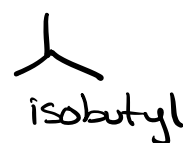
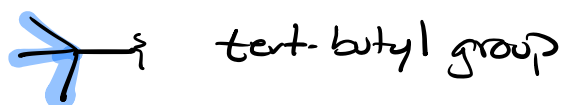
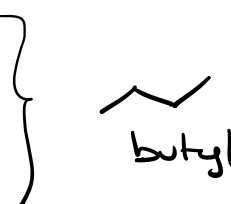
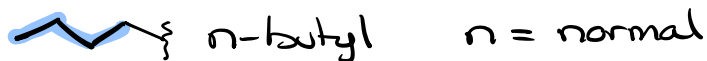


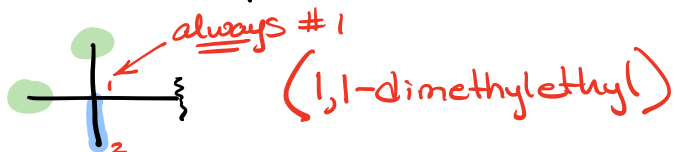
Nomenclature Cont.

Branched radicals (sidechains)

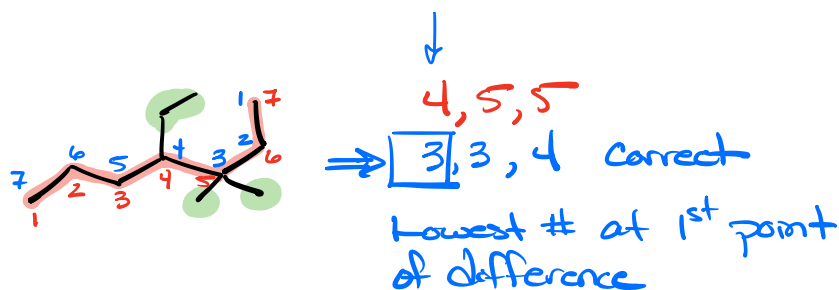
Common names



Complex sidechain nomenclature



Examples



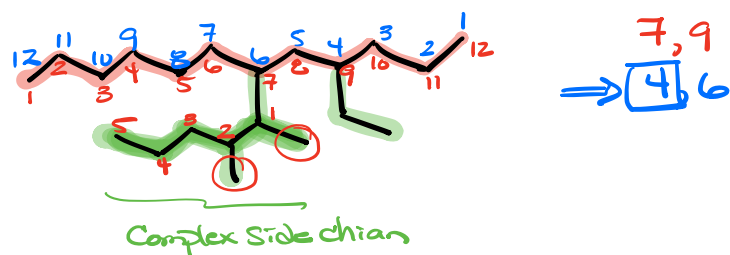
3,3-dimethyl
4-ethyl
heptane

do not alphabetize
on di, tri, tetra...

4-ethyl-3,3-dimethylheptane

isopropyl
isobutyl
neopentyl

sec-butyl
tert-butyl



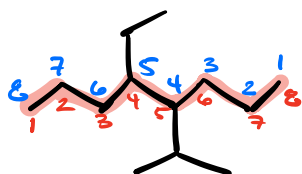
4-ethyl

6-(1,2-dimethylpentyl)

