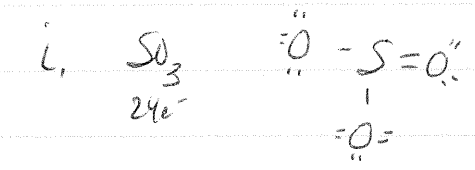
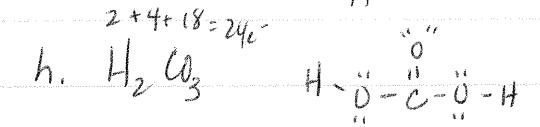
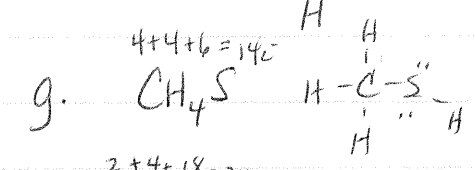
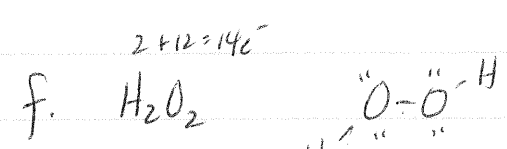
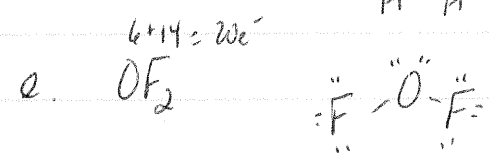
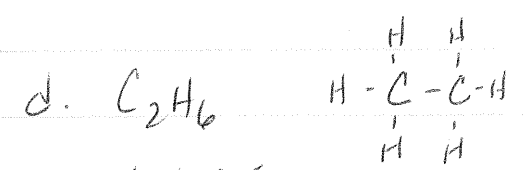
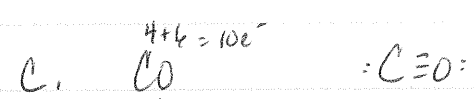
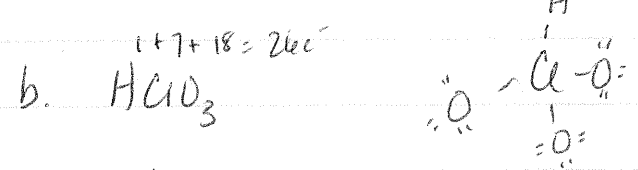
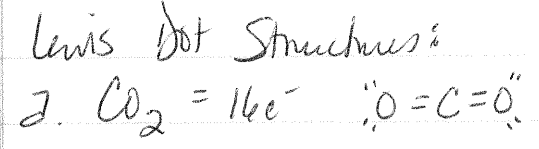
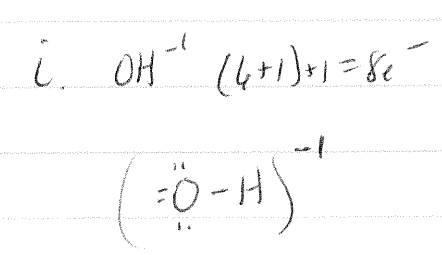
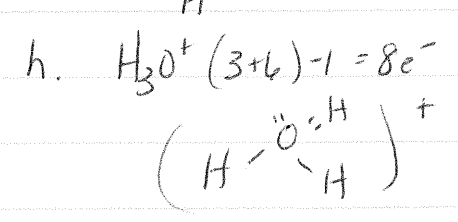
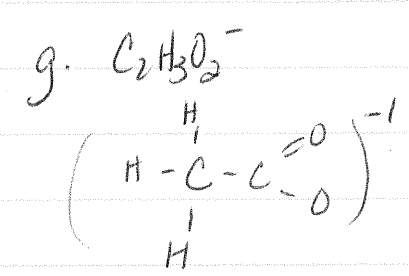
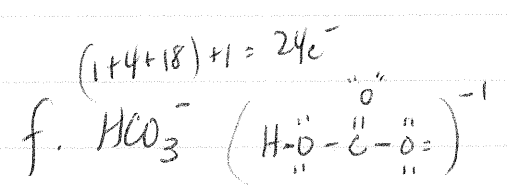
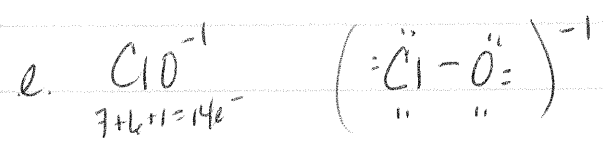
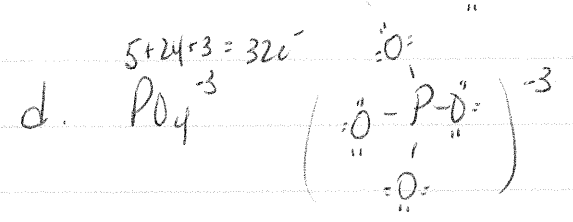
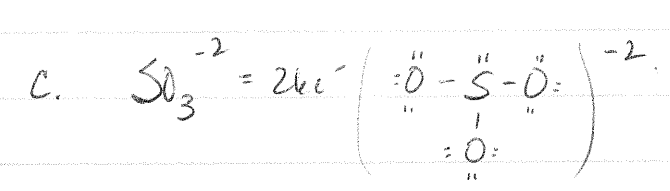
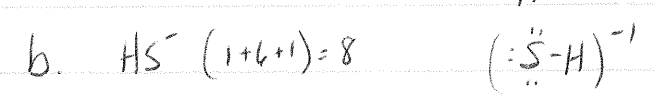
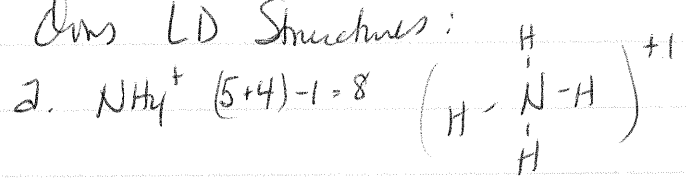


