

10/5/11

IUPAC names

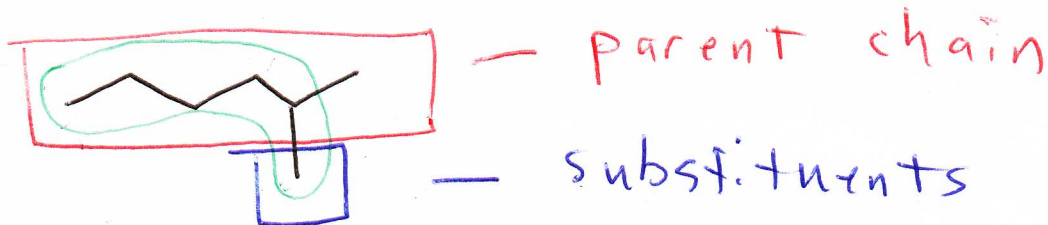
#1

Common names of substituents

primary, secondary, and tertiary carbons

cyclic compounds

Construction of IUPAC Names



stereo descriptors / locants / substituents / parent

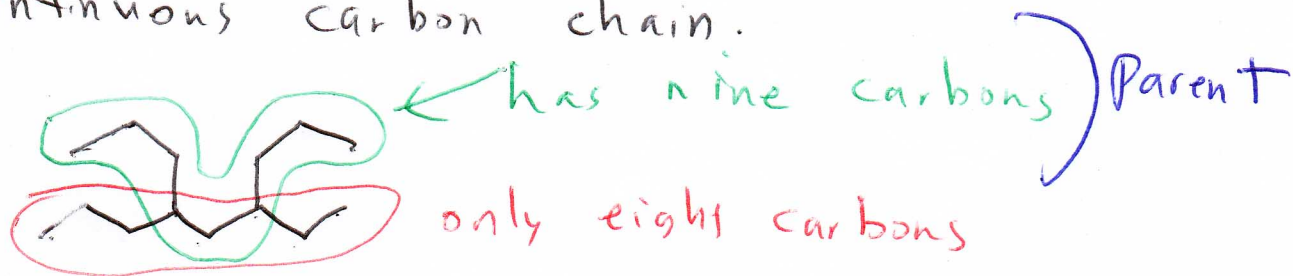
cis, trans, E/Z 1,2,3 methyl hexene

R/S

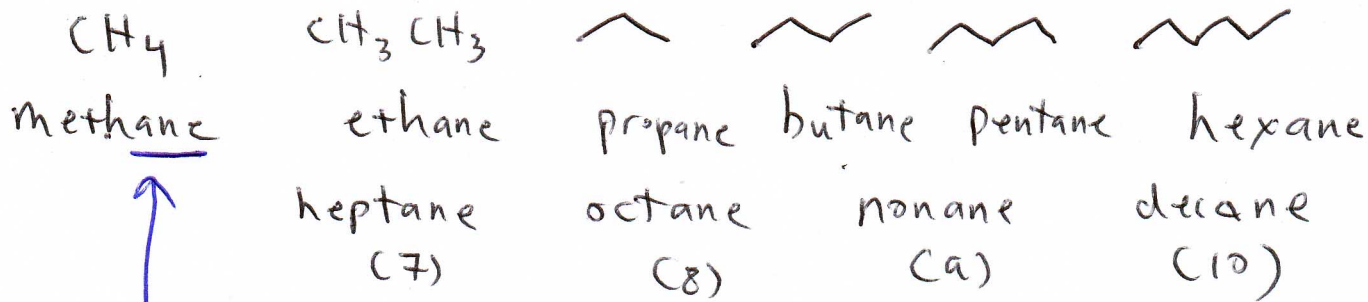
Position numbers

functional group

Rule #1 - The parent chain is the longest continuous carbon chain.



