I. Rules for Selecting More Important "Canonical" or Contributing Lewis Structures of Molecules

1. Atoms normally form bonds by sharing enough electrons to achieve the outer electronic configurations of the (nearest) noble gas *i.e.*

   $H \rightarrow 2e^-$; B-F $\rightarrow 8e^-$; Al-Cl $\rightarrow 8e^-$ to 18 e^-, *etc.*

2. Maximize the number of covalent bonds, consistent with other "rules".

3. Distribute formal charges in a "reasonable" way… i.e. if possible--

   a) Place formal negative charge on the more electronegative atom: formal positive charges on the more electropositive atom.

   b) Place opposite charges as close as possible; place like formal charges as far away as possible.

II. Summary of the VSEPR Model:

1. Electron pairs tend to arrange themselves as if they are minimizing repulsions. Ideal geometries are:

   a) Coordination number 2 – Linear
   a) Coordination number 3 – Trigonal planar
   a) Coordination number 4 – Tetrahedral
   a) Coordination number 5 – Trigonal bipyramidal
   a) Coordination number 6 – Octahedral
   a) Coordination number 7 – Capped Octahedron, Pentagonal Bipyramidal

2. The relative magnitudes of electron pair repulsions follow the order:

   lone pair-lone pair > lone pair-bond pair > bond pair-bond pair

3. When lone pairs are present the bond angles are less than predicted by 1.

4. Lone pairs choose the "largest" site, e.g. equatorial in trigonal bipyramidal.

5. If all sites are equivalent, lone pairs will choose a *trans* arrangement.

6. To first order, the sigma framework determines the VSEPR-predicted geometry; thus when applying rules of thumb listed in 1-5, π-bonds may be ignored