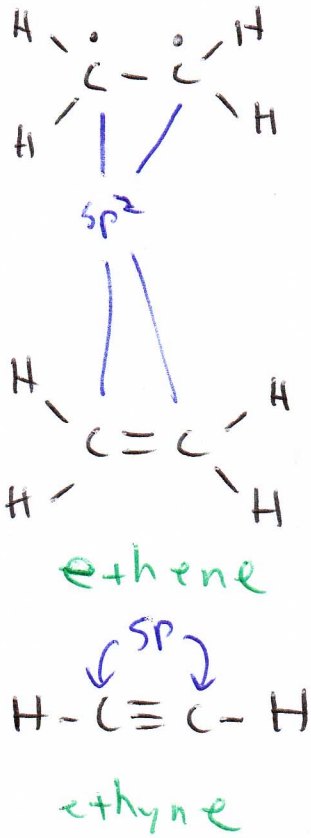

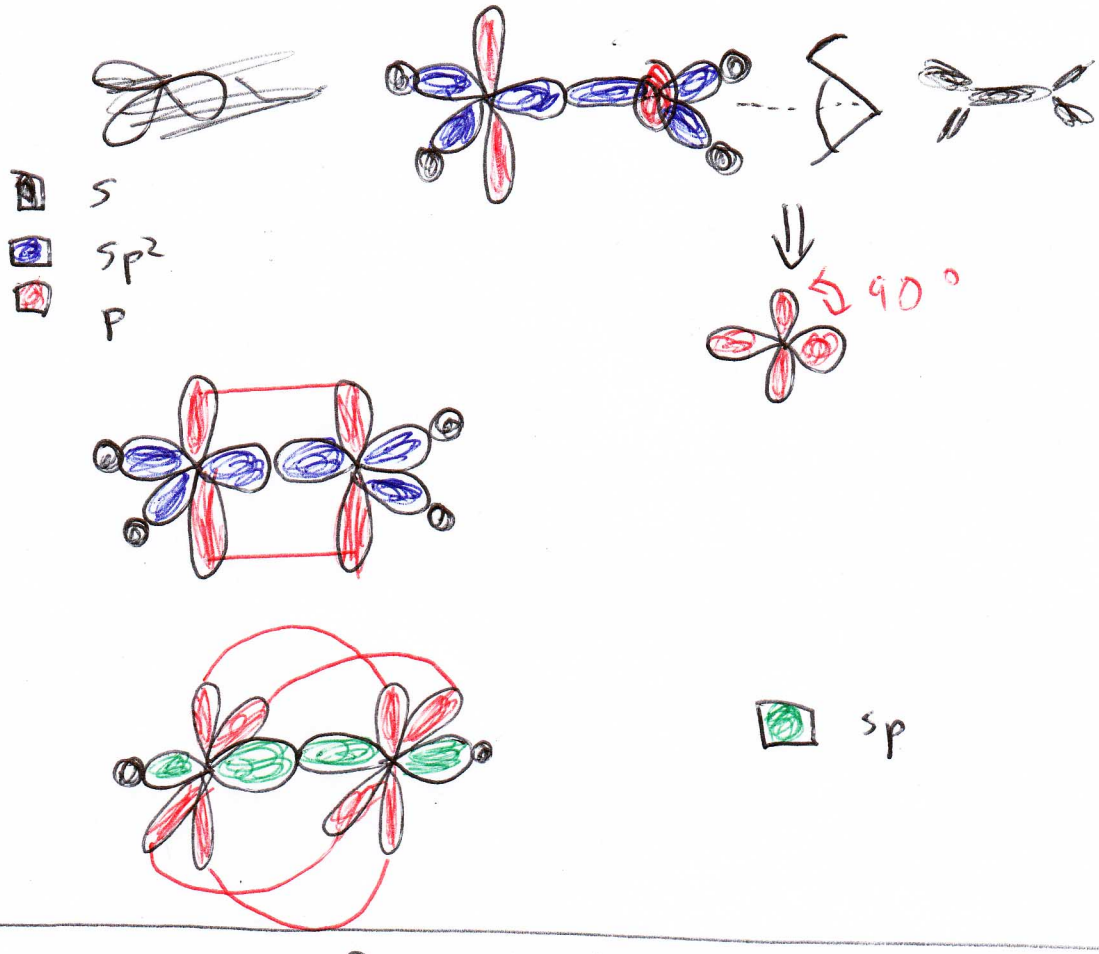

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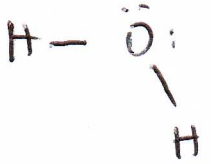
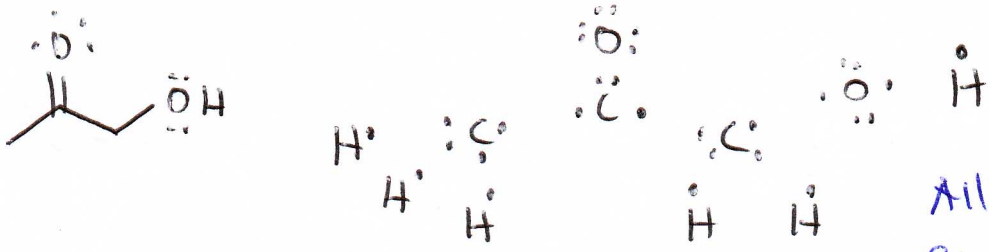
oxidation state versus formal charge



Both oxidation state and formal charge are counting systems, in which the # of electrons effectively on each atom are compared to the number of electrons each atom would have in its unreacted elemental state.

