

1.6.7.1: Practice Shape

Exercise 1.6.7.1.1

Give the electron geometry and the molecule geometry of PCl_3 . (The Lewis structure was on a previous practice page.)

Answer

Electron geometry is tetrahedral (109.5° angle) because there are 4 electron regions around the central P atom.

Molecular geometry is pyramidal (also called trigonal pyramidal) because there are 3 atoms and 1 lone pair around the central P atom.

Exercise 1.6.7.1.1

Give the electron geometry and the molecule geometry of H_2O .

Answer

Electron geometry is tetrahedral (109.5° angle) because there are 4 electron regions around the central O atom.

Molecular geometry is bent because there are 2 atoms and 2 lone pairs around the central O atom.

Exercise 1.6.7.1.1

Give the electron geometry and the molecule geometry of the nitrate ion (NO_3^{1-}). (The Lewis structure was on a previous practice page.)

Answer

Electron geometry is trigonal planar (120° angle) because there are 3 electron regions around the central N atom.

Molecular geometry is trigonal planar because all 3 electron regions around the central N atom are atoms (no lone pairs).

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