NOMENCLATURE PACKET

Worksheet I: Binary Ionic Compounds (representative metals) – metals from groups 1A, 2A, and 3A (1, 2, and 13) have constant charges as ions and do NOT get Roman Numerals in their names

1. Name the following ionic compounds:

   a. Al_2O_3 Aluminum oxide
   b. Cs_2O Cesium oxide
   c. Rb_3N Rubidium nitride
   d. Ca_3N_2 Calcium nitride
   e. SrSe Strontium selenide
   f. Cs_2S Cesium sulfide
   g. Al_2S_3 Aluminum sulfide
   h. LiBr Lithium bromide
   i. Mg_3N_2 Magnesium nitride
   j. CaF_2 Calcium fluoride

2. Write the chemical formula for the following ionic compounds:

   a. Barium nitride Ba^{+2} N^{-3} Ba_3N_2
   b. Indium Fluoride In^{+3} F^{-1} InF_3
   c. Calcium oxide Ca^{+2} O^{-2} CaO
   d. Sodium nitride Na^{+1} N^{-3} Na_3N
   e. Magnesium chloride Mg^{+2} Cl^{-1} $MgCl_2$
   f. Potassium oxide K^{+1} O^{-2} K_2O
   g. Magnesium oxide Mg^{+2} O^{-2} MgO
   h. Potassium sulfide K^{+1} S^{-2} K_2S
   i. Lithium nitride Li^{+} N^{-3} Li_3N
   j. Strontium fluoride Sr^{+2} F^{-1} SrF_2
   k. Aluminum sulfide Al^{+3} S^{-2} Al_2S_3
   l. Duplicate problem - removed

Worksheet 2: Binary Ionic Compounds (variable charge metals) – metals from groups 3 – 12 and 14 or 4A (Pb and Sn) – charge of anion is constant – use charge of anion to figure out charge of metal

1. Name the following ionic compounds:

a.	SnO_2	oxide = O^{-2}	Tin (IV) oxide
b.	Mn_2O_7	oxide = O^{-2}	Manganese (VII) oxide
c.	FeN	nitride = N^{-3}	Iron (III) nitride
d.	Cu_3N_2	nitride = N^{-3}	Copper (II) nitride
e.	TiF_3	fluoride = F^{-1}	Titanium (III) fluoride
f.	Cu_2S	sulfide = S^{-2}	Copper (I) sulfide
g.	Fe_2S_3	sulfide = S^{-2}	Iron (III) sulfide
h.	CuBr	bromide = Br^{-1}	Copper (I) bromide
i.	Co_3N_2	nitride = N^{-3}	Cobalt (II) nitride
j.	CoF_2	fluoride = F^{-1}	Cobalt (II) fluoride

2. Write the formula for the following ionic compounds:

a.	Copper (I) nitride	Cu_3N
b.	Cobalt (I) fluoride	CoF
c.	Titanium (IV) oxide	TiO_2
d.	Iron (II) nitride	Fe_3N_2
e.	Iron (III) chloride	$FeCl_3$
f.	Copper (II) oxide	CuO
g.	Rhodium (II) oxide	RhO
h.	Tin (IV) sulfide	SnS_2
i.	Manganese (IV) nitride	Mn_3N_4
j.	Copper (I) fluoride	CuF
k.	Cobalt (II) sulfide	CoS
l.	Iron (III) oxide	Fe_3O_2

