Honors Chemistry **Name _____ Block___**

Write the name of each molecule, and draw its Lewis Dot Structure. Label the bond angles, VSEPR shapes, and intermolecular forces. If Resonance Structures exist, draw 2 or 3 most stable structures.

Br_2 **HBr**

H_2O **H_2O_2**

CH_4 **NH_3**

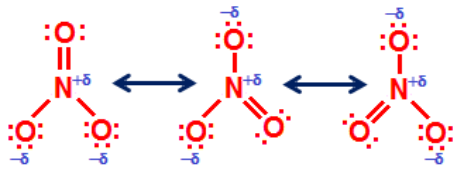
CO **CO_2**

O_2 **O_3** (Show 2 resonance structures)

Polyatomic Ions: ions containing covalently bonded nonmetal atoms with an electric charge

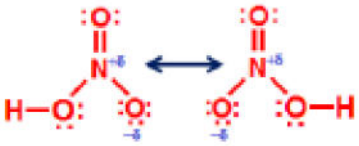
Acids: compounds that occur when a positive hydrogen ion is attracted to the lone pair electrons of an anion through hydrogen bonding.

NO_3^- (Show 3 Resonance structures)



Nitrate ion
120° Trigonal Planar
ion - ion attraction

HNO_3



Nitric acid
120° Trigonal Planar at O-N-O
120° Trigonal Planar at O=N-O
105° Bent at N-O-H
Hydrogen bonding

NO_2^- (Show 2 Resonance Structures)

HNO_2

SO_4^{2-}

H_2SO_4

SO_3^{2-} (Show 3 Resonance Structures)

H_2SO_3

PO_4^{3-}

H_3PO_4

CO_3^{2-} (Show 3 Resonance Structures)

H_2CO_3

PCl_3

BCl_3

CH_3COOH
(Label all 3 shapes, angles, and IMFs)

CH_3OH
(Label both shapes, angles, and IMFs)

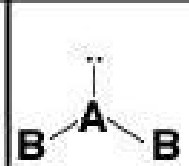
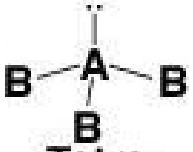
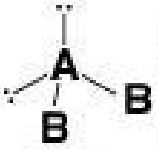
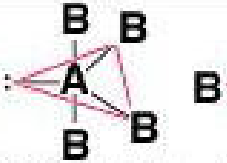
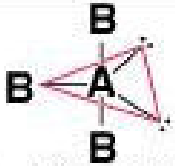
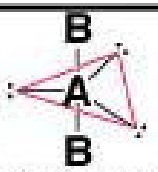
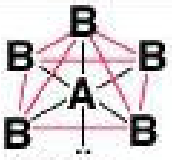
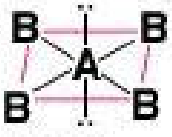
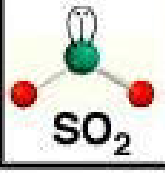
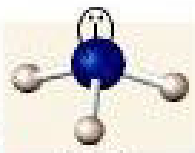
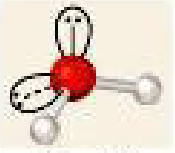
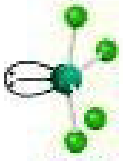
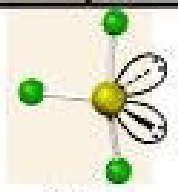
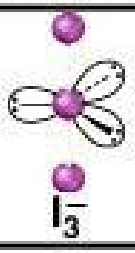
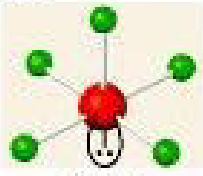
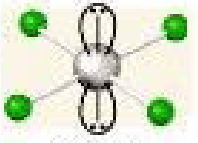
1-butanol
(Label both shapes, angles, and IMFs)

2-butanol
(Label both shapes, angles, and IMFs)

XeF4

PCl_5

Table 10.2 Geometry of Simple Molecules and Ions in Which the Central Atom Has One or More Lone Pairs

Class of molecule	AB_2E	AB_3E	AB_2E_2	AB_4E	AB_3E_2	AB_2E_3	AB_5E	AB_4E_2
Total number of electron pairs	3	4	4	5	5	5	6	6
Number of bonding pairs	2	3	2	4	3	2	5	4
Number of lone pairs	1	1	2	1	2	3	1	2
Arrangement of electron pairs*	 Trigonal planar	 Tetra-hedral	 Tetra-hedral	 Trigonal bipyra-midal	 Trigonal bipyra-midal	 Trigonal bipyra-midal	 Octa-hedral	 Octa-hedral
Geometry	Bent	Trigonal pyramidal	Bent	Distorted tetrahedron (or seesaw)	T-shaped	Linear	Square pyramidal	Sqaure planar
Examples	 SO_2	 NH_3	 H_2O	 SF_4	 ClF_3	 I_3^-	 BrF_5	 XeF_4

* The colored lines are used to show the overall shape, not bonds.