


CONCEPT: MOLECULAR GEOMETRY

- True shape of a molecule that takes into account differences in repulsion between lone pairs and surrounding elements.
 - Treats lone pairs and surrounding elements as _____.

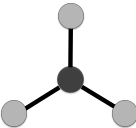
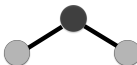
Two Electron Groups

- Central elements with 2 electron groups have _____ lone pair(s) to give only one possible molecular geometry.

2 Electron Groups					
Electron Groups	Bonding Groups	Lone Pairs	Shapes	Visual	Molecular Geometry
2			$\begin{array}{c} \text{:}\ddot{\text{Cl}}\text{---Be---}\ddot{\text{Cl}}\text{:} \\ \text{:}\ddot{\text{O}}\text{=C=}\ddot{\text{O}}\text{:} \\ \text{H-C}\equiv\text{N:} \end{array}$		_____

Three Electron Groups

- Central elements with 3 electron groups can have ____ or ____ lone pair(s) to give two possible molecular geometries.

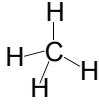
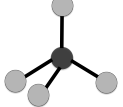
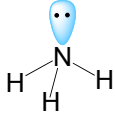
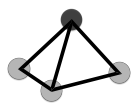
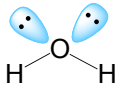
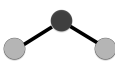
3 Electron Groups					
Electron Groups	Bonding Groups	Lone Pairs	Shapes	Visual	Molecular Geometry
3			$\begin{array}{c} \text{:}\ddot{\text{O}}\text{:} \\ \parallel \\ \text{:}\ddot{\text{F}}\text{---C---}\ddot{\text{F}}\text{:} \end{array}$		_____
			$\begin{array}{c} \text{:}\ddot{\text{Cl}}\text{---}\text{Sn}^{\text{LP}}\text{---}\ddot{\text{Cl}}\text{:} \end{array}$		_____ _____ _____

EXAMPLE: Determine the molecular geometry for the following molecule: BeH_3^-

CONCEPT: MOLECULAR GEOMETRY

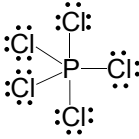
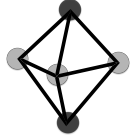
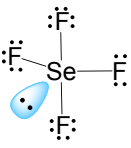
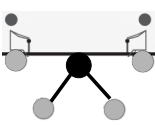
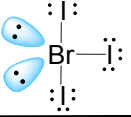
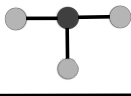
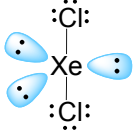

Four Electron Groups

- Central elements with 4 electron groups can have ____ to ____ lone pair(s) to give three possible molecular geometries.

4 Electron Groups					
Electron Groups	Bonding Groups	Lone Pairs	Shapes	Visual	Molecular Geometry
4					_____
					_____
					_____ _____ _____

Five Electron Groups

- Central elements with 5 electron groups can have ____ to ____ lone pair(s) to give four possible molecular geometries.

5 Electron Groups					
Electron Groups	Bonding Groups	Lone Pairs	Shapes	Visual	Molecular Geometry
5					_____
					_____
					_____
					_____

EXAMPLE: Draw and determine the electron geometry for the following molecule: SOCl_4

CONCEPT: MOLECULAR GEOMETRY

Six Electron Groups

- Central elements with 6 electron groups can have ____ to ____ lone pair(s) to give three possible molecular geometries.

6 Electron Groups					
Electron Groups	Bonding Groups	Lone Pairs	Shapes	Visual	Molecular Geometry
6					_____

EXAMPLE: Determine the molecular geometry for the following ion: KrCl_5^+

PRACTICE: Determine the molecular geometry for the following molecule: SeH_2Cl_2 .

- a) T-shaped b) Seesaw c) Square pyramidal d) Square planar

CONCEPT: MOLECULAR GEOMETRY

PRACTICE: Determine the molecular geometry for the following molecule: CHClO .

- a) Trigonal pyramidal b) T-shaped c) Trigonal planar d) Tetrahedral

PRACTICE: Determine the molecular geometry for the following molecule: FSSF .

- a) Tetrahedral b) Bent c) Trigonal planar d) Trigonal pyramidal

PRACTICE: Determine the molecular geometry for the following molecule: IF_4^- .

- a) Square planar b) Square pyramidal c) Trigonal bipyramidal d) Seesaw