Ch9/Worksheet – 3 Formal Charges and Resonance Structures

Name: _____

Calculating Formal Charge

Formal Charge = Number of valence e^- – (1/2 number of bonding e^- + lone pair of e^-)

OR Formal Charge = Number of valence e^- – (number of bonds + lone pair of e^-)

Resonance Structures: Determining if a structure is more stable or possible than the other

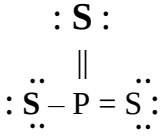
Resonance structures are structures where electrons can move around in a molecule. Electrons move only in double or triple bonds; electrons can also move in lone pairs. No bonds can be broken. No atoms can move around.

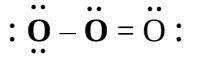
1) Calculate the formal charges on each atom;
2) If the molecule is electrically neutral, then structure is stable.
3) If more electronegative element has the negative charge then structure is more stable.
4) There should not be a positive and a negative next to each other – that destabilizes the structure.

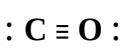
---

1. Draw the Lewis structures of the following ions:
   SO_4^{2-} CN^- $CH_3NH_3^+$

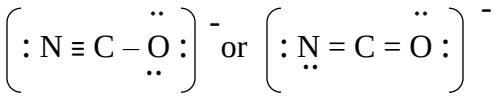
2. What are the formal charges on all the atoms "**bolded**" following structures?







3. Which of the following are resonance pairs in the left column? If they are then which is more likely to occur? Why?

	
H-C ≡ N : : C ≡ N-H	