

Write the formulas for the compounds formed from these pairs of ions.

- a.  $Ba^{2+}, Cl^{-}$   $BaCl_2$
- b.  $Ag^{+}, I^{-}$   $AgI$
- c.  $Ca^{2+}, S^{2-}$   $CaS$
- d.  $K^{+}, Br^{-}$   $KBr$
- e.  $Al^{3+}, O^{2-}$   $Al_2O_3$
- f.  $Fe^{2+}, O^{2-}$   $FeO$

\* for ionic compounds, remember to reduce subscripts \*  
ex.  $Ca_2S_2 \rightarrow CaS$

2. Write formulas for compounds formed from these pairs of ions.

- a.  $NH_4^{+}, SO_4^{2-}$   $(NH_4)_2SO_4$
- b.  $K^{+}, NO_3^{-}$   $KNO_3$
- c. Barium ion and hydroxide ion  $Ba(OH)_2$   
 $Ba^{+2} \quad OH^{-}$
- d. Lithium ion and carbonate ion  $Li_2CO_3$   
 $Li^{+} \quad CO_3^{-2}$

3. Name the following ionic compounds.

- a.  $MnO_2$  manganese (IV) oxide
- b.  $Li_3N$  lithium nitride
- c.  $SrBr_2$  strontium bromide
- d.  $K_2S$  potassium sulfide
- e.  $CuCl_2$  copper (II) chloride
- f.  $SnCl_4$  Tin (IV) chloride

\* remember to ask yourself  
→ is the metal in group 1, 2, 3, Zn, or Ag \*

4. Write formulas for the following ionic compounds.

- a. sodium phosphate  $Na_3PO_4$
- b. magnesium sulfate  $MgSO_4$
- c. sodium hydroxide  $NaOH$
- d. potassium cyanide  $KCN$
- e. ammonium chloride  $NH_4Cl$

\* write the ions, crisscross charges \*

f. potassium dichromate  $K_2Cr_2O_7$

5. Name the following compounds.

a.  $NaCN$  sodium cyanide

b.  $FeCl_3$  Iron(III) chloride

c.  $Na_2SO_4$  sodium sulfate

d.  $K_2CO_3$  potassium carbonate

e.  $Cu(OH)_2$  copper(II) hydroxide

f.  $LiNO_3$  lithium nitrate

6. Name the following covalent compounds. uses prefixes

a.  $PCl_5$  phosphorus pentachloride

b.  $CCl_4$  carbon tetrachloride

c.  $NO_2$  nitrogen dioxide

d.  $XeF_2$  xenon difluoride

e.  $SiO_2$  silicon dioxide

f.  $Cl_2O_7$  dichlorine heptoxide

7. Write the formulas for the following covalent compounds.

a. nitrogen tribromide  $NBr_3$

b. dichlorine monoxide  $Cl_2O$

c. sulfur dioxide  $SO_2$





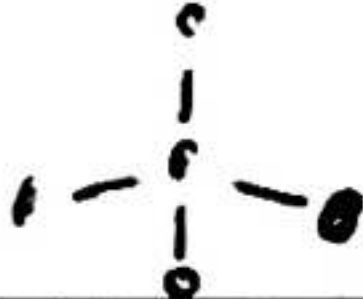

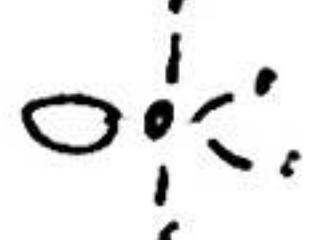
d. dinitrogen tetrafluoride  $N_2F_4$

## Bonding Properties

Property	Ionic	Covalent	Metals
Luster			✓
Malleability			✓
Ductility			✓
Melting Point	high	low	usually high
Solubility	yes	sometimes	No
Ability to conduct electricity as solid	NO	NO	yes
Ability to conduct electricity as liquid	yes	NO	yes
Use of electrons in bonding	transfer	share	sea of electrons

## Lewis Structure & VSEPR Theory

Complete the following charts:

Shape	Bonded Atoms		Lone Pairs		Sketch of Shape
Linear	1 2 1	1 1 2	0 0 1	2 3 3	
Bent	2 2		1 2		
Trigonal Planar	3		0		
Trigonal Pyramidal	3		1		
Tetrahedral	4		0		
Trigonal bipyramidal	5		0		
See Saw	4		1		

T Shape	3	2				
Octahedral	6	0				
Square pyramidal	5	1				
Square planar	4	2				
Compound	Formula	Lewis Structure	Bonded Atoms	Lone Pairs	Shape	P / NP
8. boron tribromide Val e- 24	$BBr_3$		3	0	trigonal planar	NP
9. Carbon dioxide Val e- 16	$CO_2$		2	0	linear	NP
10. Water Val e- 8	$H_2O$		2	2	bent	P
11. Silicon tetrachloride Val e- 32	$SiCl_4$		4	0	tetrahedral	NP
12. Phosphorus trihydride Val e- 8	$PH_3$		3	1	trigonal pyramid	P
13. chlorine Val e- 14	$Cl_2$		1	3	linear	NP

all diatomics are nonpolar ✓

14. Arsenic pentafluoride Val e- 40	AsF <sub>5</sub>		5	0	trigonal bipyramid	NP
15. Phosphate ion Val e- 32	PO <sub>4</sub> <sup>-3</sup>		4	0	tetrahedral	NP
16. Sulfur hexahydride Val e- 12	SH <sub>6</sub>		6	0	octahedral	NP
17. Selenium hexachloride Val e- 48	SeCl <sub>6</sub>		6	0	octahedral	NP
18. Iodine pentafluoride Val e- 42	IF <sub>5</sub>		5	0	trigonal bipyramid square pyramid	P
19. Krypton tetrabromide Val e- 36	KrBr <sub>4</sub>		4	2	square planar	P

Review Objectives from last test:

Summarize how reactivity changes in groups.

1. Which element is least reactive?

- a. Be      b. Mg      c. Ca      d. Sr

2. Which element is most reactive?

- a. Be      b. Mg      c. Ca      d. Sr

Predict the number of electrons lost or gained & oxidation number (charge) based on electron configuration

1. What charged ion would each element form?

a.  $1s^2 2s^2 2p^6 3s^2 3p^5$        $\frac{-1}{\text{-----}}$

b.  $1s^2 2s^2 2p^6 3s^1$        $\frac{+1}{\text{-----}}$