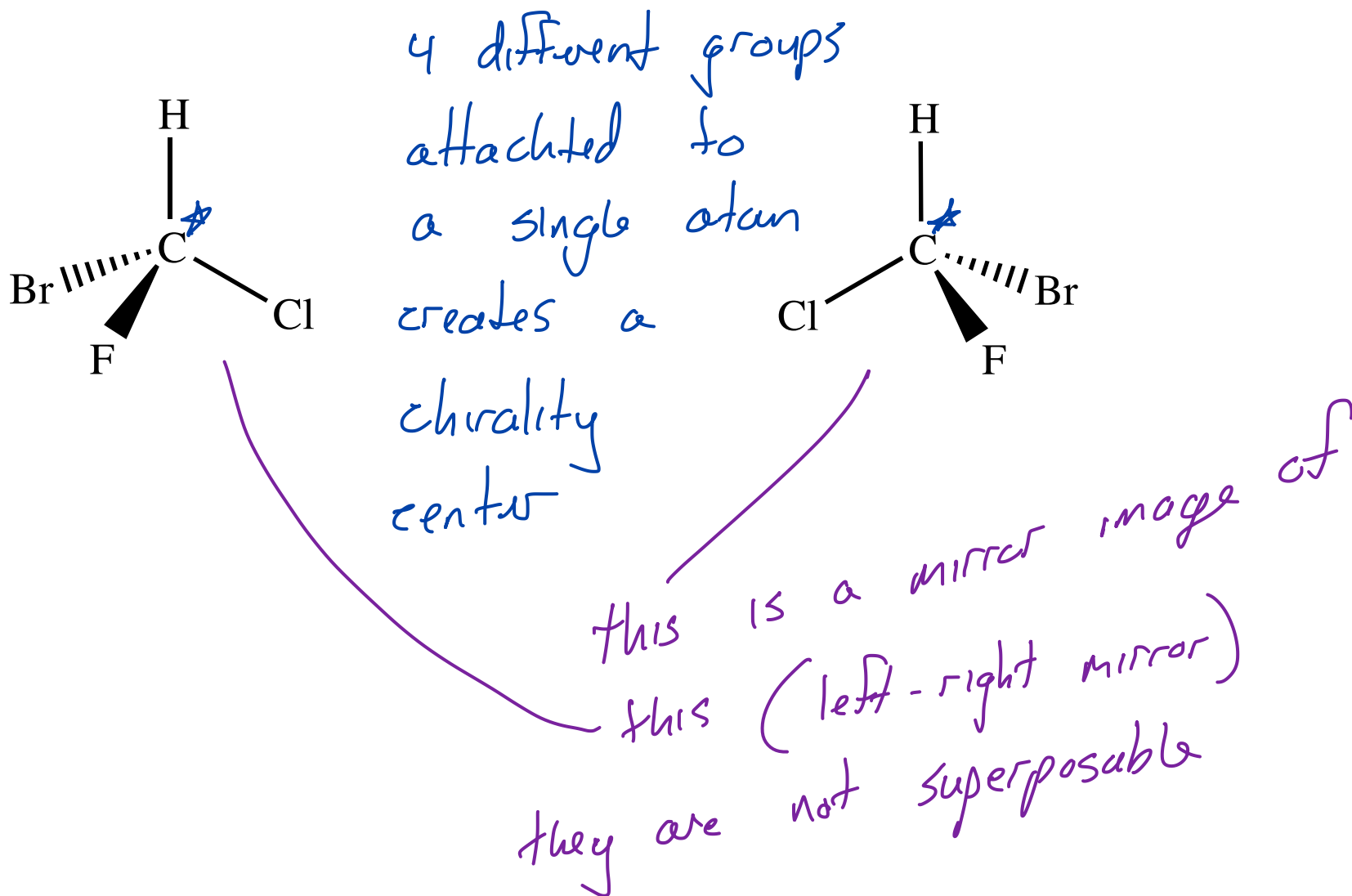
A chiral object lacks an internal mirror plane\*



