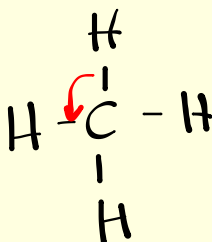
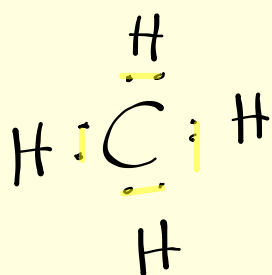
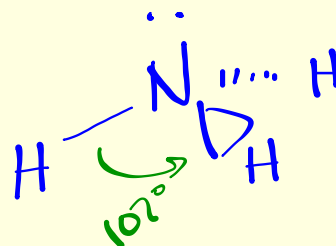
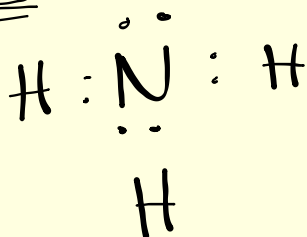
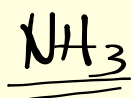
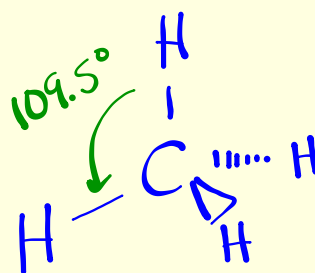


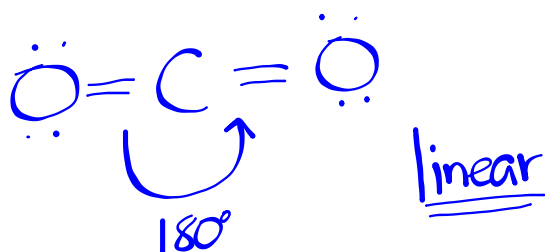
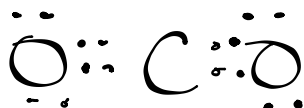
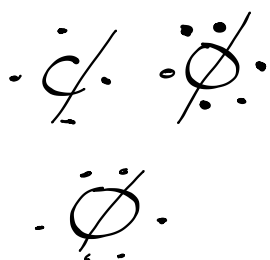
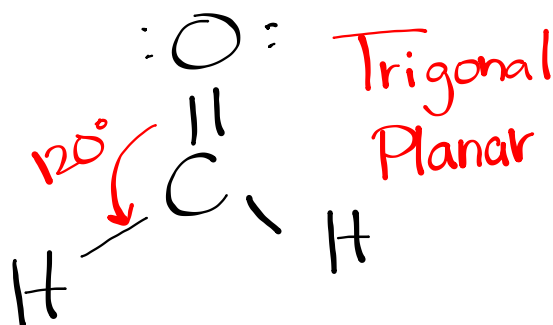
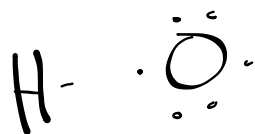
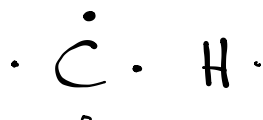
Worksheet 8.2

