

## Summary of VSEPR Orbital and Molecular Geometries

# electron regions and hybridization	# non-bonding pairs	Orbital Geometry	Bond angles	Molecular geometry	Example
2 sp	0	linear	180	Linear	$\text{BeCl}_2$
3 $\text{sp}^2$	0	trigonal-planar	120	Trigonal planar	$\text{BF}_3$
	1	trigonal-planar	<120	V-shaped	$\text{SO}_2$
4 $\text{sp}^3$	0	tetrahedral	109	Tetrahedral	$\text{CH}_4$
	1	tetrahedral	<109	Trigonal pyramid	$\text{NH}_3$
	2	tetrahedral	<109	V-shaped	$\text{H}_2\text{O}$
5 $\text{dsp}^3$	0	trigonal bipyramidal	120&90	Trigonal bipyramidal	$\text{PCl}_5$
	1	trigonal bipyramidal	<120&90	See-saw	$\text{SeF}_4$
	2	trigonal bipyramidal	90	T-shaped	$\text{ClF}_3$
	3	trigonal bipyramidal	180	Linear	$\text{I}_3^-$
6 d $\text{sp}^3$	0	octahedral	90	Octahedral	$\text{PCl}_{6^-2}$
	1	octahedral	<90	Square pyramid	$\text{IF}_5$
	2	octahedral	90	Square planar	$\text{XeF}_4$