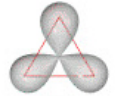
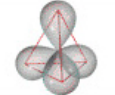
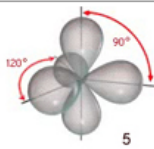
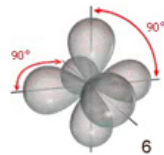


Valence Bond Theory- Hybrid Orbitals

Number structural pairs	Hybrid Orbitals				Bond angles
	Hybridized orbitals	Unhybridized orbitals	# pi bonds possible	Geometry of hybrids	
2	two sp orbitals	two p orbitals	2	linear	 180°
3	three sp ² orbitals	one p orbital	1	trigonal-planar	 120°
4	four sp ³ orbitals	none	0	tetrahedral	 109.5°
5	five sp ³ d orbitals	none	0	trigonal bipyramidal	 90° and 120°
6	six sp ³ d ² orbitals	none	0	octahedral	 90°

Determining Hybrid Orbitals:

Formula → Lewis Structure → # Structural Pairs → Hybrids

Interpreting bonding in a Lewis Structure

- Each line represents 2 shared electrons (a bond)
- Single bond (1 line) = One sigma bond
- Double bond (2 lines) = One sigma bond and one pi bond
- Triple bond (3 lines) = One sigma bond and two pi bonds