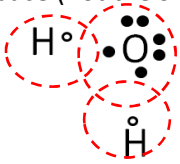
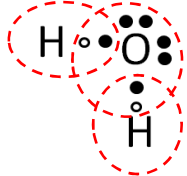
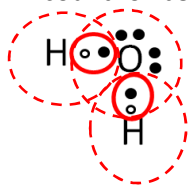
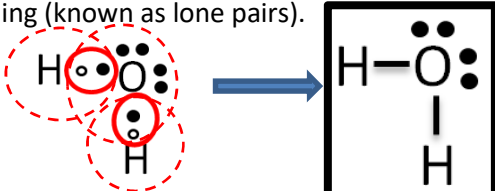
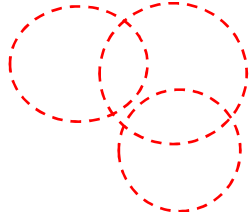
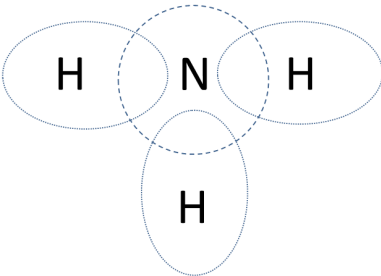
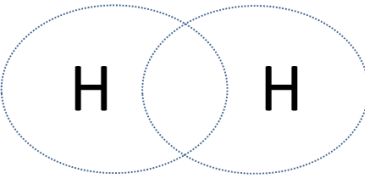
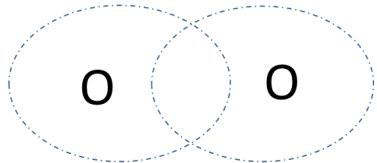
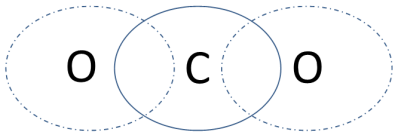
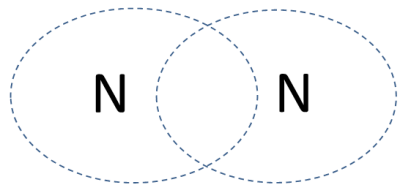
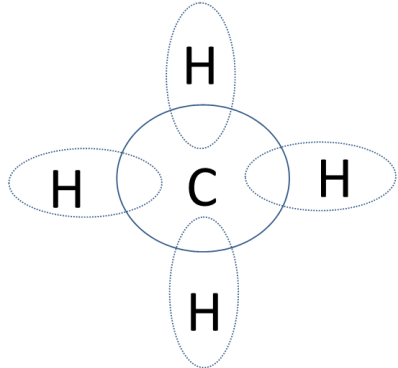
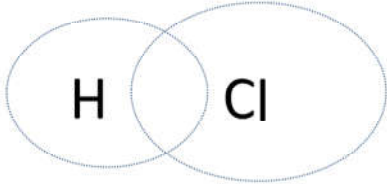
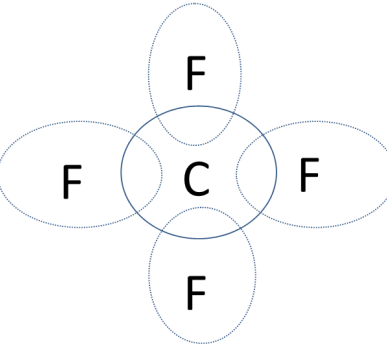


Directions: For each covalent compound:

<p>1. Start by placing all the valence electrons around each atom in their space (not the shared space)</p> 	<p>2. Move one valence electron from each atom into each "shared space" it touches</p> 	<p>3. Count how many electrons each atom has now. Remember, shared electrons count for both atoms.</p> <p>Each H has 2 electrons, O has 8 electrons</p> 
<p>4. If all atoms are happy (have a full valence shell), move on to step 5</p> <p>If all atoms are not happy (do not have a full valence shell), repeat steps 2 and 3 (place another valence electron from each atom into the shared space).</p>	<p>5. Draw the Lewis structure using dashes (lines) for each pair of shared electrons and dots for the valence electrons that were not involved in bonding (known as lone pairs).</p>  <p>There are 2 O-H bonds, There are 2 lone pairs on the oxygen</p>	