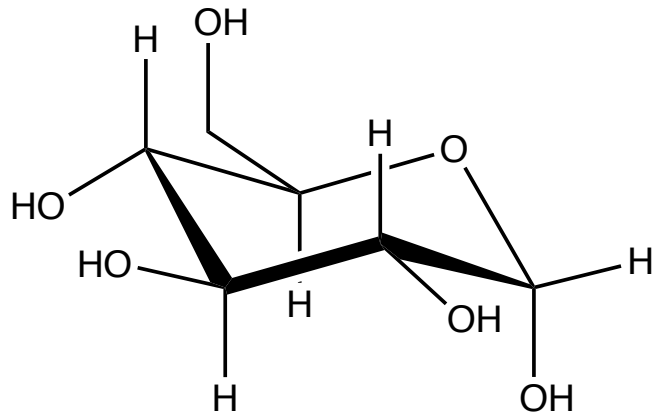
cut the  
baseball  
bat in  
half lengthwise

\*Technically it's an improper axis of rotation, but a mirror plane is an  $S_1$  and a center of inversion is an  $S_2$

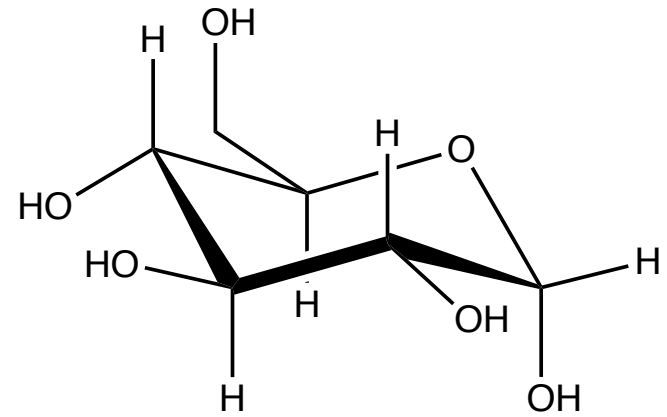
A chiral object lacks an internal mirror plane\*



