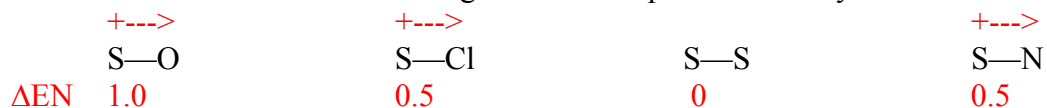


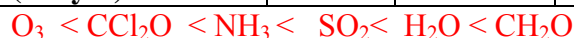
## BOND AND MOLECULAR POLARITY WORKSHEET

1. Rank the following bonds from highest to lowest polarity using electronegativity values. Indicate the direction of charges with the dipole moment symbol if the bond is polar.



2. Below are a series of molecules along with their molecular dipole moments. Rank the molecules from least to most polar based on the dipole moments. Sketch the geometry of the molecules and show the dipole moment direction.

Molecule	NH <sub>3</sub>	O <sub>3</sub>	H <sub>2</sub> O	CCl <sub>2</sub> O	SO <sub>2</sub>	CH <sub>2</sub> O
Dipole Moment (debyes)	1.48	0.52	1.85	1.19	1.63	2.27



- b. Explain why CCl<sub>2</sub>O is much less polar than CH<sub>2</sub>O

Although these molecules have the same basic geometry, CH<sub>2</sub>O is more polar because there is a highly electronegative O distributed in one direction and H's which are not very electronegative in the other two directions. For CCl<sub>2</sub>O, there are highly electronegative elements distributed in all three directions around the central atom.

3. Using bond polarities and geometries, rank the following sets of molecules from least to most polar. Sketch the geometry of the molecules and show the molecular dipole moment direction.

