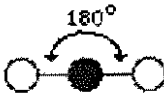
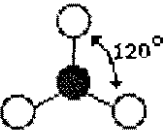
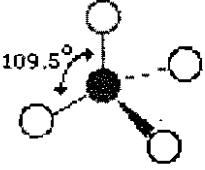
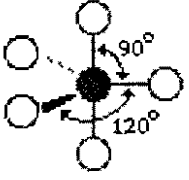
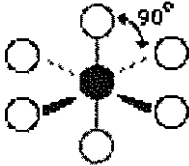
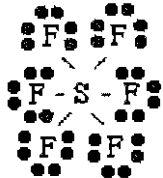
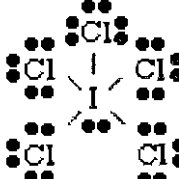
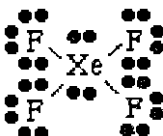


COMPARISON OF VSEPR & VB THEORIES

Valence Shell Electron Pair Repulsion Theory

Valence Bond Theory

Class e ⁻ pair geometry	bonding e ⁻ pairs	lone e ⁻ pairs	Molecular Shape/geometry	Examples	* π bonds	σ bonds	lone pairs	Hybrid Orbital
 Linear	2	0	Linear	H - Be - H	0	2	0	sp
	2	0	Linear	$\begin{array}{c} \bullet\bullet \\ \text{O} = \text{C} = \text{O} \\ \bullet\bullet \end{array}$	2	2	0	
	2	0	Linear	H - C \equiv N $\bullet\bullet$	2	2	0	
 Trigonal Planar	3	0	Trigonal planar	$\begin{array}{c} \text{H} \\ \\ \text{H} - \text{B} - \text{H} \end{array}$	0	3	0	sp ²
	3	0	Trigonal planar	$\begin{array}{c} \text{H} \\ \\ \text{H} - \text{C} = \text{O} \\ \bullet\bullet \end{array}$	1	3	0	
	2	1	Bent	$\begin{array}{c} \bullet\bullet \quad \bullet\bullet \\ \text{Cl} - \text{Sn} - \text{Cl} \\ \bullet\bullet \quad \bullet\bullet \end{array}$	0	2	1	
 Tetrahedral	4	0	Tetrahedral	$\begin{array}{c} \text{H} \\ \\ \text{H} - \text{C} - \text{H} \\ \\ \text{H} \end{array}$	0	4	0	sp ³
	3	1	Trigonal pyramidal	$\begin{array}{c} \bullet\bullet \\ \text{H} - \text{N} - \text{H} \\ \\ \text{H} \end{array}$	0	3	1	
	2	2	Bent	$\begin{array}{c} \bullet\bullet \\ \text{H} - \text{O} - \text{H} \\ \bullet\bullet \end{array}$	0	2	2	
 Trigonal Bipyramidal	5	0	Trigonal bipyramidal	$\begin{array}{c} \bullet\bullet \quad \bullet\bullet \\ \text{Cl} \quad \text{Cl} \\ \diagdown \quad \diagup \\ \bullet\bullet \text{P} \bullet\bullet \\ \diagup \quad \diagdown \\ \bullet\bullet \quad \bullet\bullet \\ \text{Cl} \quad \text{Cl} \end{array}$	0	5	0	sp ³ d
	4	1	See-saw	$\begin{array}{c} \bullet\bullet \quad \bullet\bullet \\ \text{F} \quad \text{S} \quad \text{F} \\ \diagdown \quad \diagup \\ \bullet\bullet \quad \bullet\bullet \\ \text{F} \quad \text{F} \end{array}$	0	4	1	
	3	2	T-shape	$\begin{array}{c} \bullet\bullet \quad \bullet\bullet \\ \text{Cl} \quad \text{Br} \quad \text{Cl} \\ \\ \bullet\bullet \\ \text{Cl} \end{array}$	0	3	2	
	2	3	Linear	$\begin{array}{c} \bullet\bullet \quad \bullet\bullet \\ \text{F} - \text{Xe} - \text{F} \\ \bullet\bullet \quad \bullet\bullet \end{array}$	0	2	3	

Class e ⁻ pair geometry	bonding e ⁻ pairs	lone e ⁻ pairs	Molecular Shape/geometry	Examples	*π bonds	σ bonds	lone pairs	Hybrid Orbital
 Octahedral	6	0	Octahedral		0	6	0	
	5	1	Square pyramidal		0	5	1	sp ³ d ²
	4	2	Square planar		0	4	2	

*Note that pi (π) bonds do not affect hybrid or shape. The sigma (σ) bonds and lone pairs dictate which hybrid and what geometry is involved.