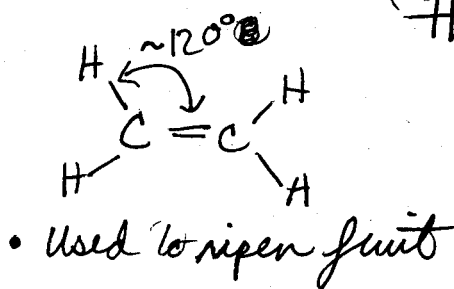
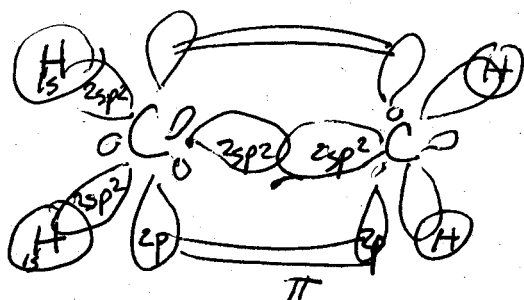
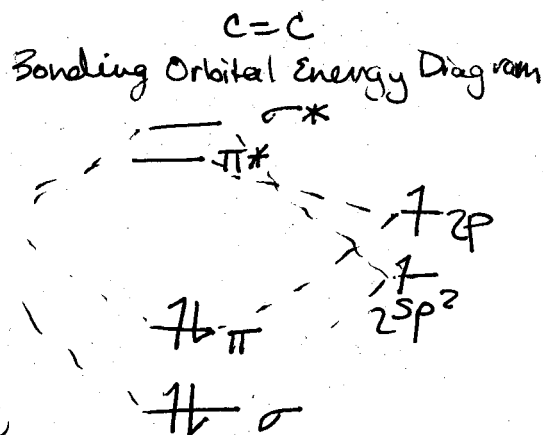
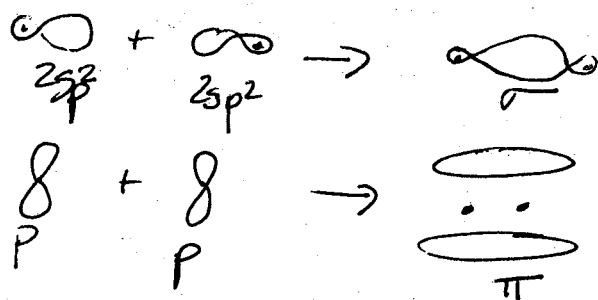
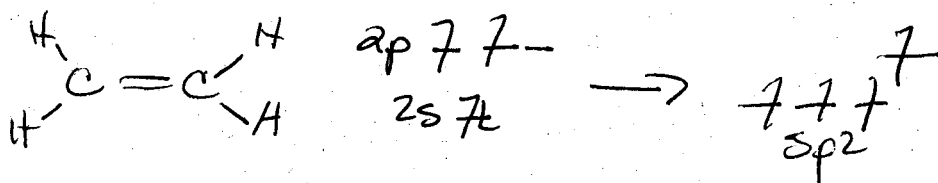
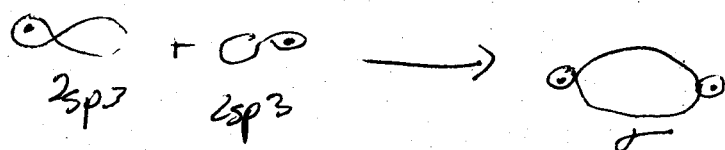
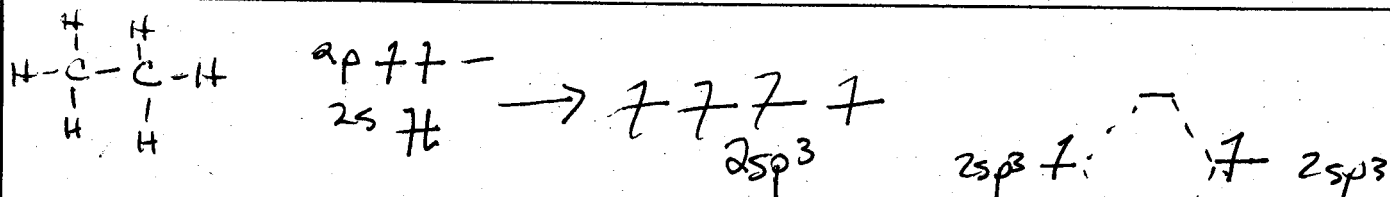
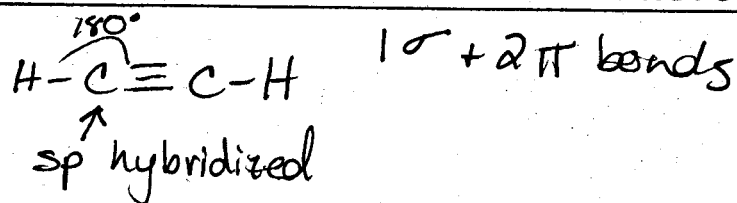
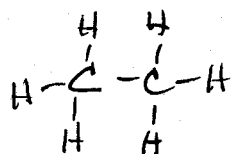
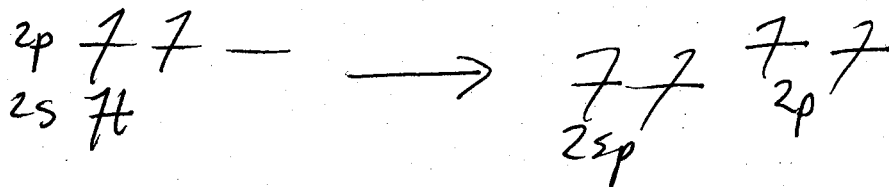


