

Molecule	Lewis structure	electron domain Geometry	molecular geometry	bond angle	Polar or not?
Example: CH <sub>4</sub>		tetrahedral	tetrahedral	109.5°	not
CCl <sub>4</sub>		tetrahedral	tetrahedral	109.5°	not
H <sub>2</sub> O		tetrahedral	V-shape	104.5°	polar
NH <sub>3</sub>		tetrahedral	trigonal pyramidal	107°	polar
CO <sub>2</sub>		linear	linear	180°	nonpolar
SO <sub>2</sub>		trigonal planar	V-shape	119°	polar
HCN		linear	linear	180°	nonpolar
N <sub>2</sub>		linear			nonpolar
OH <sup>-</sup>		linear			
SO <sub>4</sub> <sup>2-</sup> 2x 1/2 = 16		tetrahedral	tetrahedral	109.5°	

CO <sub>3</sub> <sup>2-</sup>		trigonal planar	trigonal planar	120°	/
BeCl <sub>2</sub>		linear	linear	180°	nonpolar
BF <sub>3</sub> 3 + 21		trigonal planar	trigonal planar	120°	nonpolar
CO		linear	/	/	polar
HCOO <sup>-</sup> (2 + 4 + 1 + 1) = 8		trigonal planar	trigonal planar	120°	/

Predict electron domain Geometry, molecular geometry and bond angle.

<p>1) PBr<sub>3</sub> 5 + 3 = 8</p> <p>ED: tetrahedral molecular: trigonal pyramidal 107°</p>	<p>2) N<sub>2</sub>H<sub>2</sub> 14 - 6 = 8</p> <p>ED: trigonal planar molecular: V-shape 119°</p>
<p>3) CH<sub>3</sub>OH</p> <p>ED: tetrahedral molecular: tetrahedral 109.5°</p>	<p>4) NO<sub>2</sub><sup>-</sup> 5 + 12 = 17 - 9</p> <p>ED: trigonal planar molecular: V-shape 119°</p>

<p>5) <math>\text{H}_2\text{S}</math> <math>6 + 2 = 8</math></p> <p><math>\text{H}-\text{S}-\text{H}</math></p> <p>ED: tetrahedral molecular: V-shape <math>104.5^\circ</math></p>	<p>6) <math>\text{CCl}_4</math></p> <p><math>\begin{array}{c} \text{Cl} \\   \\ \text{Cl}-\text{C}-\text{Cl} \\   \\ \text{Cl} \end{array}</math></p> <p>ED: tetrahedral molecular: tetrahedral <math>109.5^\circ</math></p>
<p>7) <math>\text{O}_3</math></p> <p><math>\text{O}=\text{O}-\text{O}</math></p> <p>ED: trigonal planar molecular: V-shape <math>119^\circ</math></p>	<p>8) <math>\text{NO}^+</math> <math>5 + 6 - 1 = 10</math></p> <p><math>[\text{N} \equiv \text{O}]^+</math></p>
<p>9) <math>\text{PO}_4^{3-}</math> ED: tetrahedral molecular: tetrahedral <math>109.5^\circ</math></p> <p><math>\begin{array}{c} \text{O} \\   \\ \text{O}-\text{P}-\text{O} \\   \\ \text{O} \end{array}^{3-}</math></p>	<p>10) <math>\text{PO}_3^{3-}</math> <math>5 + 18 + 3 = 26</math> <math>13</math></p> <p><math>\begin{array}{c} \text{O} \\   \\ \text{O}-\text{P}-\text{O} \\   \\ \text{O} \end{array}^{3-}</math></p> <p>ED: tetrahedral molecular: trigonal pyramidal <math>107^\circ</math></p>