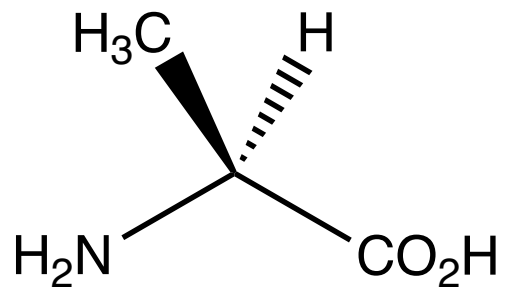




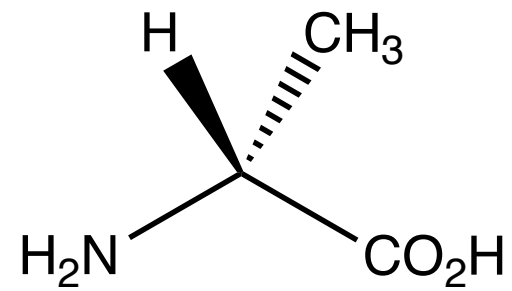
D-glucose  
6¢ per gram



L-glucose  
\$103 per gram



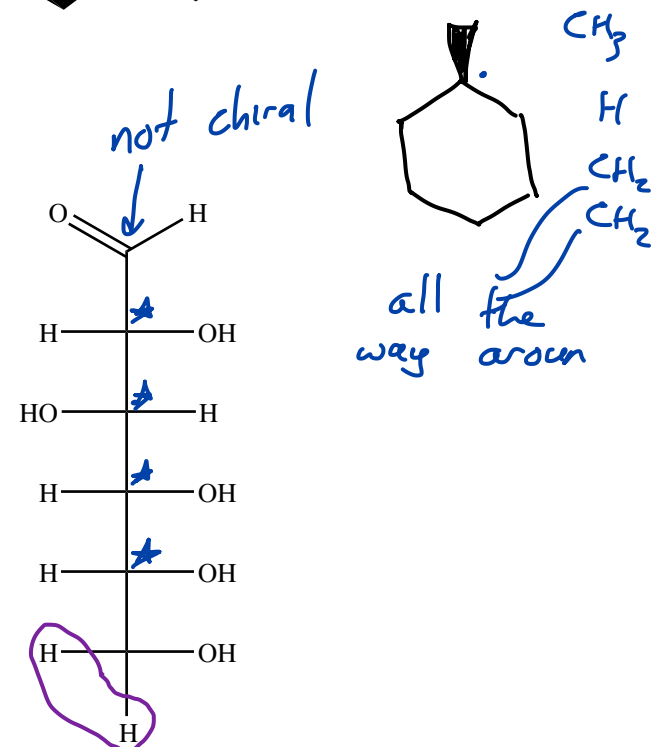
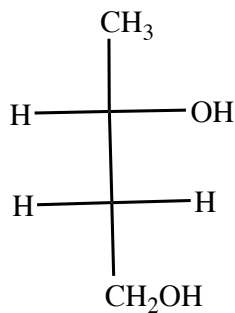
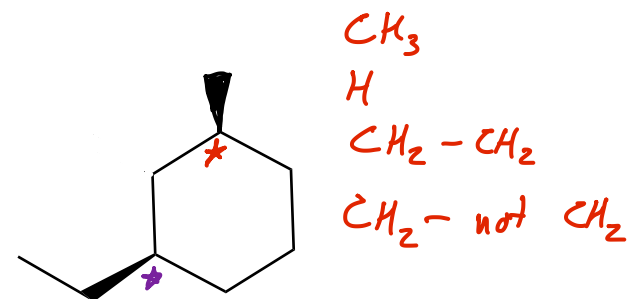
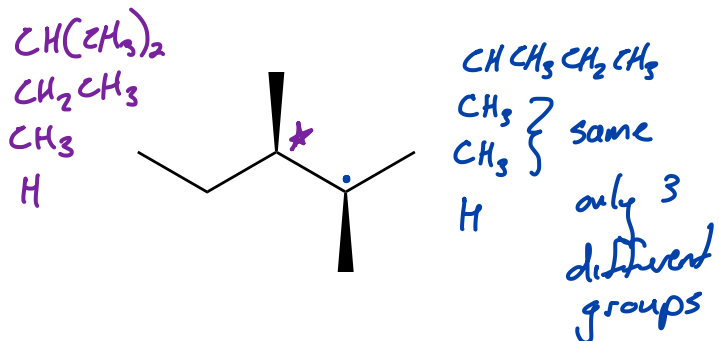
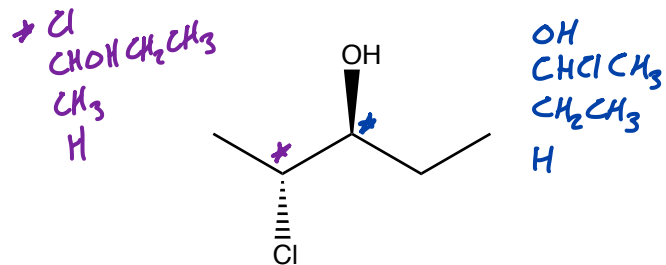
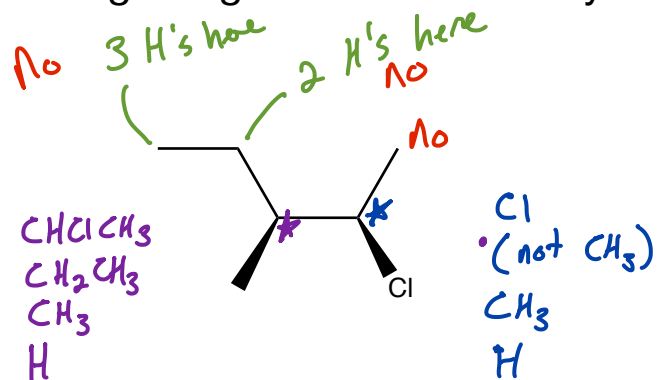
L-alanine