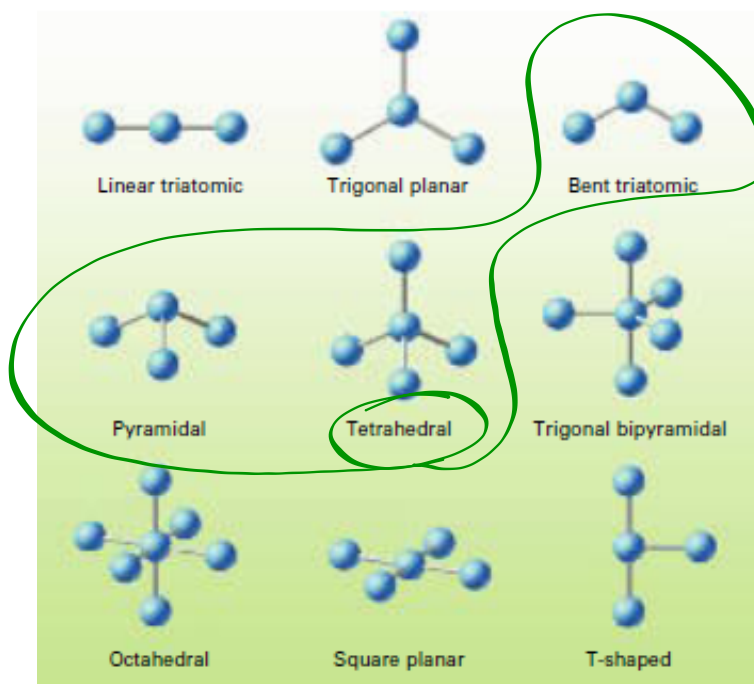
VSEPR



tetrahedral



Ex. CO₂**Ex. CH₂O**

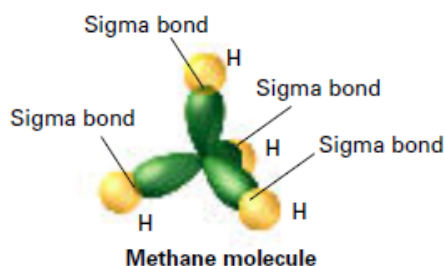
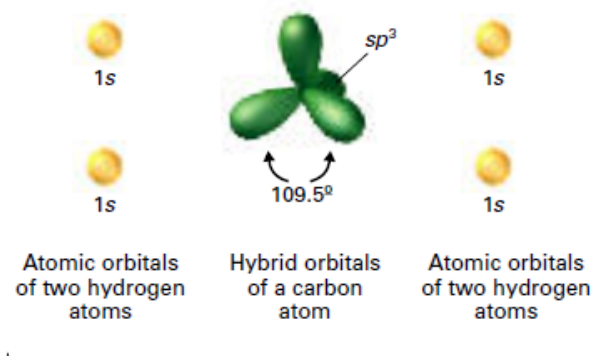


