

Molecular Geometry

Van Koppes/Offin

Central Atom, AX _n E _m	# of bonded atoms	# of lone pairs	Electron Geometry	Bond Angle(s)	Molecular Geometry	Example	Hybridization
AX	1	0	Linear	180°	Linear	HCl	sp
AX ₂	2	0	Linear	180°	Linear	CO ₂	sp
AX ₂ E	2	1	Trigonal Bipyramidal	180°, 120°	Bent	SO ₂	sp ²
AX ₂ E ₂	2	2	Trigonal Bipyramidal	180°, 120°	Bent	ClO ₂	sp ²
AX ₃	3	0	Trigonal Planar	120°	Trigonal Planar	BF ₃	sp ²
AX ₃ E	3	1	Trigonal Bipyramidal	120°, 90°	Trigonal Pyramidal	NO ₂	sp ²
AX ₃ E ₂	3	2	Trigonal Bipyramidal	120°, 90°	Linear	CO ₂	sp
AX ₄	4	0	Tetrahedral	109.5°	Tetrahedral	CH ₄	sp ³
AX ₄ E	4	1	Trigonal Bipyramidal	120°, 90°	Trigonal Bipyramidal	PF ₅	sp ³
AX ₄ E ₂	4	2	Trigonal Bipyramidal	120°, 90°	Equatorial Planar	SO ₂	sp ²
AX ₅	5	0	Trigonal Bipyramidal	120°, 90°	Trigonal Bipyramidal	PCl ₅	sp ³
AX ₅ E	5	1	Octahedral	90°	Square Pyramidal	BrF ₅	sp ³
AX ₅ E ₂	5	2	Octahedral	90°	Linear	IF ₅	sp ³

Example: Draw Lewis Structures, Molecular Formulas, Hybridization, Molecular Geometry and Hybridization for the following molecules. Indicate the hybridization of the central atom and the electron geometry of the central atom. (10 points each)

10.1 Draw Lewis Structures, Molecular Formulas, Hybridization, Molecular Geometry and Hybridization for the following molecules. Indicate the hybridization of the central atom and the electron geometry of the central atom. (10 points each)

10.2 Draw Lewis Structures, Molecular Formulas, Hybridization, Molecular Geometry and Hybridization for the following molecules. Indicate the hybridization of the central atom and the electron geometry of the central atom. (10 points each)

10.3 Draw Lewis Structures, Molecular Formulas, Hybridization, Molecular Geometry and Hybridization for the following molecules. Indicate the hybridization of the central atom and the electron geometry of the central atom. (10 points each)

10.4 Draw Lewis Structures, Molecular Formulas, Hybridization, Molecular Geometry and Hybridization for the following molecules. Indicate the hybridization of the central atom and the electron geometry of the central atom. (10 points each)

10.5 Draw Lewis Structures, Molecular Formulas, Hybridization, Molecular Geometry and Hybridization for the following molecules. Indicate the hybridization of the central atom and the electron geometry of the central atom. (10 points each)