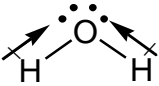
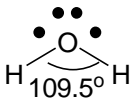


Complete the following table for the indicated species:

Substance	H ₂ O	HF	O ₂	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 O = 0</p> <p>formal charge H = 0</p>			
Name the electronic geometry around central atom(s)	Tetrahedral			
Give hybridization for central atom(s)	sp^3			
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 σ and 0 π 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	NH_4^{+1}	Na_2S	SO_3	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	SO_3^{-2}	CH_2O	CO_2	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	NO_3^-	NO_2	H_2O_2	C_2H_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	A: C ₂ H ₄ O ₂	B: C ₂ H ₄ O ₂	C ₂ H ₆	BaO
a) Draw the best Lewis structure(s), resonances, and structural isomers if any	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	Draw a new structural isomer keeping all formal charges = 0. More than 5 isomers are possible		
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 (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?				