↑
main chain

connected to
main chain at
1 on pentyl

6-(1,2-dimethylpentyl)-4-ethyl dodecane



$\boxed{4}5$

4,5

Tie

\Rightarrow the chain
having the
(least branched)
side chains

4-ethyl

5-isopropyl or 5-(1-methylethyl)
octane

4-ethyl-5-isopropyloctane

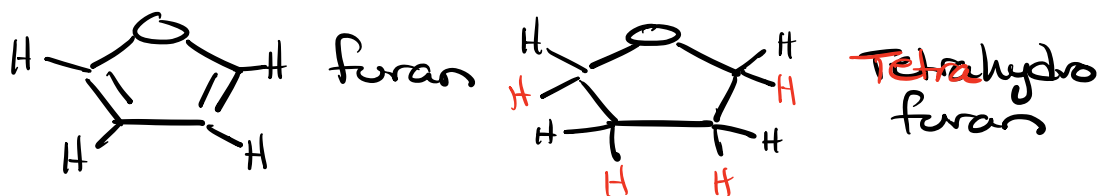
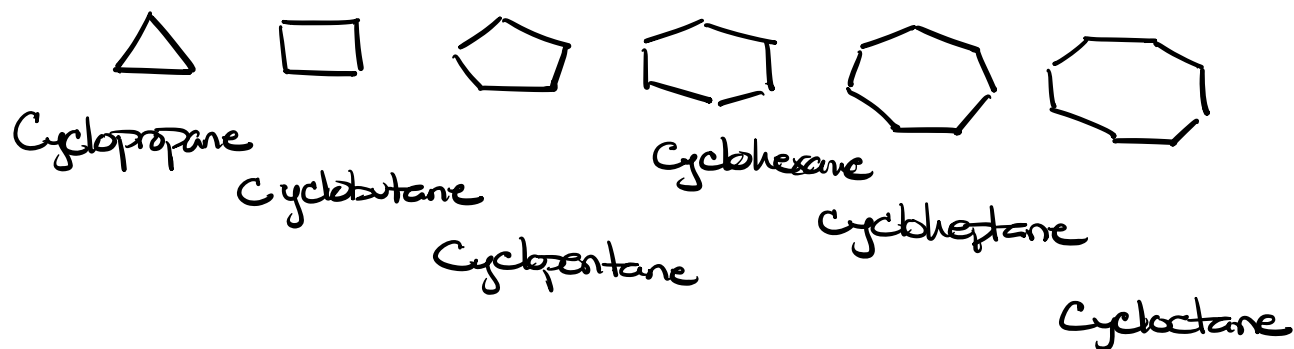
4-ethyl-5-(1-methylethyl)octane

If chains are of equal length, choice of main chain goes to following:

- The chain with more side chains.
- The chain with side chains that have the lowest # locants.
- The chain having the greatest # of carbons in the smallest side chains
- The chain having the least branched side chains.

Cycloalkane

Cyclo added before name





1,1-dimethyl
3-ethyl
Cyclohexane

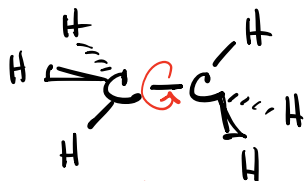
3-ethyl-1,1-dimethylcyclohexane

Conformations

Conformations are rotations about σ bonds

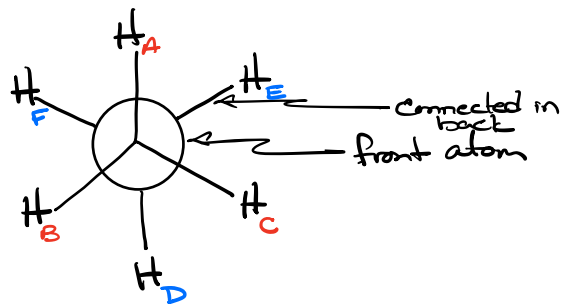
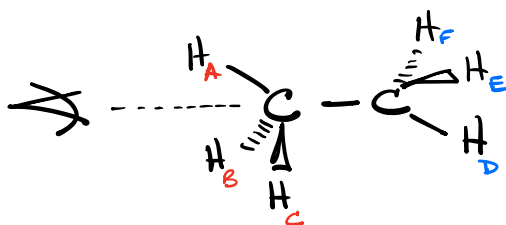


σ density centered between atoms
the atoms can rotate

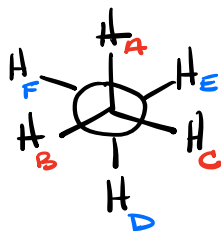
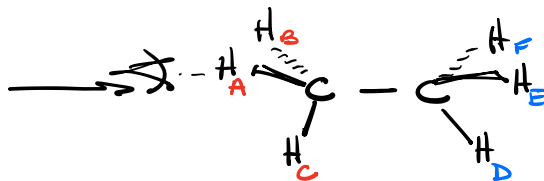
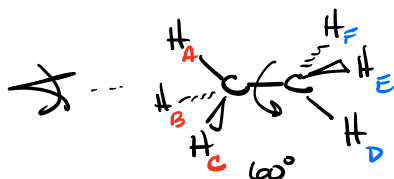


