CONCEPT: RESONANCE STRUCTURES

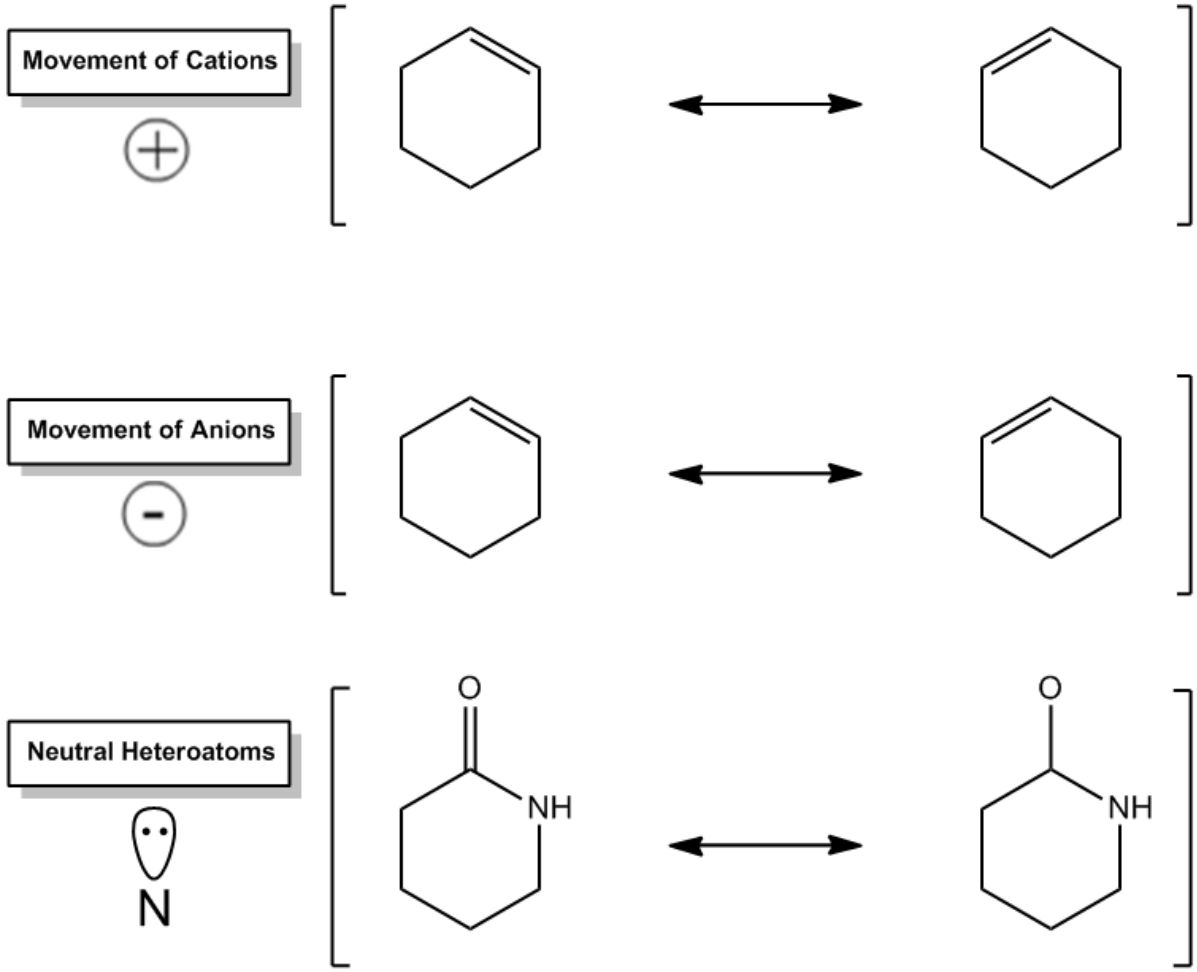
Resonance theory is used to represent all the different ways that the ***same molecule*** can distribute its electrons.

