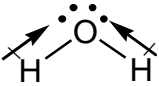
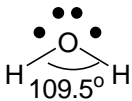


Complete the following table for the indicated species:

Substance	H <sub>2</sub> O	HF	O <sub>2</sub>	CO
<p>a) Draw the best Lewis structure(s), resonances, and structural isomers if any</p> <p>b) In your structure above, indicate polar bonds with dipole arrows toward the more electronegative atom</p> <p>c) Include formal charges if they are not zero</p>	 <p>(does NOT need to be bent at this point!)</p> <p>formal charge <sub>O</sub> = 0</p> <p>formal charge <sub>H</sub> = 0</p>			
Name the electronic geometry around central atom(s)	Tetrahedral			
Give hybridization for central atom(s)	<i>sp</i> <sup>3</sup>			
Name the shape around central atom(s)	Bent (or angular)			
Show 3-D sketch of the structure and label all bond angles				
How many sigma bonds? How many pi bonds?	2 $\sigma$ and 0 $\pi$ bonds			
Is the substance an ionic compound, a polar molecule, a nonpolar molecule, or a polyatomic ion?	polar molecule			

Name: \_\_\_\_\_

Section: \_\_\_\_\_

Complete the following table for the indicated species:

Substance	$\text{NH}_4^{+1}$	$\text{Na}_2\text{S}$	$\text{SO}_3$	$\text{ClO}_2^-$
a) Draw the best Lewis structure(s), resonances, and structural isomers if any				
b) In your structure above, indicate polar bonds with dipole arrows toward the more electronegative atom				
c) Include formal charges if they are not zero				
Name the electronic geometry around central atom(s)				
Give hybridization for central atom(s)				
Name the shape around central atom(s)				
Show 3-D sketch of the structure and label all bond angles				
How many sigma bonds? How many pi bonds?				
Is the substance an ionic compound, a polar molecule, a nonpolar molecule, or a polyatomic ion?				

Name: \_\_\_\_\_

Section: \_\_\_\_\_

Complete the following table for the indicated species:

Substance	$\text{SO}_3^{-2}$	$\text{CH}_2\text{O}$	$\text{CO}_2$	$\text{SCN}^-$
a) Draw the best Lewis structure(s), resonances, and structural isomers if any				
b) In your structure above, indicate polar bonds with dipole arrows toward the more electronegative atom				
c) Include formal charges if they are not zero				
Name the electronic geometry around central atom(s)				
Give hybridization for central atom(s)				
Name the shape around central atom(s)				
Show 3-D sketch of the structure and label all bond angles				
How many sigma bonds? How many pi bonds?				
Is the substance an ionic compound, a polar molecule, a nonpolar molecule, or a polyatomic ion?				

Name: \_\_\_\_\_

Section: \_\_\_\_\_

Complete the following table for the indicated species:

Substance	$C_2H_2Br_2$	$NF_3$	$CH_2Cl_2$	$CH_3OH$
a) Draw the best Lewis structure(s), resonances, and structural isomers if any				
b) In your structure above, indicate polar bonds with dipole arrows toward the more electronegative atom				
c) Include formal charges if they are not zero				
Name the electronic geometry around central atom(s)				
Give hybridization for central atom(s)				
Name the shape around central atom(s)				
Show 3-D sketch of the structure and label all bond angles				
How many sigma bonds? How many pi bonds?				
Is the substance an ionic compound, a polar molecule, a nonpolar molecule, or a polyatomic ion?				

Name: \_\_\_\_\_

Section: \_\_\_\_\_

Complete the following table for the indicated species:

Substance	$C_6H_6$ (ring)	$S_8$	$PO_4^{3-}$	$C_3H_8O$
a) Draw the best Lewis structure(s), resonances, and structural isomers if any				
b) In your structure above, indicate polar bonds with dipole arrows toward the more electronegative atom				
c) Include formal charges if they are not zero				
Name the electronic geometry around central atom(s)				
Give hybridization for central atom(s)				
Name the shape around central atom(s)				
Show 3-D sketch of the structure and label all bond angles				
How many sigma bonds? How many pi bonds?				
Is the substance an ionic compound, a polar molecule, a nonpolar molecule, or a polyatomic ion?				

Name: \_\_\_\_\_

Section: \_\_\_\_\_

Complete the following table for the indicated species:

Substance	$\text{NO}_3^-$	$\text{NO}_2$	$\text{H}_2\text{O}_2$	$\text{C}_2\text{H}_2$
a) Draw the best Lewis structure(s), resonances, and structural isomers if any				
b) In your structure above, indicate polar bonds with dipole arrows toward the more electronegative atom				
c) Include formal charges if they are not zero				
Name the electronic geometry around central atom(s)				
Give hybridization for central atom(s)				
Name the shape around central atom(s)				
Show 3-D sketch of the structure and label all bond angles				
How many sigma bonds? How many pi bonds?				
Is the substance an ionic compound, a polar molecule, a nonpolar molecule, or a polyatomic ion?				

Complete the following table for the indicated species:

Substance	A: $C_2H_4O_2$	B: $C_2H_4O_2$	$C_2H_6$	BaO
<p>a) Draw the best Lewis structure(s), resonances, and structural isomers if any</p> <p>b) In your structure above, indicate polar bonds with dipole arrows toward the more electronegative atom</p> <p>c) Include formal charges if they are not zero</p>	<p>Draw one structural isomer with C–C bond that has one C connected to 3 H and the other to 2 O. This is acetic acid</p>	<p>Draw a new structural isomer keeping all formal charges = 0. More than 5 isomers are possible</p>		
Name the electronic geometry around central atom(s)				
Give hybridization for central atom(s)				
Name the shape around central atom(s)				
Show 3-D sketch of the structure and label all bond angles				
How many sigma bonds? How many pi bonds?				
Is the substance an ionic compound, a polar molecule, a nonpolar molecule, or a polyatomic ion?				

Name: \_\_\_\_\_

Section: \_\_\_\_\_

Complete the following table (the central atom for each species has an expanded octet):

Substance	$I_3^-$	$ICl_5$	$SF_6$	$XeOCl_2$
a) Draw the best Lewis structure(s), resonances, and structural isomers if any				
b) In your structure above, indicate polar bonds with dipole arrows toward the more electronegative atom				
c) Include formal charges if they are not zero				
Name the electronic geometry around central atom(s)				
Give hybridization for central atom(s)				
Name the shape around central atom(s)				
Show 3-D sketch of the structure and label all bond angles				
How many sigma bonds? How many pi bonds?				
Is the substance an ionic compound, a polar molecule, a nonpolar molecule, or a polyatomic ion?				