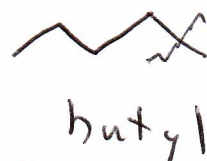
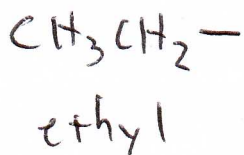
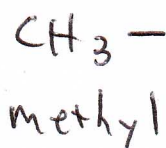
Alkanes - hydrocarbon with only single bonds



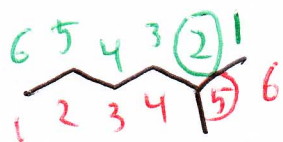
-ane indicates only alkanes are present as the most important functional group

Alkyl \rightarrow -yl is a substituent name ending

#2



shows the point of connection

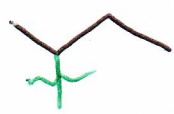


2 < 5

2-methylhexane

Rule #2 - Compounds are numbered so that the first substituent receives the lowest possible number.

Common names of substituents



attachment point

isopropyl

sec-butyl

isobutyl

tert-butyl

neopentyl

primary carbon (1°) - a carbon attached to only one other carbon

secondary (2°) - a carbon attached to 2 carbons

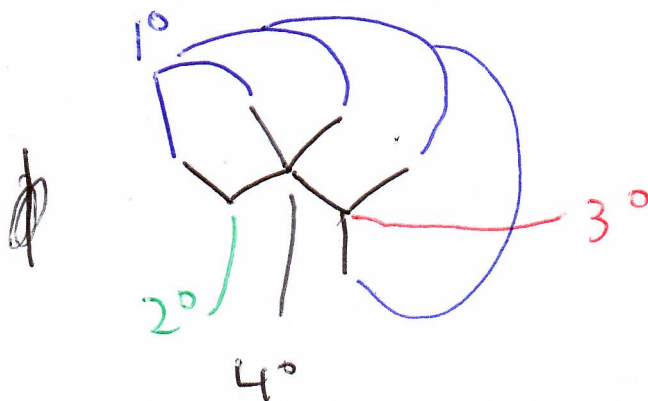
tertiary (3°) - attached to 3 carbons

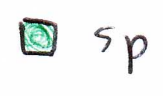
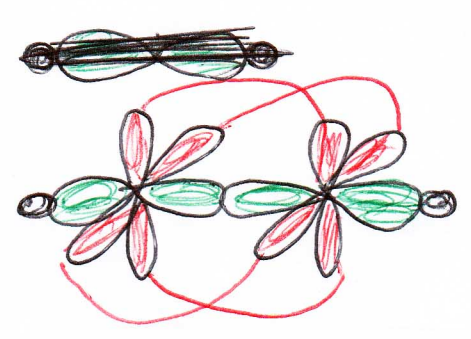
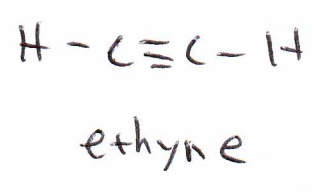
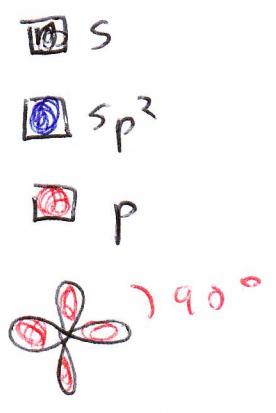
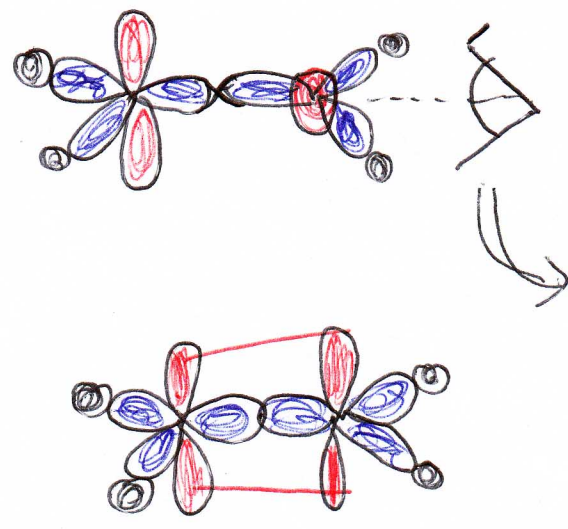
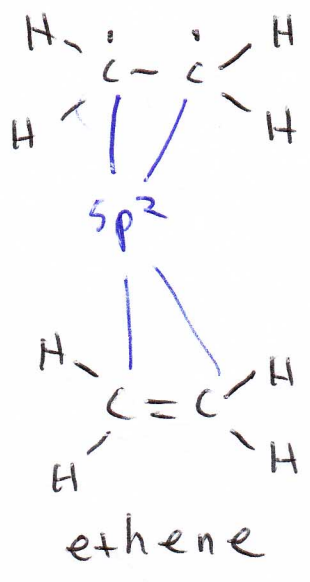
quaternary (4°) - attached to 4 carbons



