Chemistry
Notes: VSEPR

VSEPR Theory: Because electron pairs repel, molecular shapes adjust so the valence-electron pairs are as far apart as possible. Two lone pairs repel more than one lone pair and one shared pair which repel more than two shared pairs.

This repulsion gives molecules their three dimensional shape.

Name of shape	Bond angle	Eletrons (shared and unshared)	Shape
Linear	180	2 shared no unshared	
Trigonal Planar	120	3 shared no unshared	
Bent	105	2 shared 2 unshared	
Pyramidal	109	3 shared 1 unshared	
Tetrahedral	109	4 shared no unshared	

Hybridization: Atomic orbital mix to form the same number of hybrid orbitals.

Hybridization	Orbitals involved	example	Draw structural formula
sp^3	1 s 3 p (p_x,p_y,p_z)	Methane	
sp^2	1 s and 2 p	Ethene	
sp	1 s and 1 p	Ethyne	

Bond polarity:

Nonpolar covalent bond: Electrons are shared equally between atoms in a bond

Example:

Polar covalent bond: Electrons are not shared equally between atoms which causes one part of a molecule to be partially positive and the other to be partially negative. **POLAR!**

Example:

Polarity is effected by shape.

Example: CO_2

example: H_2O

Attractions between molecules:

Van der Waals forces: Weakeast attractions found between molecules

*Dispersion: Motion of electrons generate an attraction between molecules
usually increases as the number of electrons increase
Example: halogens

*Dipole interactions: Polar molecules are attracted to each other.

Example: Water

Hydrogen bonds: Attraction of hydrogen from one molecule to a lone pair of electrons of another molecule

example: water, DNA