Covalent Compound	Electron Count			Diagram showing sharing of electrons	Lewis Structure for Covalent Compound
<p>Example: H₂O</p>	<p># valence electrons</p>	<p>H</p>	<p>O</p>		
	<p>Start</p>				
	<p>After bonding (sharing) once</p>				
<p>NH₃</p>	<p># valence electrons</p>	<p>N</p>	<p>H</p>		
	<p>Start</p>				
	<p>After bonding (sharing) once</p>				
	<p>If necessary: after bonding (sharing) 2 times</p>				
	<p>If necessary: after bonding (sharing) 3 times</p>				
<p>H₂</p>	<p># valence electrons</p>	<p>H</p>	<p>H</p>		
	<p>Start</p>				
	<p>After bonding (sharing) once</p>				
	<p>If necessary: after bonding (sharing) 2 times</p>				
	<p>If necessary: after bonding (sharing) 3 times</p>				

O ₂	# valence electrons	O	O		
	Start				
	After bonding (sharing) once				
	If necessary: after bonding (sharing) 2 times				
	If necessary: after bonding (sharing) 3 times				
CO ₂	# valence electrons	C	O		
	Start				
	After bonding (sharing) once				
	If necessary: after bonding (sharing) 2 times				
	If necessary: after bonding (sharing) 3 times				
N ₂	# valence electrons	N	N		
	Start				
	After bonding (sharing) once				
	If necessary: after bonding (sharing) 2 times				
	If necessary: after bonding (sharing) 3 times				
CH ₄	# valence electrons	C	H		
	Start				
	After bonding (sharing) once				
	If necessary: after bonding (sharing) 2 times				
	If necessary: after bonding (sharing) 3 times				

HCl	# valence electrons	H	Cl		
	Start				
	After bonding (sharing) once				
	If necessary: after bonding (sharing) 2 times				
	If necessary: after bonding (sharing) 3 times				
CF ₄	# valence electrons	C	F		
	Start				
	After bonding (sharing) once				
	If necessary: after bonding (sharing) 2 times				
	If necessary: after bonding (sharing) 3 times				

HONC Rule: Use the Lewis Structures you drew to answer the following questions

- How many bonds does 1 **Hydrogen** atom need to form in order to achieve a full valence shell? ____
- How many bonds does 1 **Oxygen** atom need to form in order to achieve a full valence shell? ____
- How many bonds does 1 **Nitrogen** atom need to form in order to achieve a full valence shell? ____
- How many bonds does 1 **Carbon** atom need to form in order to achieve a full valence shell? ____
- How many bonds does 1 **halogen** atom need to form in order to achieve a full valence shell? ____

Fill in the following blanks with the terms “single”, “double” or “triple” bond

When only **1 pair** of electrons is shared between atoms (one dash), it is known as a _____

When **2 pairs** of electrons are shared between atoms, it is known as a _____

When **3 pairs** of electrons are shared between atoms, it is known as a _____

Putting it all together...

****In general, when drawing the Lewis Structure, satisfy the HONC Rule first, then the Octet Rule**

Chemical Formula	Lewis Structure:	Essential Information:
HCN		Total valence electrons:
		Bonded electrons:
		Electrons in lone pairs:
PF ₃		Total valence electrons:
		Bonded electrons:
		Electrons in lone pairs:
H ₂ CO		Total valence electrons:
		Bonded electrons:
		Electrons in lone pairs:
CHCl ₃		Total valence electrons:
		Bonded electrons:
		Electrons in lone pairs:
C ₂ H ₂		Total valence electrons:
		Bonded electrons:
		Electrons in lone pairs:
CH ₃ OH		Total valence electrons:
		Bonded electrons:
		Electrons in lone pairs: