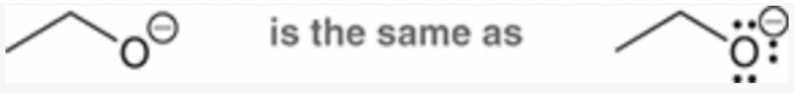
Session 2 Worksheet

You do not have to write lone pairs if you don't want to, however, you MUST include a formal charge (if applicable)



Resonance

Resonance structures:

We represent resonance structures with _____

Note: the resonance structures are not switching back and forth! The hybrid is a mixture of both structures

Resonance hybrid of 1 and 2

Curved Arrows:

Use a double-barbed arrow, single-barbed arrows show the movement of radicals (single e-)

Molecular Orbitals

Molecular Orbital (MO):

- Represents the_____where one or two electrons of a molecule are likely to be found
- Have a _____ behavior with_____ and _____ lobes

Remember

Bonding MO:

Anti-bonding MO:

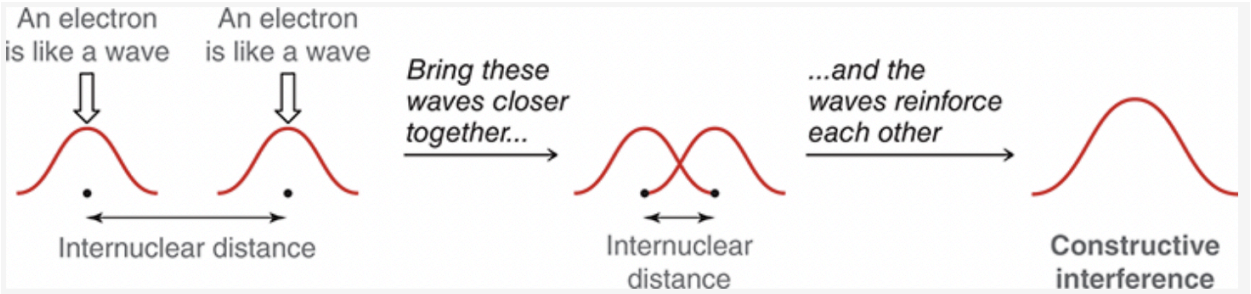
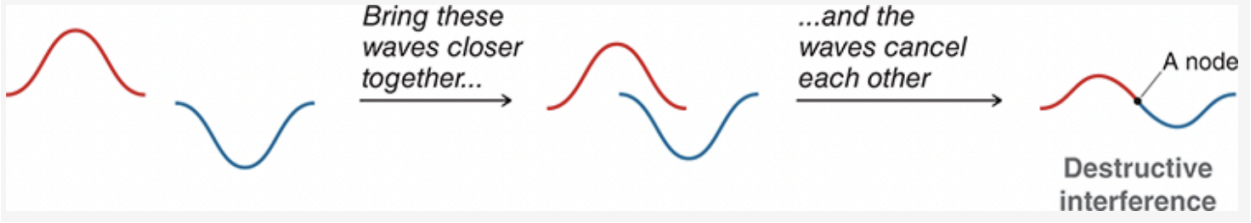
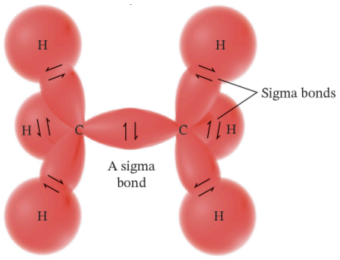
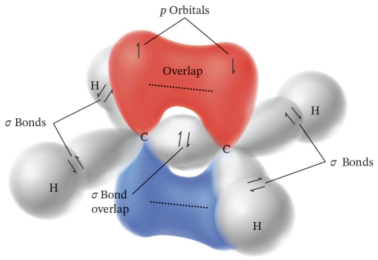
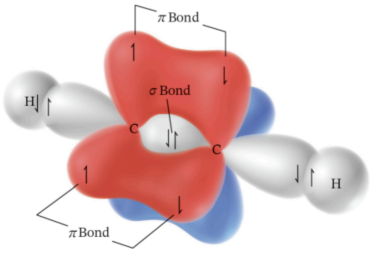


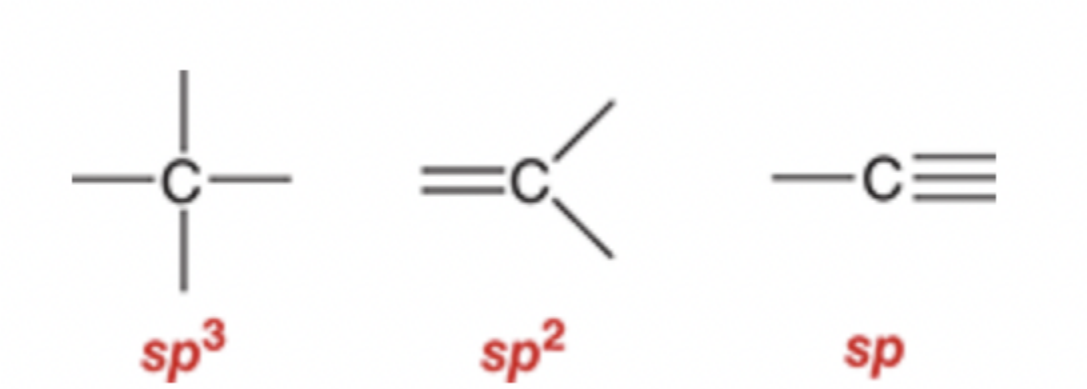
FIGURE 1.11 Constructive interference resulting from the interaction of two electrons.



