Activity # 10

_____ 20	**Name** _____
	Date _____
	Date due _____

Assignment on Naming Ionic Compounds

NOTE: This assignment is based on material given in your notes as well as on page 204 in the Science Probe textbook. Use your Periodic Table and your "Common Ion" chart to help you find ion charges (combining capacities).

1. Compounds with only **two** elements are called _____ compounds.

2. In a **binary** compound, the non-metal changes it's name so it ends in the letters __ __ __.

3. In a compound containing a ***polyatomic ion,*** the name of the polyatomic ion

   (always/sometimes/never) _____ changes.

4. Write the correct names for the following ionic compounds:

   a) Na_2SO_4 ..... _____

   b) Li_2S ..... _____

   c) K_2SO_3 ..... _____

   d) Na_2CO_3 ..... _____

   e) $Mg(OH)_2$ ..... _____

   f) $BeSO_4$ ..... _____

   g) H_2SO_4 ..... _____

   h) $NaHCO_3$ ..... _____

   i) $AgNO_3$ ..... _____

j) $RbCl$ ..... _____

k) $RbHSO_4$ ..... _____

l) Na_3PO_4 ..... _____

m) $LiBr$ ..... _____

n) $(NH_4)_2Cr_2O_7$ ..... _____

o) $BeCl_2$ ..... _____

p) $NaOH$ ..... _____

q) $KMnO_4$ ..... _____

r) $ZnCl_2$ ..... _____

s) Ag_2CO_3 ..... _____

t) $Ba(NO_3)_2$ ..... _____

u) $GaCl_3$ ..... _____

v) $CsBr$ ..... _____

w) ZnO ..... _____

x) $Al(NO_3)_3$ ..... _____

y) $Ca(ClO)_2$ ..... _____

z) $Ca(OH)_2$ ..... _____

aa) K_2CrO_4 ..... _____

bb) $NaCH_3COO$ ..... _____

cc) SrS ..... _____

dd) CaF_2 ..... _____

ee) CaO ..... _____

ff) NH_4NO_3..... _____

gg) NH_4OH ..... _____

hh) $K_2Cr_2O_7$..... _____

ii) $BaCl_2$ ..... _____

jj) $GaCl_3$ ..... _____

kk) AlI_3 ..... _____

ll) K_3PO_4..... _____

mm) $NaHCO_3$ ..... _____

nn) Li_2S ..... _____

5. Determine the metal ion and its charge in each of the following compounds. The first two are done as examples.

a) $TiCl_4$ .....The metal ion is $\underline{Ti^{4+}}$ (This is because each Cl^- has a charge of –1, there are 4 Cl^- 's so the total negative charge is – 4. The total positive charge is + 4 and there is one Ti ion. So the charge on each Ti ion is 4+.)

b) $Fe_2(SO_4)_3$ .....The metal ion is $\underline{Fe^{3+}}$ (This is because each SO_4^{2-} has a charge of –2, there are 3 SO_4^{2-}'s so the total negative charge is – 6. The total positive charge is + 6 and there are two Fe ions. So the charge on each Fe ion is 3+.)

c) $CoCO_3$.....The metal ion is _____

d) $Pd(ClO)_2$ .....The metal ion is _____

e) $Ru(CO_3)_2$ .....The metal ion is _____

f) $U(CrO_4)_3$ .....The metal ion is _____

g) $Ni_3(PO_4)_2$ .....The metal ion is _____

h) ReF_7 .....The metal ion is _____

i) $V_2(SO_3)_5$.....The metal ion is _____

j) $Nb(HSO_4)_5$ .....The metal ion is _____

6. An unknown element (we'll call "X") forms the following compounds:

   $X(NO_3)_2$ $X_2(Cr_2O_7)_3$ and $X(MnO_4)_4$

   From the information given, what possible ions (with their charges) does X form?

   _____

   If "X" is a real element, which one of the following would it most likely be? (Circle)

   Pt Zr An Alkali Metal An Alkaline Earth Mn U Pu Au W

7. An unknown element (we'll call "Y") forms the following compounds:

   $Y(NO_3)_5$ $Y_2(CrO_4)_3$ and $Y(MnO_4)_3$

   From the information given, what possible ions (with their charges) does Y form?

   _____

   If "Y" is a real element, which one of the following would it most likely be? (Circle)

   Al Ru An Alkali Metal An Alkaline Earth Mn Bk Po Ag Bi

8. An element "Q" forms the compounds $Q_3(PO_4)_2$ and $Q(HSO_4)_3$.

   a) Is it possible that "Q" is an Alkaline Earth element? _____

   b) Explain why or why not. _____

      _____

9. An element "X" forms the compounds X_3PO_4 and $XClO_4$

   a) Is it possible that "X" is an Alkali Metal element? _____

   b) Explain why or why not. _____

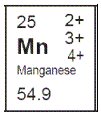
      _____

10. Circle the compounds in which Cu has an ion charge of +1.

    CuCl Cu_2CO_3 $CuSO_4$ Cu_3PO_4 $Cu(ClO)_2$ $CuClO_2$ $CuClO_3$ $Cu_3(PO_4)_2$

    Cu_2SO_4 $CuHSO_4$ $Cu(HSO_3)_2$ $CuHCO_3$ $Cu(HCO_3)_2$ CuF Cu_2O

11. Write the correct names of the following ionic compounds. (NOTE: If the metal ion has more than one possible charge, a Roman Numeral MUST come after the name of the metal. If the metal ion only has one possible charge, THERE MUST BE NO ROMAN NUMERAL!) The first two questions are done as examples.

    a) $Mn(OH)_3$ .....**manganese (III) hydroxide** (Mn ions have three possible charges, 2+, 3+ and 4+. (See Mn on Periodic Table 

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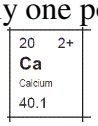
    Each OH^- ion has a charge of –1 and there are 3 of them, so the total negative charge is –3. The total positive charge is +3 and there is one Mn ion. So its charge must be 3+. Since it has more than one possible charge, we MUST include a Roman Numeral, which would be (III) for the 3+ charge on Mn.

    b) $Ca_3(PO_4)_2$ .....**calcium phosphate** (Calcium has only one possible charge (2+), so we MUST NOT include a Roman Numeral in the name! 

    c) $Cr(MnO_4)_3$....._____

    d) $MnSO_4$ ....._____

    e) Ag_3PO_4 ....._____

    f) $Nb(NO_3)_5$ ....._____

    g) Bi_2O_5 ....._____

    h) $Sr_3(PO_4)_2$ ....._____

    i) $Fe(ClO)_2$ ....._____

    j) $Al(NO_2)_3$ ....._____

    k) Zn_3As_2....._____

    l) $Pb(HSO_4)_4$ ....._____

    m) $Hg_2Cr_2O_7$ ....._____

    n) $U(HPO_4)_3$ ....._____

    o) RaC_2O_4....._____