cyclohexane

in a ring





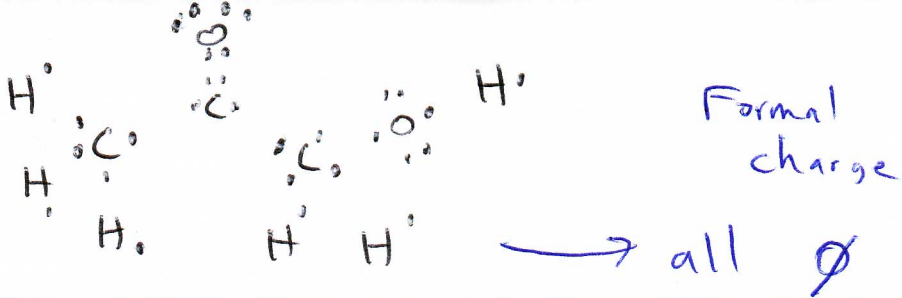
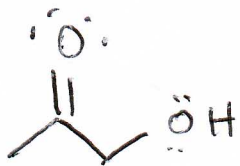
formal charge vs. oxidation state



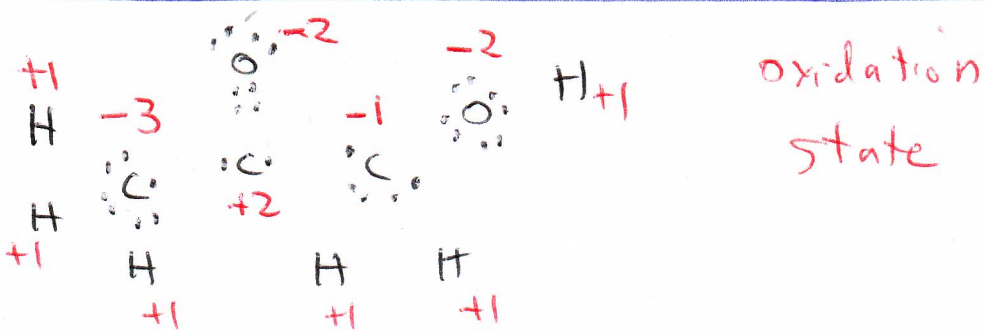
Formal charge and oxidation are both counting systems for electrons,

in which the number of electrons on an atom in a molecule is compared to how many e^- the atom would have as an unreacted element,

- Formal charge assumes covalent bonding \rightarrow one electron is given to each atom for each bond.
- Oxidation state assumes ionic bonding \rightarrow both electrons are given to the most electronegative atom in the bond. If a bond is made of two of the same atom, then the bond is treated covalently, meaning the electrons are evenly split.



#4



Formal charge = FC = # of valence e^- - # bonds - lone e^-
($\frac{1}{2}$ bonding e^-)