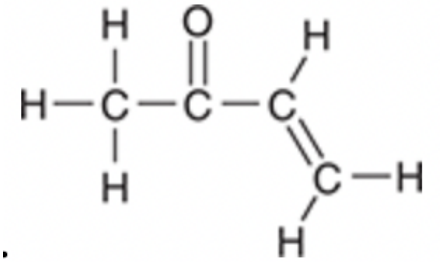
Hybridized Orbitals:

	Sp3	Sp2	Sp
Diagram			
What's Happening			
Bond-line			
Geometry			
Angles			

Hybridization life hack!!!

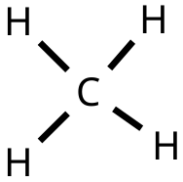
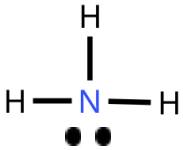
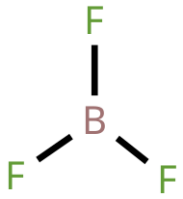


Determine the hybridization state of each carbon:



VSEPR Theory:

Common Molecular Shapes:

Compound	Bonding e- pairs	Lone e- pairs	Steric number	Arrangement of e- pairs	Molecular Geometry
					
					
					
					
					

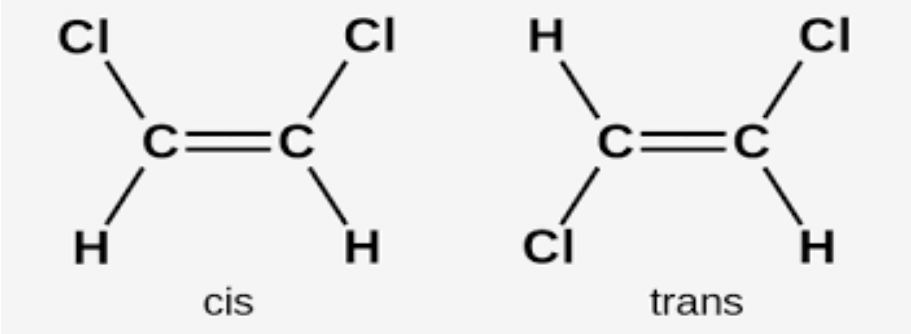
Cis/trans Steroisomerism:

Cis:

Trans:

We can think of the molecule as being on a plane and separating this plane evenly either through the molecule itself or through a double/triple bond

Ex:



Restricted Rotation:

AKA, the properties of a single, double, and triple bond

Order the bonds:

Length

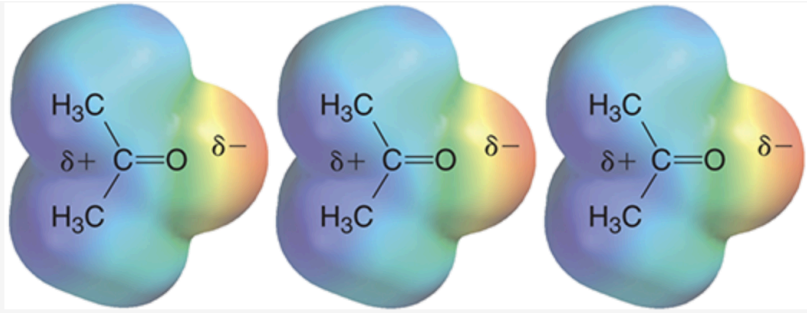
Energy

Strength

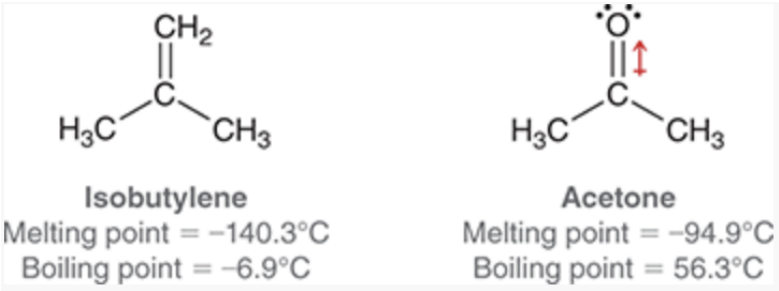
Intermolecular Forces

Dipole-Dipole:

The resulting _____ between two dipoles



How does this affect bp and mp?



