

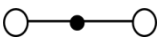
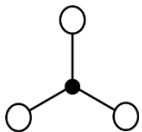
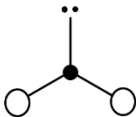
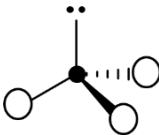
UNIT 1 – STRUCTURE AND BONDING

VTOC: [Electron Configurations of Atoms](#), [Chemical Bonding & Valence](#), [Charge Distribution in Molecules](#), [The Shape of Molecules](#), [Isomers](#), [Analysis of Molecular Formulas](#), [Resonance](#), [Atomic and Molecular Orbitals](#)

UCSD: [1.1: Atomic orbitals and electron configuration](#) , [1.2: Chemical Bonds](#) , [1.3: Drawing organic structures](#) , [1.5: Valence bond theory](#) , [2.2: Resonance](#)

Skills:

- 1A. Draw valid Lewis structures for organic compounds.
- 1B. Determine formal charge of atoms in a molecule.
- 1C. Determine the geometry (shape) of atoms in a molecule and predict bond angles.
- 1D. Determine if molecules are polar or non-polar, draw dipole direction
- 1E. Determine hybridization of atoms in a molecule.
- 1F. Identify and pi and sigma bonds in a molecule.
- 1G. Interpret and expand condensed structures.
- 1H. Convert to and from skeletal structures, determine the number of carbons, hydrogens and lone pairs in a skeletal structure.
- 1I. Given a molecule draw all possible resonance structures, recognize where resonance is not possible.

Summary of Shapes, Angles and Hybridization				
Electron Groups	Hybridization	0 Lone Pairs	1 Lone Pair	2 Lone Pairs
2	sp	linear (180°) 		
3	sp^2	trigonal planar (120°) 	bent ($<120^\circ$) 	
4	sp^3	tetrahedral (109°) 	trigonal pyramid ($<109^\circ$) 	bent ($<109^\circ$) 