Can rotate about the bond

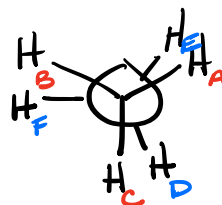
Newman projection



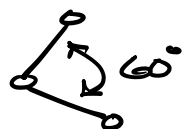
Newman projection



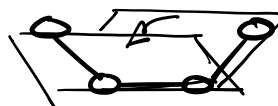
Staggered
Conformation



Hydrogens all
overlapping
Eclipsed Conformation

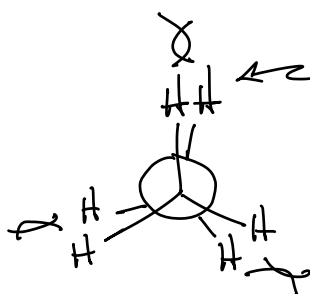
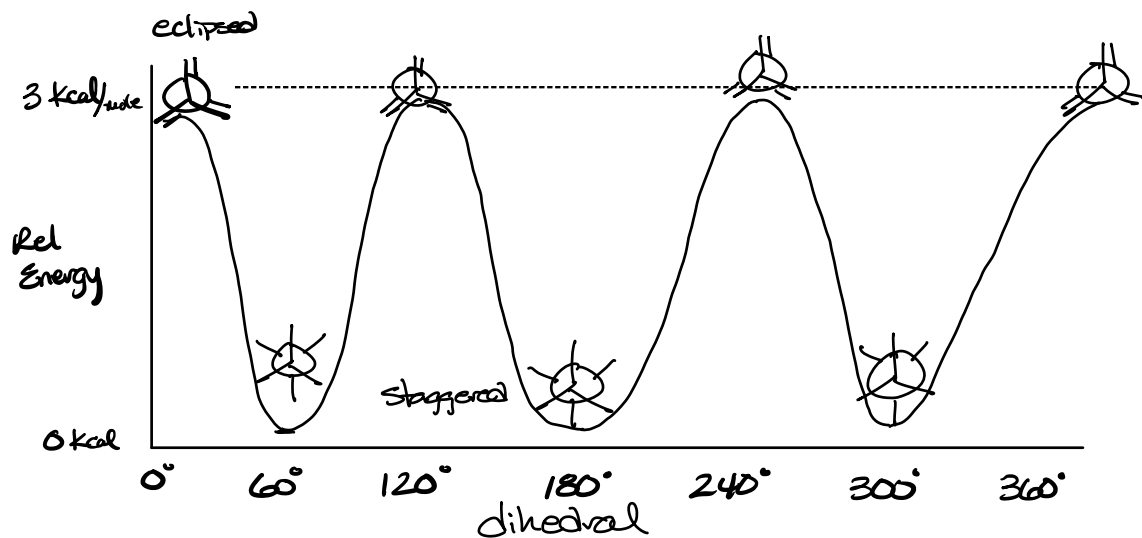


Bond angle
3 atom angle



Dihedral angle
4 atom angle

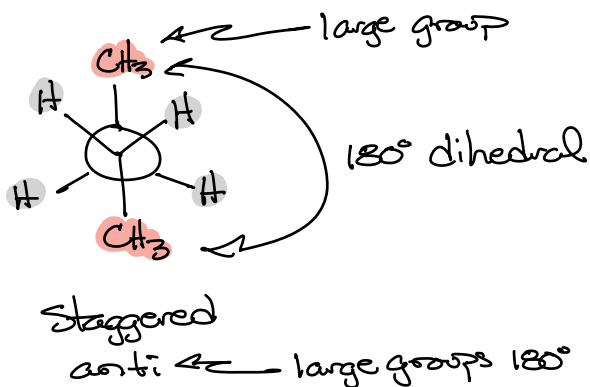
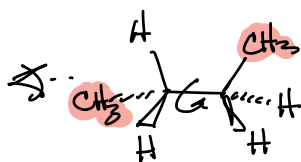
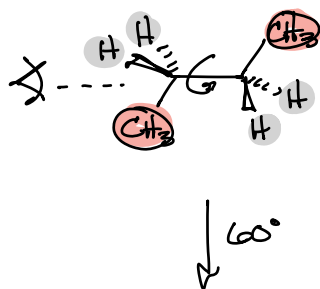
Potential energy vs. Dihedral angle



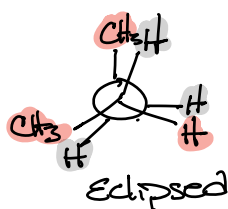
← nuclear-nuclear repulsion
Sterics - when two atoms are fighting to occupy the same space.

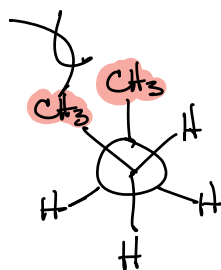
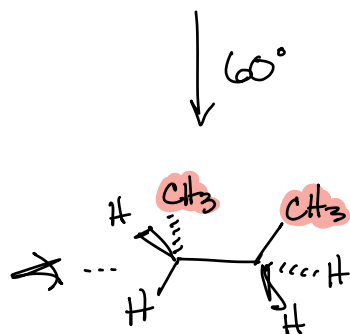
Sterics increase the potential energy of the system.

Butane



75%
molecules
at
room
temp





Staggered
Gauche

= Steric Strain

25%
molecules
@ 25°C