Isobutylene lacks _____, so the mp and bp are much lower

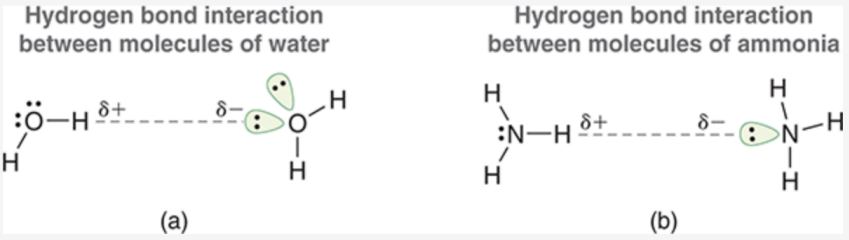
compared to Acetone, which has _____

Hydrogen Bonding:

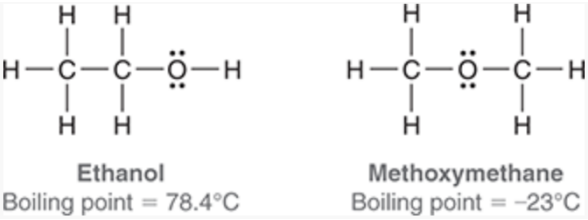
- Not technically a “bond”, more like another form of attraction

A hydrogen is connected to an _____(_____)

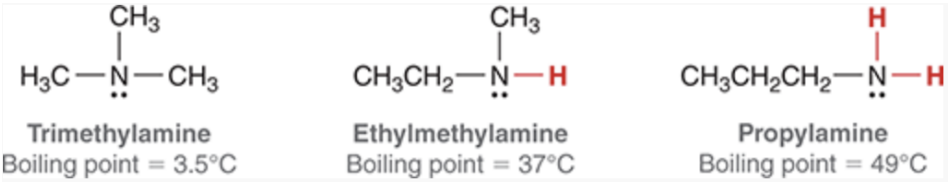
In most cases, H-bonding takes priority



How does this affect bp & mp?



Ethanol has a higher bp because it has a hydrogen bonded to, versus Methoxymethane, which only has a _____bond



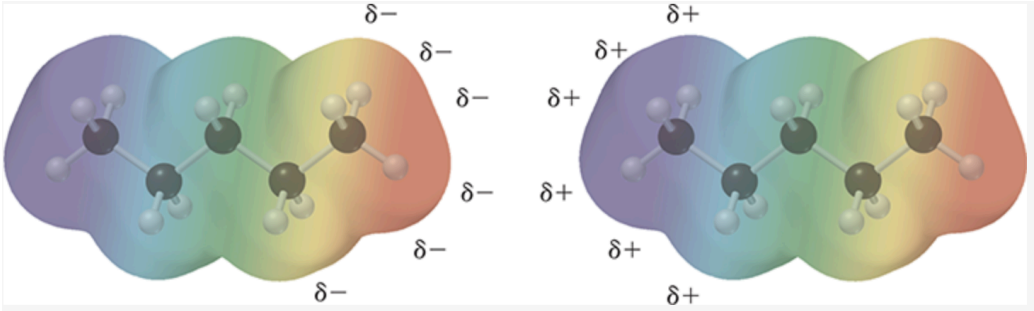
Notice how as more hydrogens are bonded to the Nitrogen atom, the _____ the bp gets

London Dispersion Forces:

A consideration of the _____ and _____ charges on a whole molecule, rather than the entire atom

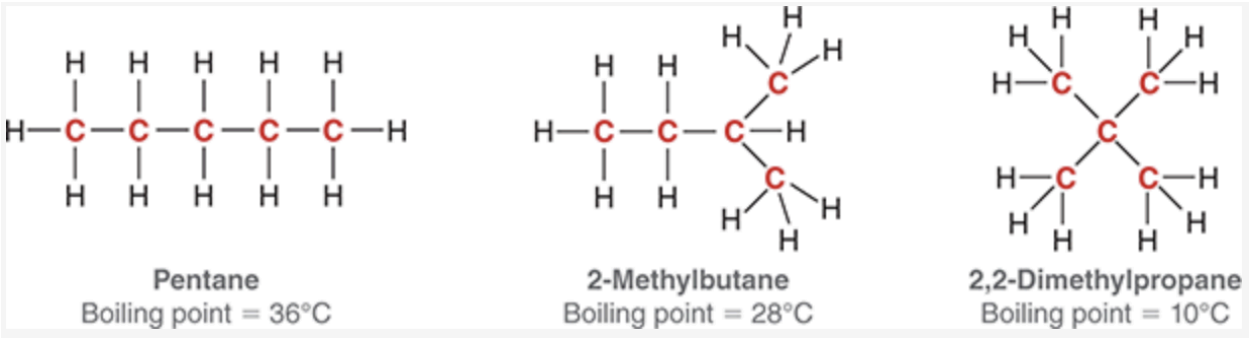
Usually observed in large _____

This force is transient, or _____



How does this affect bp and mp?

The _____ the carbon chain, the _____ higher the bp



The more _____, the _____ the bp