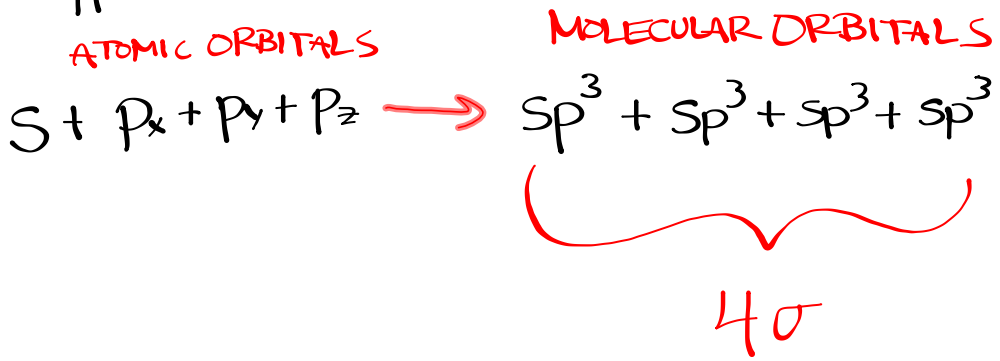
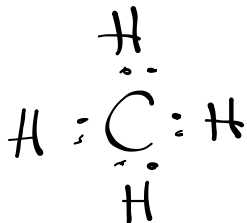
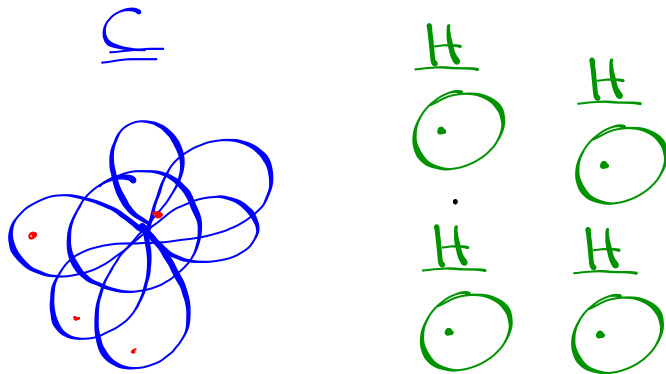
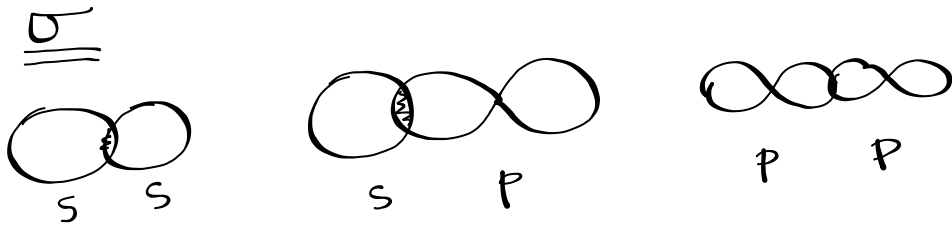
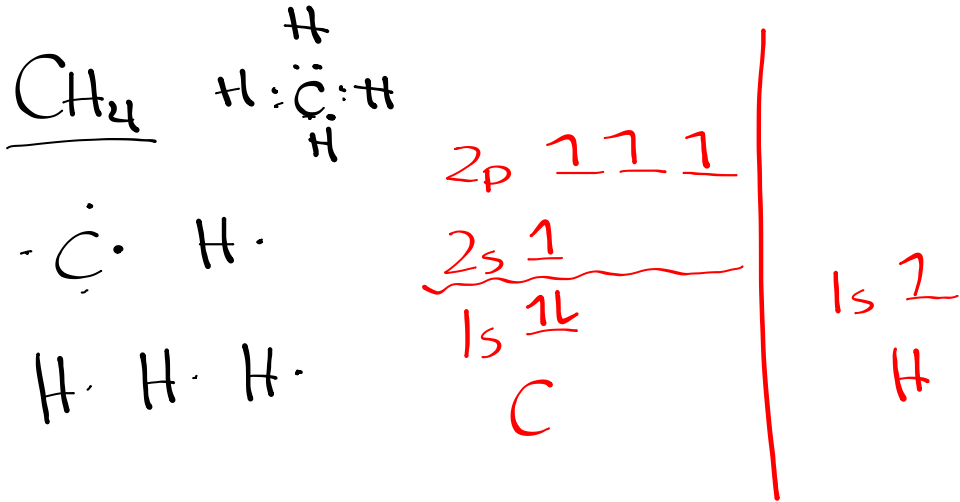
Hybridization Involving Single Bonds

In **hybridization**, atomic orbitals mix to form the same total number of equivalent hybrid orbitals.

Ex. CH_4

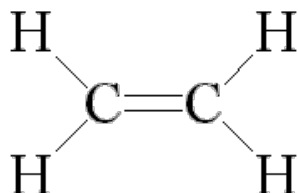
The one $2s$ orbital and three $2p$ orbitals of a carbon atom mix to form four sp^3 hybrid orbitals.