- Formal charge treats bonds as covalent, which means each atom in a bond receives one electron from each bond

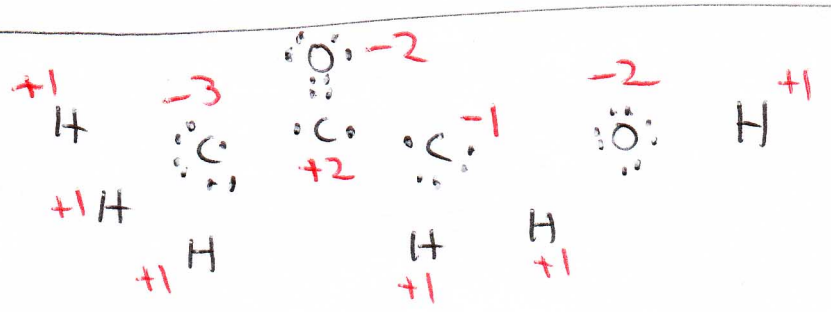
- Oxidation state treats bonds as ionic, which means both electrons in a bond are given to the most electronegative atom. If the two atoms in a bond are the same, the bond is treated as covalent.



Formal Charge

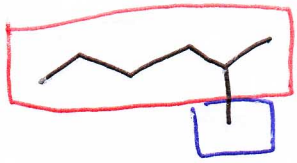
All atoms in this example have FC of 0.

F.C. = # of valence e^- − # bonds − lone e^-



Oxidation Charge

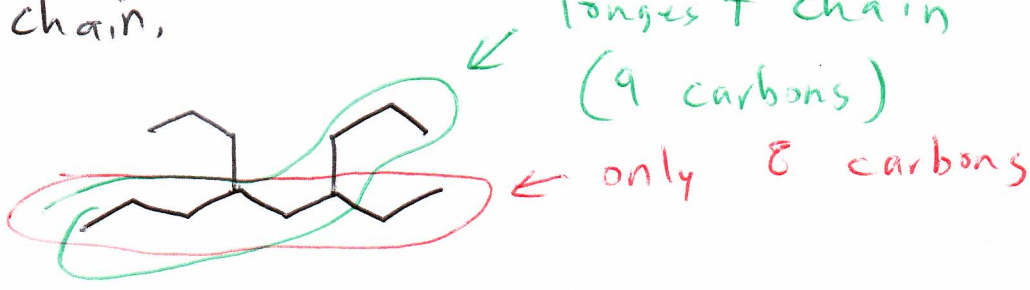
IUPAC name
common names of substituents
primary, secondary, and tertiary carbons
cyclic compounds
Construction of IUPAC names



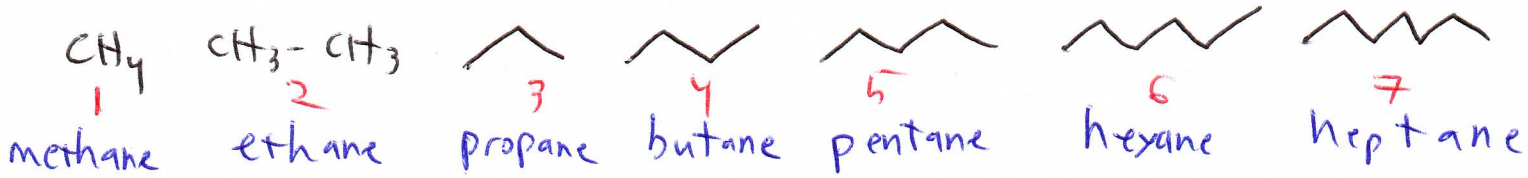
— parent chain
— substituent

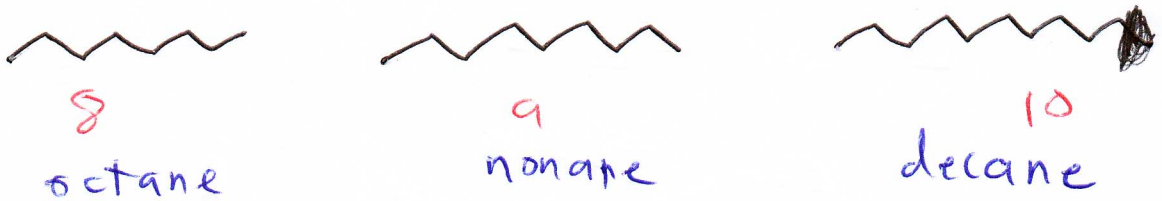
stereodescriptors / locants / substituents / parent / functional groups
cis, trans, E, Z, R, S | position numbers

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



Alkanes - hydrocarbons with only single bonds

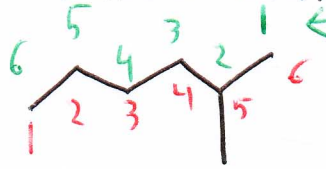




Alkyl ⟶ -yl ending is used for substituents

Position

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

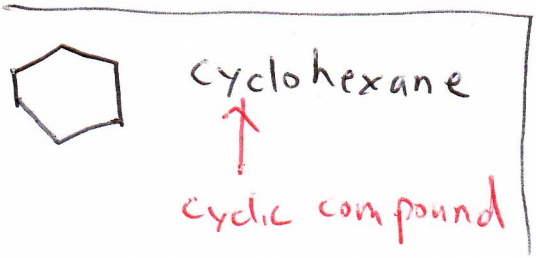


correct since 2 < 5

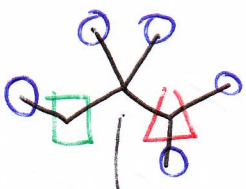
2-methylhexane

common names of substituents

primary carbon (1°) - a carbon attached to only one carbon
secondary (2°) - attached to 2 carbons
tertiary (3°) - attached to 3 carbons
quaternary (4°) - attached to 4 carbons



2,3,3-trimethylpentane



○ primary
□ secondary
△ tertiary

quaternary