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1 σ + 2 π bonds

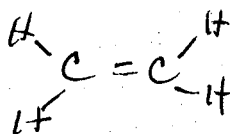
ethane

 sp^3

tetrahedral

109.5°

1.54 Å



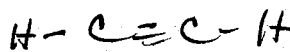
ethylene

 sp^2

120°

trigonal planar

1.33 Å



acetylene

 sp

180°

linear

1.20 Å

Polarity + Electronegativity

Table 1.1 in your book

Know trends: EN. in e L $\rightarrow$ R across periodic table
 " " bottom to top across

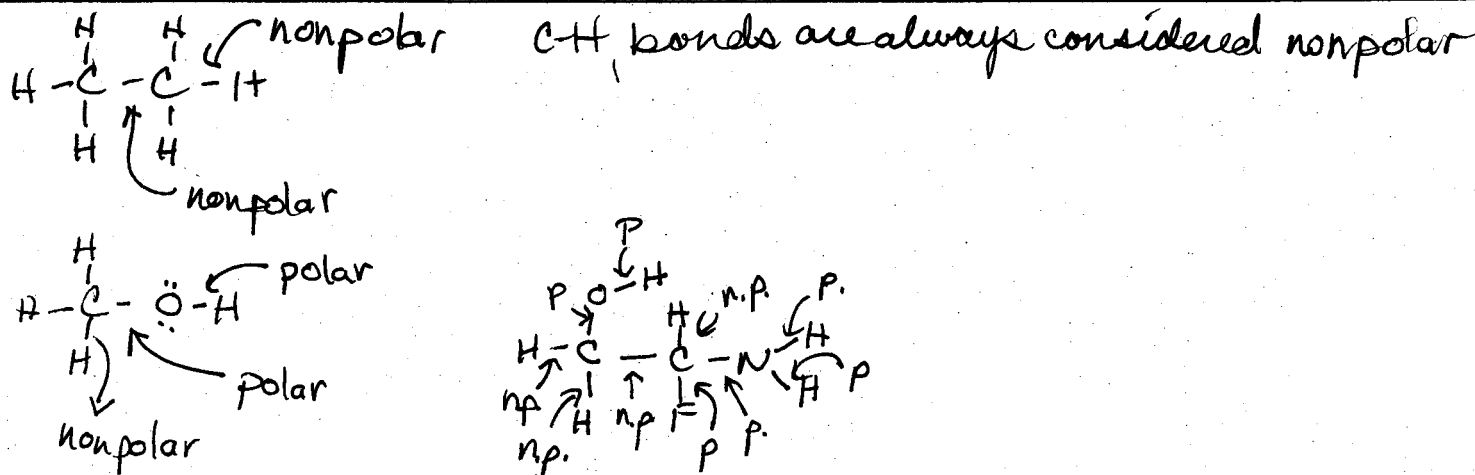
Polarity in Bonds + Molecules

The way in which e^- are shared between atoms is determined by electronegativities of the partners