Hybridization Involving Double Bonds

Ex. C_2H_4

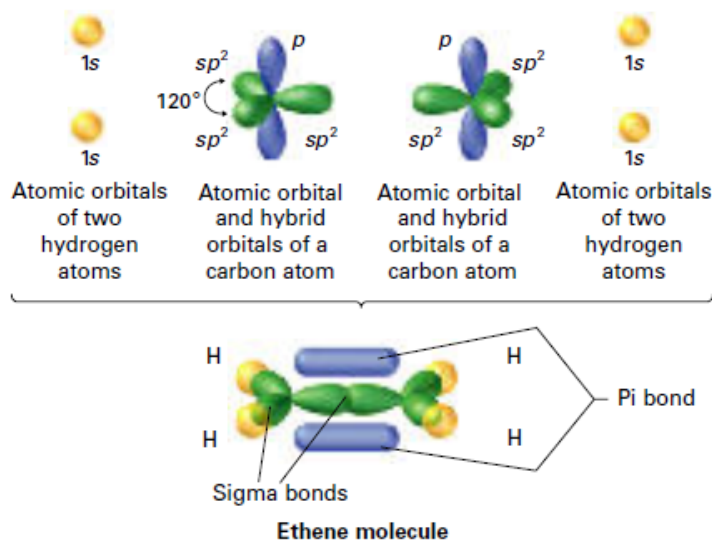


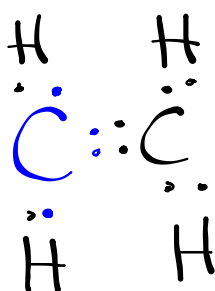
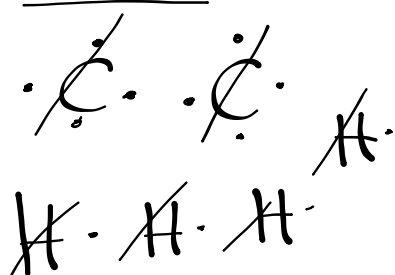
The one $2s$ orbital and two $2p$ orbitals of each carbon atom mix to form three sp^2 hybrid orbitals.

Two of the sp^2 orbitals overlap with the $1s$ hydrogen orbital to form carbon-hydrogen sigma bonds.

The third sp^2 orbital overlaps with an sp^2 orbital from the other carbon to form a carbon-carbon sigma bond.

The non-bonding $2p$ orbitals overlap side-by-side to form a carbon-carbon pi bond.





3 σ

P_z

P_z

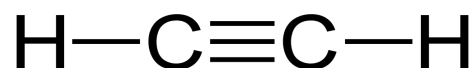
leftover



π bond

Hybridization Involving Triple Bonds

Ex. C_2H_2

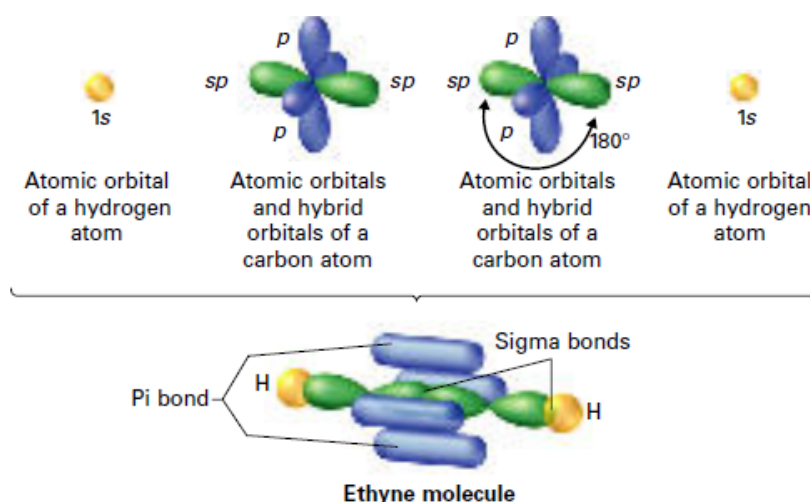


The one $2s$ orbital and one $2p$ orbitals of each carbon atom mix to form two sp hybrid orbitals for each carbon.

One of the sp orbitals overlap with the $1s$ hydrogen orbital to form carbon-hydrogen sigma bonds.

The second sp orbital overlaps with the sp orbital from the other carbon to form a carbon-carbon sigma bond.

The non-bonding $2p$ orbitals overlap side-by-side to form two carbon-carbon pi bonds.



Homework

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