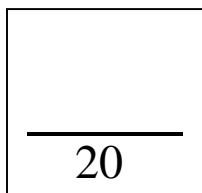


# Activity # 10



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).

- Compounds with only **two** elements are called \_\_\_\_\_ compounds.
- In a **binary** compound, the non-metal changes it's name so it ends in the letters \_ \_ \_.
- In a compound containing a **polyatomic ion**, the name of the polyatomic ion  
(*always/sometimes/never*) \_\_\_\_\_ changes.
- Write the correct names for the following ionic compounds:
  - Na<sub>2</sub>SO<sub>4</sub> ..... \_\_\_\_\_
  - Li<sub>2</sub>S ..... \_\_\_\_\_
  - K<sub>2</sub>SO<sub>3</sub> ..... \_\_\_\_\_
  - Na<sub>2</sub>CO<sub>3</sub> ..... \_\_\_\_\_
  - Mg(OH)<sub>2</sub> ..... \_\_\_\_\_
  - BeSO<sub>4</sub> ..... \_\_\_\_\_
  - H<sub>2</sub>SO<sub>4</sub> ..... \_\_\_\_\_
  - NaHCO<sub>3</sub> ..... \_\_\_\_\_
  - AgNO<sub>3</sub> ..... \_\_\_\_\_

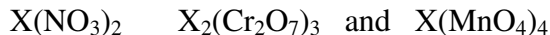
- j)  $\text{RbCl}$  ..... \_\_\_\_\_
- k)  $\text{RbHSO}_4$  ..... \_\_\_\_\_
- l)  $\text{Na}_3\text{PO}_4$  ..... \_\_\_\_\_
- m)  $\text{LiBr}$  ..... \_\_\_\_\_
- n)  $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$  ..... \_\_\_\_\_
- o)  $\text{BeCl}_2$  ..... \_\_\_\_\_
- p)  $\text{NaOH}$  ..... \_\_\_\_\_
- q)  $\text{KMnO}_4$  ..... \_\_\_\_\_
- r)  $\text{ZnCl}_2$  ..... \_\_\_\_\_
- s)  $\text{Ag}_2\text{CO}_3$  ..... \_\_\_\_\_
- t)  $\text{Ba}(\text{NO}_3)_2$  ..... \_\_\_\_\_
- u)  $\text{GaCl}_3$  ..... \_\_\_\_\_
- v)  $\text{CsBr}$  ..... \_\_\_\_\_
- w)  $\text{ZnO}$  ..... \_\_\_\_\_
- x)  $\text{Al}(\text{NO}_3)_3$  ..... \_\_\_\_\_
- y)  $\text{Ca}(\text{ClO})_2$  ..... \_\_\_\_\_
- z)  $\text{Ca}(\text{OH})_2$  ..... \_\_\_\_\_
- aa)  $\text{K}_2\text{CrO}_4$  ..... \_\_\_\_\_
- bb)  $\text{NaCH}_3\text{COO}$  ..... \_\_\_\_\_
- cc)  $\text{SrS}$  ..... \_\_\_\_\_
- dd)  $\text{CaF}_2$  ..... \_\_\_\_\_
- ee)  $\text{CaO}$  ..... \_\_\_\_\_

- ff)  $\text{NH}_4\text{NO}_3$ ..... \_\_\_\_\_
- gg)  $\text{NH}_4\text{OH}$  ..... \_\_\_\_\_
- hh)  $\text{K}_2\text{Cr}_2\text{O}_7$ ..... \_\_\_\_\_
- ii)  $\text{BaCl}_2$  ..... \_\_\_\_\_
- jj)  $\text{GaCl}_3$  ..... \_\_\_\_\_
- kk)  $\text{AlI}_3$  ..... \_\_\_\_\_
- ll)  $\text{K}_3\text{PO}_4$ ..... \_\_\_\_\_
- mm)  $\text{NaHCO}_3$  ..... \_\_\_\_\_
- nn)  $\text{Li}_2\text{S}$  ..... \_\_\_\_\_

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

- a)  $\text{TiCl}_4$  .....The metal ion is  $\text{Ti}^{4+}$  (This is because each  $\text{Cl}^-$  has a charge of  $-1$ , there are 4  $\text{Cl}^-$ '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)  $\text{Fe}_2(\text{SO}_4)_3$  .....The metal ion is  $\text{Fe}^{3+}$  (This is because each  $\text{SO}_4^{2-}$  has a charge of  $-2$ , there are 3  $\text{SO}_4^{2-}$ '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)  $\text{CoCO}_3$ .....The metal ion is \_\_\_\_\_
- d)  $\text{Pd}(\text{ClO})_2$  .....The metal ion is \_\_\_\_\_
- e)  $\text{Ru}(\text{CO}_3)_2$  .....The metal ion is \_\_\_\_\_
- f)  $\text{U}(\text{CrO}_4)_3$  .....The metal ion is \_\_\_\_\_
- g)  $\text{Ni}_3(\text{PO}_4)_2$  .....The metal ion is \_\_\_\_\_
- h)  $\text{ReF}_7$  .....The metal ion is \_\_\_\_\_
- i)  $\text{V}_2(\text{SO}_3)_5$ .....The metal ion is \_\_\_\_\_
- j)  $\text{Nb}(\text{HSO}_4)_5$  .....The metal ion is \_\_\_\_\_

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



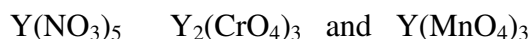
From the information given, what possible ions (with their charges) does X form?

\_\_\_\_\_

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:



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  $\text{Q}_3(\text{PO}_4)_2$  and  $\text{Q}(\text{HSO}_4)_3$ .

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

b) Explain why or why not. \_\_\_\_\_

\_\_\_\_\_

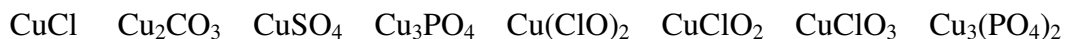
9. An element "X" forms the compounds  $\text{X}_3\text{PO}_4$  and  $\text{XClO}_4$

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.



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

25	2+
<b>Mn</b>	3+
Manganese	4+
54.9	

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!

20	2+
<b>Ca</b>	
Calcium	
40.1	

- 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)  $RaC_2O_4$ ..... \_\_\_\_\_