Worksheet 3: Binary Covalent Compounds

1. Name the following covalent compounds:

   a. CO Carbon monoxide

   b. CO_2 Carbon dioxide

   c. NO Nitrogen monoxide

   d. NO_2 Nitrogen dioxide

   e. SF_6 Sulfur hexafluoride

   f. SiF_4 Silicon tetrafluoride

   g. N_2S_3 Dinitrogen trisulfide

   h. B_2H_6 Diboron hexahydride

   i. SO_2 Sulfur dioxide

   j. CH_4 Carbon tetrahydride

2. Write the formula for the following covalent compounds:

   a. Boron trichloride BCl_3

   b. Nitrogen monoxide NO

   c. Dinitrogen monoxide N_2O

   d. Dinitrogen pentoxide N_2O_5

   e. Sulfur hexachloride SCl_6

   f. Carbon monoxide CO

   g. Carbon disulfide CS_2

   h. Oxygen difluoride OF_2

   i. Dinitrogen tetrahydride N_2H_4

   j. Silicon tetrahydride SiH_4

Worksheet 4: Mixing up Binary Compounds

1. Name the following binary compounds:

   a. CuO Copper (II) oxide

   b. SrO Strontium oxide

   c. B_2O_3 Diboron trioxide

   d. $TiCl_4$ Titanium (IV) chloride

   e. K_2S Potassium sulfide

   f. OF_2 Oxygen difluoride

   g. NH_3 Nitrogen trihydride

   h. VF_5 Vanadium fluoride

   i. $CuCl$ Copper (I) chloride

   j. MnO_2 Manganese (IV) oxide

   k. MgO Magnesium oxide

   l. B_2H_6 Diboron hexahydride

2. Write the formula for the following binary compounds:

   a. Phosphorous trichloride PCl_3

   b. Chlorine monofluoride CF

   c. Copper (II) chloride $CuCl_2$

   d. Copper (I) sulfide Cu_2S

   e. Calcium nitride Ca_3N_2

   f. Carbon tetrabromide CBr_4

   g. Lithium oxide Li_2O

   h. Potassium chloride KCl

   i. Titanium (IV) bromide $TiBr_4$

   j. Magnesium sulfide MgS

   k. Manganese (II) nitride Mn_3N_2

Worksheet 5: Ionic Compounds with Polyatomic Ions

1. Name the following ionic compounds:

   a. $Co(NO_3)_2$ Cobalt (II) nitrate

   b. $NaNO_2$ Sodium nitrite

   c. $Cu_3(PO_3)_2$ Copper (II) phosphite

   d. $Ba(CN)_2$ Barium cyanide

   e. $Al_2(SO_4)_3$ Aluminum sulfate

   f. $KClO_3$ Potassium chlorate

   g. $CuC_2H_3O_2$ Copper (I) acetate

   h. $Fr_2C_2O_4$ Francium oxalate

   i. NH_4Cl Ammonium chloride

   j. $PbPO_4$ Lead (III) phosphate

   k. $Ba(OH)_2$ Barium hydroxide

   l. $KClO$ Potassium hypochlorite

2. Write the formula for the following ionic compounds:

   a. Rhodium (II) chromate $RhCrO_4$

   b. Lithium hydroxide $LiOH$

   c. Sodium permanganate $NaMnO_4$

   d. Manganese (III) nitrate $Mn(NO_3)_3$

   e. Barium nitrite $Ba(NO_2)_3$

   f. Aluminum hypochlorite $Al(ClO)_3$

   g. Potassium phosphate K_3PO_4

   h. Copper (I) acetate $CuC_2H_3O_2$

   i. Ammonium bromide NH_4Br

   j. Sodium carbonate Na_2CO_3

   k. Lithium chlorite $LiClO_2$

Worksheet 6: Putting it All Together

1. Name the following compounds:

   a. $Fe(NO_3)_3$ Iron (III) nitrate
   b. $CaSO_4$ Calcium sulfate
   c. $NaCl$ Sodium chloride
   d. K_2SO_4 Potassium sulfate
   e. CO_2 Carbon dioxide
   f. SF_6 Sulfur hexafluoride
   g. $KClO$ Potassium hypochlorite
   h. N_2O_5 Dinitrogen pentoxide
   i. IF_5 Iodine pentafluoride
   j. $Co(MnO_4)_2$ Cobalt (II) permanganate
   k. $Sn(SO_4)_2$ Tin (IV) sulfate
   l. $FrCl$ Francium chloride

2. Write the formula for the following compounds:

   a. Trinitrogen dioxide N_3O_2
   b. Lithium phosphate Li_3PO_4
   c. Ammonium chloride NH_4Cl
   d. Copper (II) chlorite $Cu(ClO_2)_2$
   e. Nitrogen monoxide NO
   f. Iron (II) iodide FeI_2
   g. Calcium phosphate $Ca_3(PO_4)_2$
   h. Dinitrogen dioxide N_2O_3
   i. Magnesium oxide MgO
   j. Iron (III) chromate $Fe_2(CrO_4)_3$
   k. Sulfur dioxide SO_2