Covalent Bonding and Mixed Nomenclature Review KEY  Bonding:  1. What type of elements (metal, nonmetal, or metalloid) are found in each of the following compounds or bonds  a. Acids	Name:				Date:			Period:					
Bonding:  1. What type of elements (metal, nonmetal, or metalloid) are found in each of the following compounds or bonds  a. Acids  b. Covalent compounds  c. Ionic compound  d. Molecular compounds  e. Polar compound  2 nonmetals (molecular = covalent))  e. Polar compound  2 nonmetals with electronegativity difference in between 0.5 to 1.9  f. Nonpolar compounds  2 nonmetals with electronegativity difference o.5.  2. What type of bond (single, double, or triple) holds each of the following diatomic molecules together?  {HINT DRAW the compound using Lewis structures}  a. Oxygen O <sub>2</sub> DB e. Fluorine F <sub>2</sub> SB e. Chlorine Cl <sub>2</sub> SB g. water SB b. Nitrogen N <sub>3</sub> TB d. Hydrogen H <sub>2</sub> SB f. SO <sub>3</sub> DB h. NH <sub>3</sub> SB  3. How many lone pairs surround each element in the following diatomic molecules?  4. Classify each of the following compound as Ionic, Covalent or an Acid  a. CS <sub>2</sub> covalent - Carbon disulfide d. CaSO <sub>4</sub> ionic -Calcium sulfate g. N <sub>2</sub> O <sub>4</sub> covalent b. Bal <sub>2</sub> Ionic-Barium iodide e. PCl <sub>3</sub> covalent - Phosphorus trichloride h. VO <sub>3</sub> ionic c. H <sub>2</sub> Pa edi-Tydro phosphorus acid f. PCl <sub>3</sub> PO <sub>3</sub> et al-phosphorus acid i. PCl <sub>3</sub> covalent g. Dinitrogen teroxide h. Vanadium (VI) oxide i. Phosphorus pentachloride  5. Classify each of the following as polar or nonpolar covalent bonds. Use electronegativity values in book or page 177.  a. O <sub>2</sub> nonpolar [EN difference: 3.5-2.5 = 1.9]  b. HCl Polar [EN difference: 3.5-2.5 = 0.5]  b. HCl Polar [EN difference: 3.5-2.5 = 0.5]  c. FCl Polar [EN difference: 3.0-2.5 = 0.5]  Naming  6. What covalent prefix corresponds to each of the following numbers  a. One mono d. Four tetra g. Seven hepta j. Ten deca  b. Two die e. Five penta h. Eight octa  c. Three tri f. Six hexa i. Nine nona  7. When naming a birary covalent compound, the number of atoms of each element present in the molecule is indicated by prefixes  9. Compare and contrast the properties of Covalent and Ionic bonds		Cov							eview KEY				
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Ionic Covalent	^					,	. 1						
	9.	Compa	are and con	ntrast the prop		ent and Io	nic bonds	Covalant		$\neg$			
		a. I	Formed by	,		nmetal o	· a polv		 	$\dashv$			

atomic ion Transferred

Very high melting point

Electrons
Melting point

Shared

**Low melting points** 

d. Most common phase	Solid	Liquid or gas
e. Conductors	Conduct in aqueous or molten	Do not conduct electricity.
	solutions.	

10. For the following items if given the name write the chemical formula and if given the formula write the name. Make sure you follow the correct naming rules.

name: Wake bare you remove the correct naming raise.						
9. S <sub>2</sub> F <sub>6</sub> disulfur hexafluoride						
10. Vanadium (IV) sulfide VS <sub>2</sub>						
11. HBr hydrobromic acid						
12. Calcium sulfate CaSO <sub>4</sub>						
13. Hydrosulfuric acid H₂S						
14. Sulfuric acid H <sub>2</sub> SO <sub>4</sub>						
15. KCl potassium chloride						
16. CoO <sub>2</sub> cobalt (IV) oxide						

## **Properties**

- 11. Ionic bonds form by **transfering** electrons, covalent bonds form by **sharing** electrons.
- 12. Ionic compound have high melting and boiling points while covalent compounds have low.

## Lewis Structures

13. Draw the Lewis Structure for CS<sub>2</sub>, and complete the table below showing number and types of bonds or lone pairs that each element has. [HONORS describe the molecular geometry]

	C	S	_
Single Bond	0	0	_
Double Bond	2	1	
Triple Bond	0	0	. S=C=S.
Lone Pair Electrons	0	2	Linear

14. Draw the Lewis Structure for CH<sub>3</sub>I, and complete the table below showing number and types of bonds or lone pairs that each element has. [HONORS describe the molecular geometry]

	C	Η	Ι	_
Single Bond	4	1	1	
Double Bond	0	0	0	— н _
Triple Bond	0	0	0	_ н—ç <b>—ї:</b>
Lone Pair Electrons	0	0	3	–   – H tetrahedral
				- icii aliculai

15. Draw the Lewis Structure for HCN, and complete the table below showing number and types of bonds or lone pairs that each element has. [HONORS describe the molecular geometry]

	H	C	N	_	
Single Bond	1	1	0	_	
Double Bond	0	0	0		
Triple Bond	0	1	1	TT	$\sim$ $\sim$ $\sim$
Lone Pair Electrons	0	0	1	H-	
				-	IIIICai