

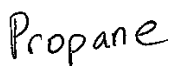
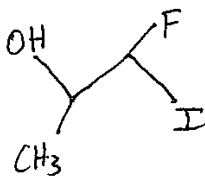
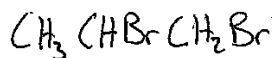
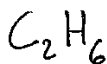
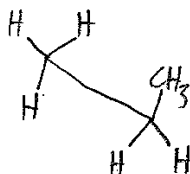
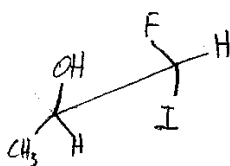
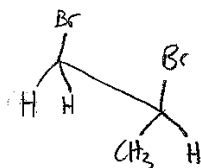
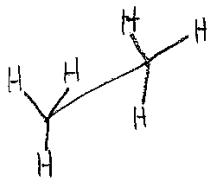
Conformations

What are conformations?

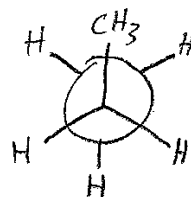
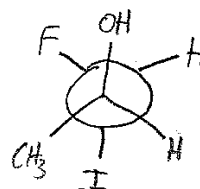
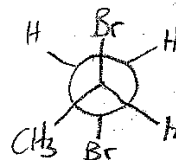
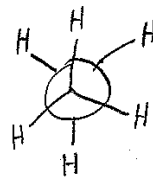
A unique 3D arrangement of atoms based on rotation around a single bond.

Sawhorse Representations

- Draw the C-C bond at an angle to the page
- Show bonds to all atoms

Newman Projections

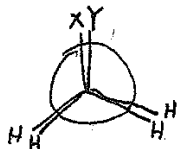
- Front carbon is part of
- Back carbon is part of
- Looking through the C-C bond



Conformational States

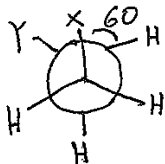
Eclipsed

Groups overlap



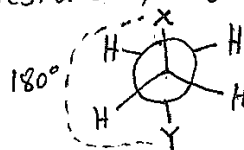
Gauche (Staggered)

Groups 60° apart + not anti

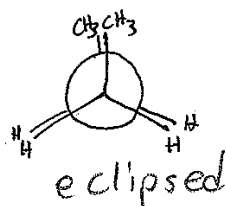
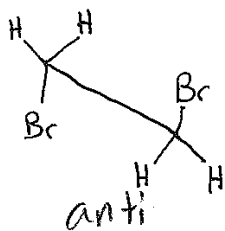
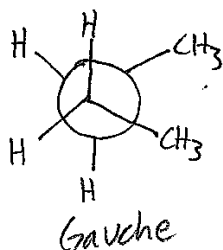
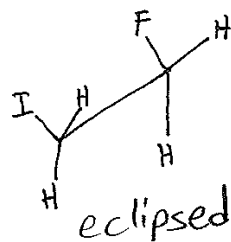
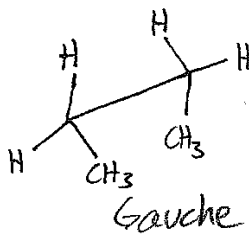
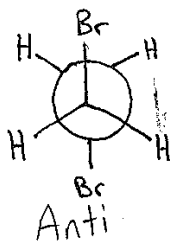


Anti (Staggered)

Biggest groups 180° apart, rest are hydrogens



Identify the following as either Eclipsed, Gauche, or Anti:



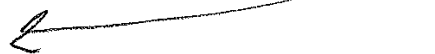
Strain

What is strain?

Repulsion between functional groups due to proximity.

Deviation from ideal state.

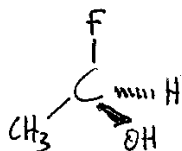
When is strain induced?



Stereochemistry

Chirality: The property of a molecule possessing one or more mirror images of itself.

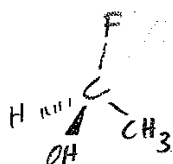
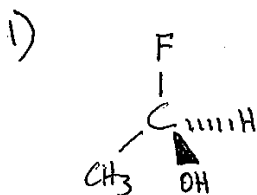
Enantiomers: A molecule that is a mirror image of another. Both enantiomers have exactly the same physical properties (except opposite optical rotation).



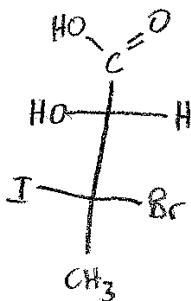
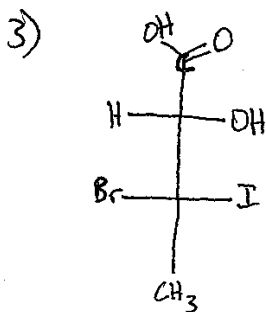
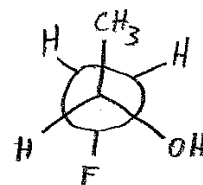
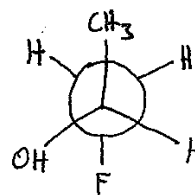
4 different functional groups

Best way to identify a chiral center.

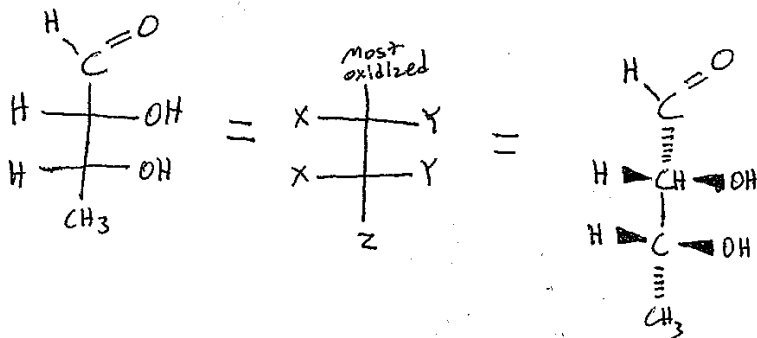
Draw enantiomers for each:



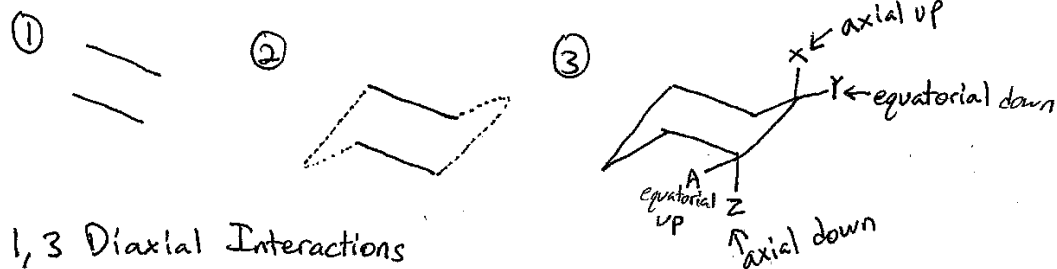
2)



Fischer Projections



Chair Conformations

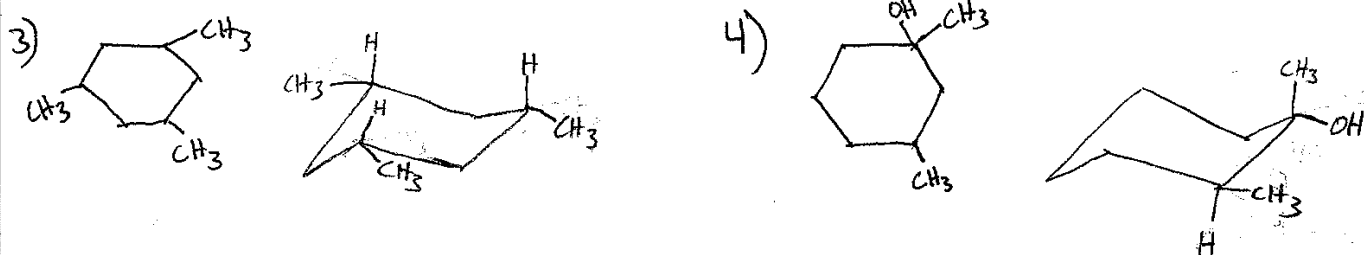
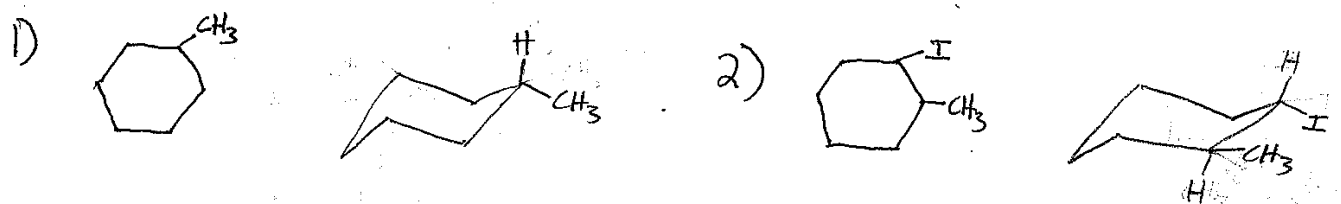


Largest group prefers equatorial position.

1,3 Diaxial Interactions

Repulsion between 2 axial substituents on the same face of a cyclic system.

Draw a chair conformation for the following molecules. In addition, make sure it is the most stable conformation.



Ring Flips

- 1) Shift each carbon
- 2) Axial substituents become equatorial.
- 3) Equatorial substituents become axial.

Draw ring flips for the following:

