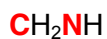
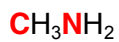


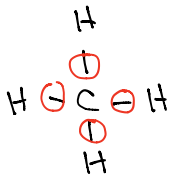
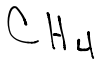
Hybridization and Bonding Sample Problems

Determine the Hybridization around all atoms. Note that you'll need a correct Lewis structure to determine this.



Draw a Lewis structure for each atom. Using Energy Diagrams for the Red/bold-faced atoms, show how all bonds (including single, double, and triple between the red atom, as well as bonds with hydrogen atoms) form. Remember that each bond MUST contain one electron from each atom. Single (sigma) bonds come hybrid orbitals, while double and triple bonds (pi bonds) come from unhybridized p-orbitals. Also make sure to show the orbitals that lone pairs are located in (these must be hybridized). Make sure to get the hybridization correct!





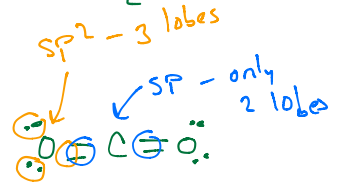
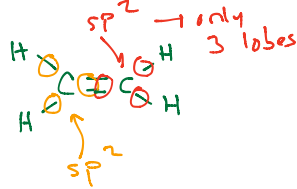
Carbon has 4 lobes, all 3 P orbitals are necessary
 $sp^3 \leftarrow s + p + p + p$
 Hydrogen cannot hybridize



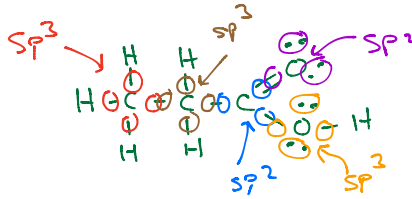
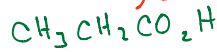
Each Cl has 4 lobes, both are sp^3



All atoms require 4 lobes \rightarrow all are sp^2

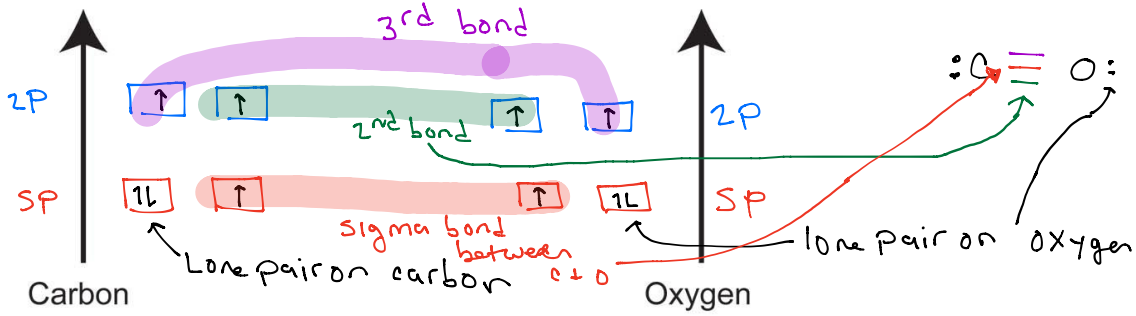


You should recognize this as one of the common groups seen last week



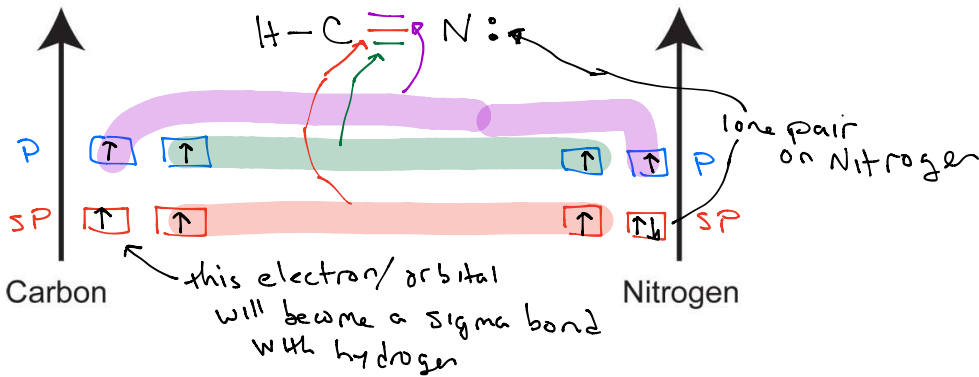
CO

$:\text{C}\equiv\text{O}:$ each atom has sp hybridization

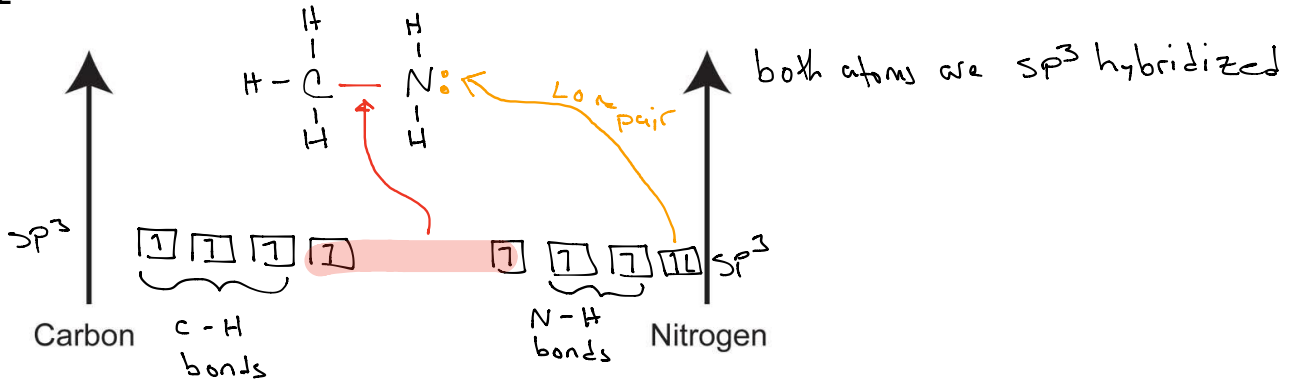


HCN

$\text{H}-\text{C}\equiv\text{N}:$ both are sp hybridized



CH₃NH₂



CH₂NH

