

Name \_\_\_\_\_

Period \_\_\_\_

## Lewis Structure Worksheet #1

Read the **Instructions for Drawing Lewis Structures** worksheet carefully and draw Lewis structures for each of the following molecules:

### *Group A: Simple Molecules*

CH <sub>4</sub>	NH <sub>3</sub>	H <sub>2</sub> O	SiF <sub>4</sub>	NCl <sub>3</sub>
-----------------	-----------------	------------------	------------------	------------------

### *Group B: Polyatomic Ions*

PO <sub>4</sub> <sup>3-</sup>	ClO <sub>3</sub> <sup>-</sup>	ClO <sub>4</sub> <sup>-</sup>	SO <sub>3</sub> <sup>2-</sup>
-------------------------------	-------------------------------	-------------------------------	-------------------------------

### *Group C: Multiple Bonds*

H <sub>2</sub> CO	HCN	CO	CO <sub>2</sub>
-------------------	-----	----	-----------------

**Group D: Incomplete Octets**

$\text{BCl}_3$	$\text{BeF}_2$
----------------	----------------

**Group E: Expanded Octets**

$\text{SF}_6$	$\text{PCl}_5$	$\text{BrF}_5$	$\text{XeF}_4$	$\text{ClF}_3$
---------------	----------------	----------------	----------------	----------------

**Group F: Multiple Central Atoms**

$\text{C}_2\text{H}_6$	$\text{C}_3\text{H}_8$	$\text{C}_2\text{H}_5\text{OH}$	$\text{C}_2\text{H}_4$	$\text{C}_2\text{F}_2$
------------------------	------------------------	---------------------------------	------------------------	------------------------

## Lewis Structure Worksheet #2

Draw Lewis Structures for each of the following molecules or ions:

1. Br <sub>2</sub>	2. BH <sub>3</sub>
3. O <sub>2</sub>	4. PS <sub>3</sub> <sup>-</sup>
5. H <sub>2</sub> CS	6. CHCl <sub>3</sub>
7. SF <sub>2</sub>	8. SHF
9. N <sub>2</sub> F <sub>4</sub>	10. XeO <sub>4</sub>
11. N <sub>2</sub> O <sub>3</sub> (dinitrogen trioxide)*	12. NO <sub>2</sub> (nitrogen dioxide)*
13. N <sub>2</sub> O <sub>4</sub> (dinitrogen tetraoxide)*	14. N <sub>2</sub> O <sub>5</sub> (dinitrogen pentaoxide)*

\*Problems 11-14 are more challenging and may have more than one correct structure. Please note that if a molecule has an odd number of valence electrons, at least one atom in the molecule will NOT fulfill the octet rule.

15. Draw two resonance structures for the formate ion,  $\text{CHO}_2^-$  and calculate the C—O bond order in the molecule.

16. Draw three possible Lewis structures for the cyanate ion,  $\text{CNO}^-$ , where C is the central atom. Calculate the formal charges of all atoms in each structure. Then, determine the most stable structure for the ion.

17. Draw three possible Lewis structures for  $\text{N}_2\text{O}$  and assign formal charges to the atoms in each molecule. Then, identify the most stable structure for  $\text{N}_2\text{O}$ . (Note: N must be the central atom in each molecule).

Name \_\_\_\_\_

Period \_\_\_\_\_

### Lewis Structure Worksheet #3

Lewis Structure	Electron Pair Geometry (Electron Pair Arrangement)	Molecular Geometry (Molecular Structure/Shape)	Bond Angle(s)	Polarity	Hybridization
BF <sub>3</sub>					
NO <sub>2</sub> <sup>-</sup>					
CCl <sub>4</sub>					
H <sub>3</sub> O <sup>+</sup>					
H <sub>2</sub> S					
PF <sub>5</sub>					

Lewis Structure	Electron Pair Geometry (Electron Pair Arrangement)	Molecular Geometry (Molecular Structure/Shape)	Bond Angle(s)	Polarity	Hybridization
SF <sub>4</sub>					
ICl <sub>3</sub>					
XeF <sub>2</sub>					
SF <sub>6</sub>					
ClF <sub>5</sub>					
XeF <sub>4</sub>					