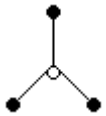
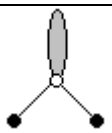
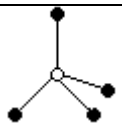
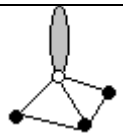
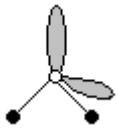
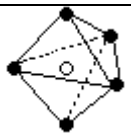
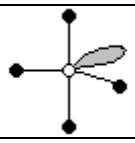
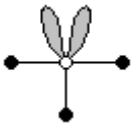
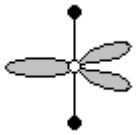
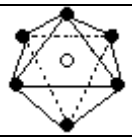
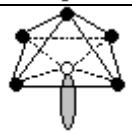
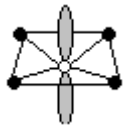
VSEPR Diagrams

Valence Shell Electron Pair Repulsion Theory helps us to understand the shapes of molecules based upon the number of lone pairs and shared pairs on a central atom. The following shapes should be memorized by making a flash card and placing the molecule type (AB_4 for example) on one side and the name of the shape (tetrahedral for example) on the other side.

○ = A ● = B = Lone electron Pair (E)

Type	Picture	Shape	Example
AB_2		Linear	H_2 / CO_2
AB_3		Triangular	BCl_3
AB_2E		Angular or Bent	PbI_2
AB_4		Tetrahedral	CH_4
AB_3E		Triangular pyramidal	NH_3
AB_2E_2		Anguler or Bent	H_2O
AB_5		Triangular bipyramidal	PCl_5

Type	Picture	Shape	Example
AB_4E		Irregular tetrahedral	SF_4
AB_3E_2		T-shaped	ClF_3
AB_2E_3		Linear	XeF_2
AB_6		Octahedral	SF_6
AB_5E		Square pyramidal	ClF_5
AB_4E_2		Square planar	XeF_4
AB_7		Pentagonal bipyramidal	IF_7