JW

# # 1 TAN Handout Lewis Dot Structures:



# # 2 Ours LD Structures:



JW

### Practice with Lewis Structures

Draw a Lewis Structure for each of these substances. Then determine: a) whether the bond(s) are non-polar covalent, polar covalent, or ionic, b) whether the molecule is polar or non-polar, c) the shape of the molecule and d) the intermolecular forces present. In the molecule

1. Dihydrogen sulfide  $H_2S$   
 $2+6=8$

$H-\overset{\cdot\cdot}{\underset{\cdot\cdot}{S}}-H$  bent
2. Carbon tetrachloride  $CCl_4$   
 $4+28=32e^-$

$\begin{array}{c} \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \end{array}$  polar bonds tetrahedral non-polar molecule
3. Phosphorus trifluoride  $PF_3$   
 $5+21=26e^-$

$\begin{array}{c} \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \end{array}$  polar bonds pyramidal polar molecule
4. Boron tribromide  $BBr_3$   
 $3+21=24e^-$

$\begin{array}{c} \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \end{array}$  trigonal planar non-polar molecule
5. Silicon dioxide  $SiO_2$   
 $4+12=16e^-$

$\cdot\cdot \quad \cdot\cdot$   
 $\cdot\cdot = Si = \cdot\cdot$   
 $\cdot\cdot \quad \cdot\cdot$  linear non-polar
6. Hydrogen cyanide  $HCN$   
 $1+4+5=10e^-$


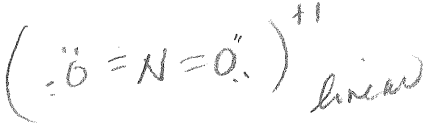
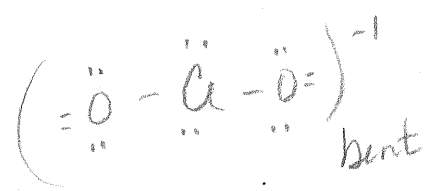
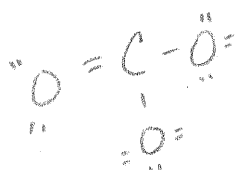
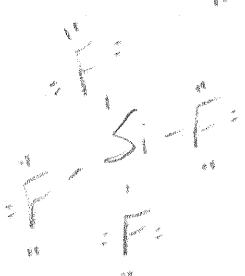
$H-C \equiv N:$  polar bonds (C≡N) linear polar molecule

JW

Scientific Inquiries - Chemistry  
Additional Practice with Lewis Dots

Spring 2008

DIRECTIONS: Complete the chart for the following molecules/ions. 1) Draw the Lewis Dot structure, 2) Predict the geometry around the central atom, 3) Predict how the substance would behave in the presence of a charged rod.

STRUCTURE	GEOMETRY	BEHAVIOR
$\text{PF}_3$ $\# \text{ of } e^-$ $5 + 3(7) = 26$	 <i>Pyramidal</i>	<i>bend</i>
$\text{NO}_2^{+1}$ $(5 + 2(6)) - 1 = 16e^-$	 <i>linear</i>	<i>No effect</i>
$\text{HCN}$ $1 + 4 + 5 = 10e^-$ $\text{H}-\text{C}\equiv\text{N}:$	<i>linear</i>	<i>bend</i>
$\text{ClO}_2^{-1}$ $(7 + 2(6)) + 1 = 20e^-$	 <i>bent</i>	<i>Slight effect</i>
$\text{N}_2$ $10e^-$ $:\text{N}\equiv\text{N}:$	<i>linear</i>	<i>no effect</i>
$\text{SO}_2$ $6 + 2(6) = 18e^-$ $:\text{O}=\text{S}=\text{O}:$	<i>bent</i>	<i>bend</i>
$\text{CO}_3^{-2}$ $(4 + 3(6)) + 2 = 24e^-$ 	<i>trigonal planer</i>	<i>no effect</i>
$\text{SiF}_4$ $4 + 4(7) = 32e^-$ 	<i>tetrahedral</i>	<i>No effect</i>