

Writing Lewis Structures

1. **Count the valence electrons.**
2. **Draw the structure with all single bonds and the octet satisfied.**
3. **Count the drawing electrons.**
4. **Compare the drawing electrons to the valence electrons.**
5. **Adjust the drawing if necessary.**
 - If there are too many drawing electrons, make multiple bonds.
 - If there are too few drawing electrons, the octet rule is broken, usually by adding the extra electrons to the central atom.

Determining Geometry

1. **Count the regions of electron density. (Double bonds are just 1 region.)**
2. **Determine the "base" geometry.**
3. **Determine the number of electron regions that are bonded to another atom.**
4. **Determine the actual molecular geometry from the "base" geometry.**
5. **Polarity:**
 - Are the bonds polar? If yes, then:
 - Does the geometry make the molecule polar?

Table of Molecular Geometries

Regions of electron density	Arrangement giving maximum space (electronic geometry)	Number of regions used in bonding to another atom	Number of lone pairs	Molecular Geometry	Angles	Hybridization
2	linear	2	0	linear		
		1	1	linear		
3	trigonal planar	3	0	trigonal planar		
		2	1	angular		
		1	2	linear		
4	tetrahedral	4	0	tetrahedral		
		3	1	trigonal pyramidal		
		2	2	angular		
		1	3	linear		
5	trigonal bipyramidal	5	0	trigonal bipyramidal		
		4	1	sea saw		
		3	2	T-shaped		
		2	3	linear		
6	octahedral	6	0	octahedral		
		5	1	square pyramidal		
		4	2	square planar		

Note: Some books use the noun form of the geometries. For example: triangular plane, tetrahedron, triangular pyramid, triangular bipyramid, octahedron, square pyramid, square plane can be interchanged with the adjective form above.

Note: A single region of high electron density is formed by a unshared pair of electrons, a single bond, a double bond, or a triple bond.

Note: This is similar to page 188 from your lab manual.