- Atoms _____ move! The only thing that moves is _____
- _____ of these *contributing structures* will be a realistic representation of what the molecule actually looks like

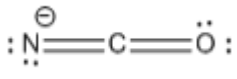
Rules:

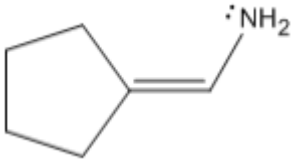
- Use curved arrows to represent electron movement
- Use double-sided arrows and _____ to link related structures to each other
- Arrows always travel from region of ___ electron density to ___ electron density
- The net charge of each structure must be _____

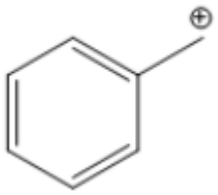
EXAMPLE: Common forms of resonance



PRACTICE: Draw all of the *contributing structures* for the following molecules

a. 

b. 

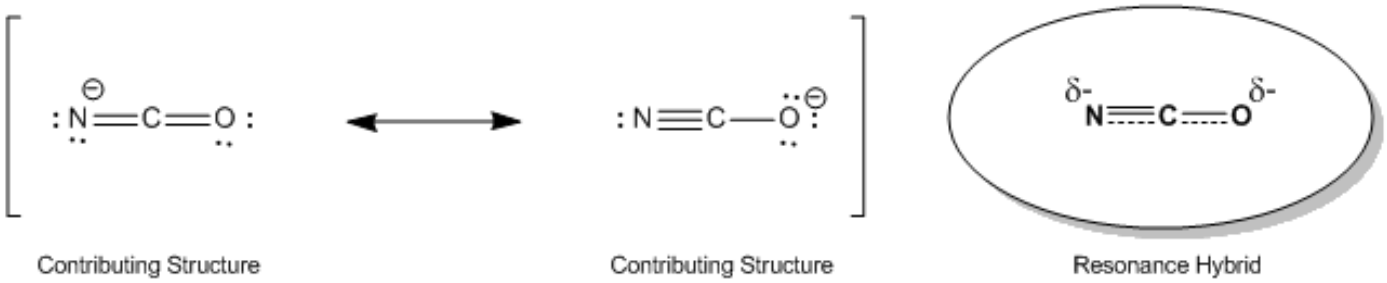
c. 

CONCEPT: RESONANCE HYBRIDS

The resonance hybrid represents the mathematical combination of all the *contributing structures*

- It indicates where the resonating electrons within the molecule are _____ to reside

EXAMPLE: Isocyanate Resonance Hybrid

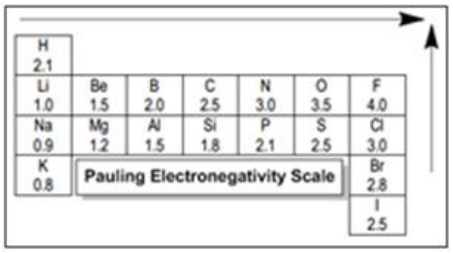


CONCEPT: MAJOR CONTRIBUTORS

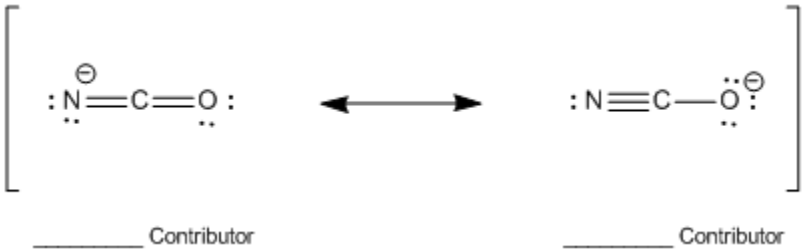
Often one of the resonance structures will be more _____ so it will contribute to the _____ more than the others.

Major contributors will often have the following characteristics:

- _____ structures are almost always more stable than charged ones
  - □ If possible, every atom should fill its _____
  - □ Use electronegativity trends to determine best placement of charges

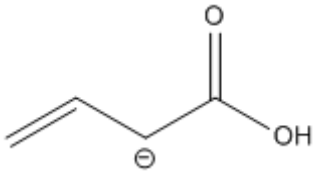


EXAMPLE: Isocyanate major contributor

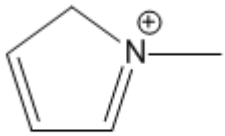


PRACTICE: Draw all of the *contributing structures* for the following molecules. Label the major contributor if applicable and draw the resonance hybrid.

a.



b.



Iminium Cation