C - C non polar; same atom, same electronegativity

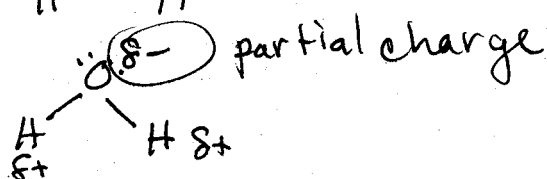
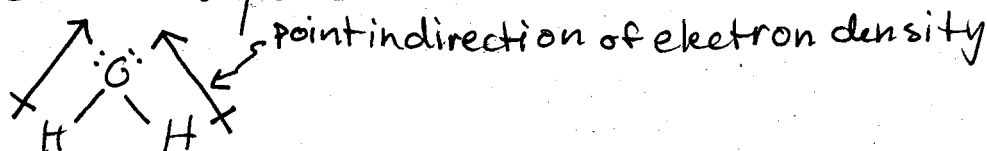
$\text{Na}^+ \text{Cl}^-$ ionic bond - complete e^- transfer

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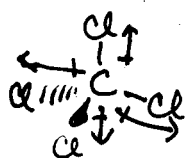


Determining polarity of a molecule

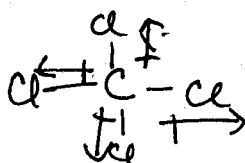
① Bond dipoles



② Molecular Dipole Moment - sum of bond dipoles

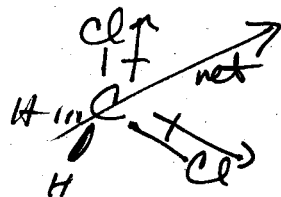


carbon tetrachloride

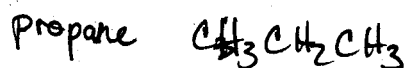
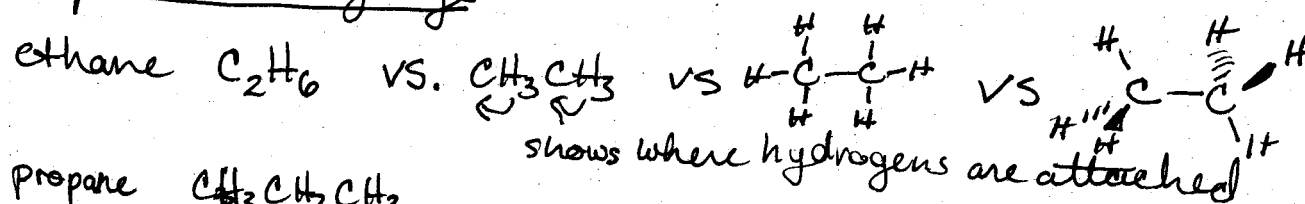


all vectors cancel, no molecular dipole

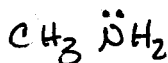
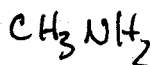
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Graphical Language



- Carbons at end and each corner
- Hydrogens are assumed

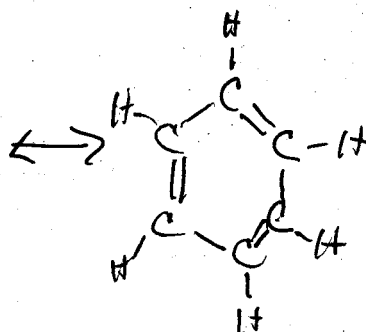
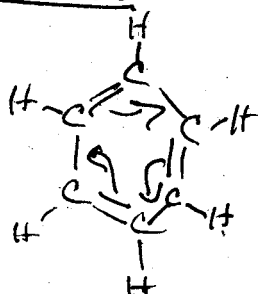


- Lone pairs are left off often - need to know where they are

Resonance Structures



localized



Each bond is
 ~ 1.5