D-alanine

# Practice Recognizing centers of chirality

Section 4.4, 4.13



Determining Configuration (R vs S)

clockwise



counter clockwise



same rules as Z+E, except 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, + 4<sup>th</sup> place

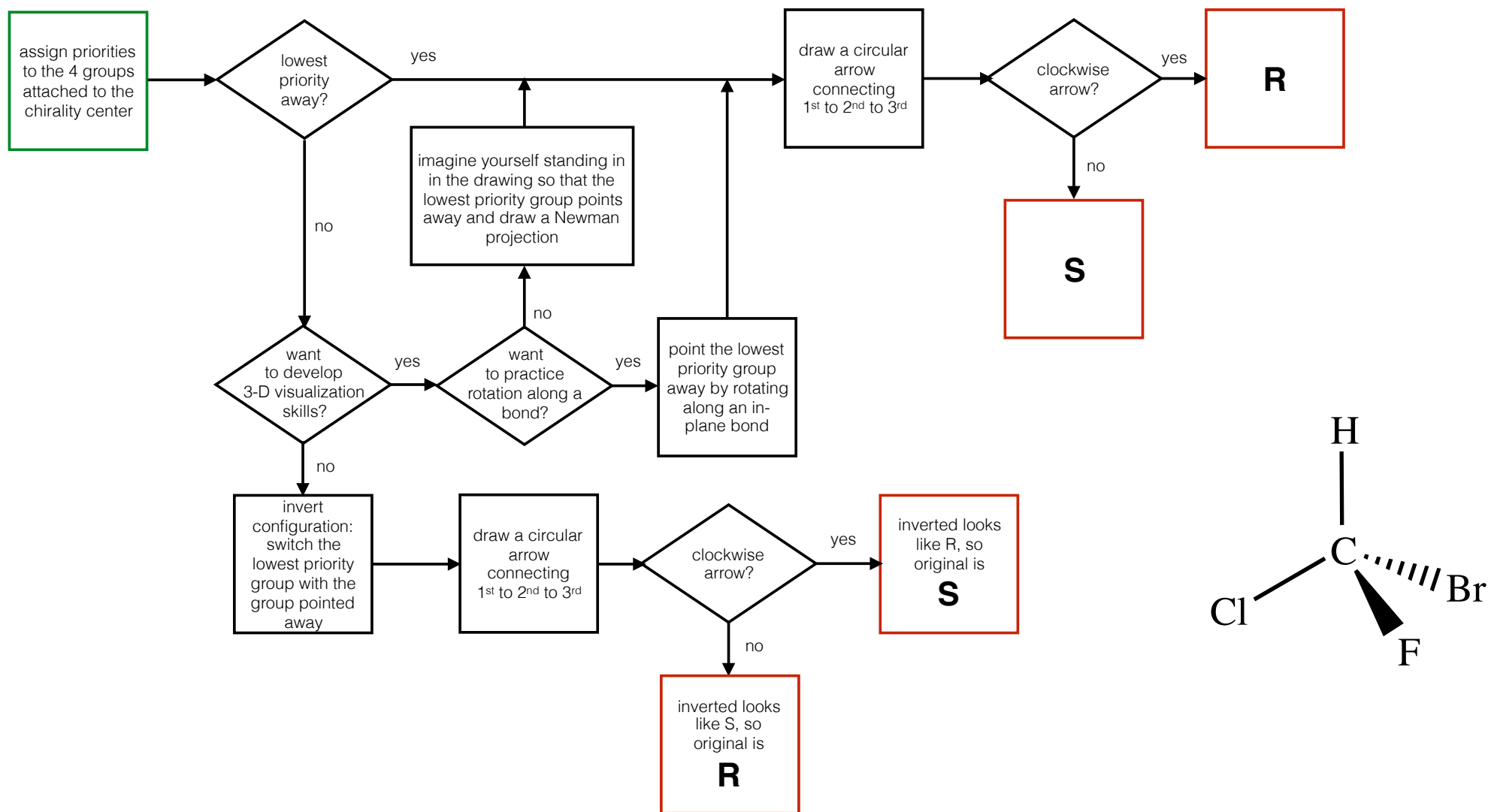
Assign priorities to groups connected to chirality center

Point lowest priority group away

Draw a circle from 1<sup>st</sup> to 2<sup>nd</sup> to 3<sup>rd</sup> priority groups

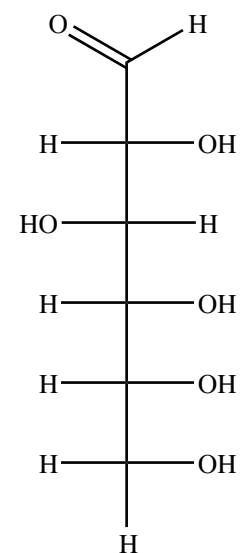
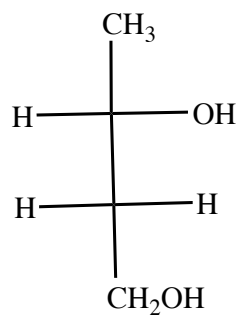
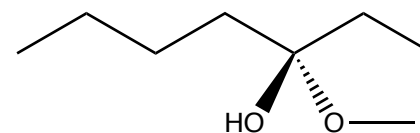
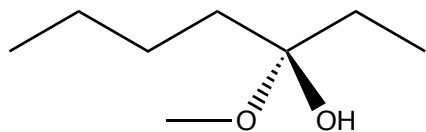
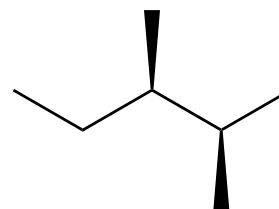
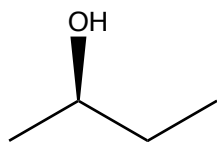
**Clockwise** circle is **R** configuration

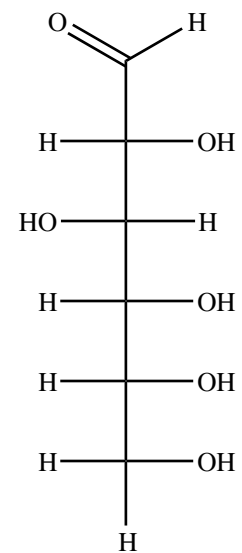
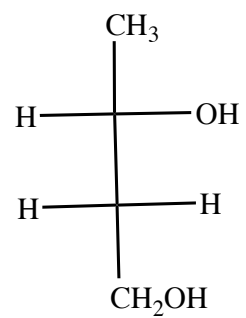
**Counter Clockwise** circle is **S** configuration

Determining Configuration (*R* vs *S*)

Practice determining the configuration of centers of chirality

Section 4.8





1. Draw a tetrahedral C atom
2. Assign priorities to the groups
3. Place the lowest priority group so that it points away
4. Draw in priority groups 1 through 3 in the correct (clockwise or counterclockwise) orientation.



1. Draw the molecule
2. Assign priorities and check if the correct configuration is drawn
3. a. If correct, celebrate, you're done
3. b. If incorrect version is drawn, redraw molecule switching the positions of 2 (and only two) substituents.

*R*-2-chloropentane

(2*S*,3*S*)-2-bromo-3-chloropentane

