

## Honors Chemistry Internet Nomenclature Worksheet

Name: \_\_\_\_\_

Period: \_\_\_\_\_

You may link from Summer Packet page, or type in following address,  
<http://www.chemteam.info/Nomenclature/Nomenclature.html> or search for “ChemTeam” and click on “Nomenclature.”

You will do 5 types of compounds listed on this page.

- Binary Compounds (Metal/Nonmetal) with Fixed Charge Cation
- Binary Compounds (Metal/Nonmetal) with Variable Charge Cation: Stock System
- Covalent Binary Compound (Two Nonmetals): Greek Prefix System
- Polyatomics (metal with fixed or variable charge/ Polyatomic
- Miscellaneous

### Section One: Quiz on August 27<sup>th</sup>/28<sup>th</sup> (questions 1-7)

For each of these sections you should be able to go both directions:

name → formula   &   formula → name

Click on ***Nomenclature Definition List*** (Listed under HTML Files)

1. Define CATION and ANION

cation: \_\_\_\_\_

anion: \_\_\_\_\_

2. Define Binary Compound

binary compound \_\_\_\_\_

***Go to Tutorials: Binary Compounds with Fixed Charge Cation; 1. Given formula, write the name***

The elements involved in this less only have \_\_\_\_\_

3. Complete the following points to remember:

- The order for names in a binary compound is \_\_\_\_\_
- Use the name of cation with a fixed oxidation state \_\_\_\_\_
- The name of the anion will be made from the \_\_\_\_\_

Rules for writing binary ionic compounds:

- ✓ write the name of the first element
- ✓ use the root of the second element but change the ending to “ide”

4. Show yourself two examples of how to write the name from the formula for these types of compounds.

5. Try these practice problems, then check your answers:

- a. MgS \_\_\_\_\_
- b. KBr \_\_\_\_\_
- c. Ba<sub>3</sub>N<sub>2</sub> \_\_\_\_\_
- d. Al<sub>2</sub>O<sub>3</sub> \_\_\_\_\_
- e. NaI \_\_\_\_\_

**Go to Tutorials:** *Binary Compounds with Fixed Charge Cation; 2. Given name, write the formula*

6. Complete these points to remember:

- a. The order in a formula is \_\_\_\_\_
- b. You must know the charges associated with each cation and anion.
  - 1. The sum of the positive charge and the sum of the negative charges \_\_\_\_\_
  - 2. You \_\_\_\_\_ of the cations or anions to get a total charge of zero.
  - 3. You \_\_\_\_\_ to get a total charge of zero.

A summary of the rules is as follows:

- a. write the symbol and charge of the first word
- b. write the symbol and charge of the second word
- c. use the minimum number of cations and anions needed to make the sum of all the charges in the formula equal to zero

EX: Barium iodide: **Ba**<sup>+2</sup> **I**<sup>-1</sup> Iodide's superscript 1 must be multiply by a number that will make the total sum of superscripts equal to zero. Multiplying by 2 (**Ba**<sup>+2</sup> **I**<sup>-1(2)</sup>) will give you a sum of zero. (<sup>+2</sup> + <sup>-2</sup> = 0) **Answer: BaI<sub>2</sub>**

7. Practice with these problems then check your answers:

- a. magnesium oxide \_\_\_\_\_
- b. lithium bromide \_\_\_\_\_
- c. calcium nitride \_\_\_\_\_
- d. aluminum sulfide \_\_\_\_\_
- e. potassium iodide \_\_\_\_\_

## Section Two: Quiz on Sept 9<sup>th</sup>/10<sup>th</sup> (questions 8-11)

*Go to Tutorials: Binary Compounds with Variable Charge Cation (Stock); 1. Given formula, write the name*

8. Complete the following steps:

Step #1: first part of the name is the \_\_\_\_\_

Step #2: result from step one \_\_\_\_\_

Here is how to determine its value:

- a. multiply \_\_\_\_\_
- b. divide this result by \_\_\_\_\_

**This is the value of the Roman numeral to use.**

- c. The value of the Roman number represents \_\_\_\_\_

Step #3: anion is named in the usual manner of stem plus “-ide”

**\*Hint, all metals except for those in column IA, IIA, and  $\text{Al}^{+3}$ ,  $\text{Cd}^{+2}$ ,  $\text{Zn}^{+2}$  and  $\text{Ag}^{+1}$  require roman numerals in their names. The reason the above metals do not have roman numerals is because they only have one charge.**

9. Name following examples:

$\text{CuCl}_2$  \_\_\_\_\_

$\text{Fe}_2\text{O}_3$  \_\_\_\_\_

10. Practice with these then check the answers:

a.  $\text{CuS}$  \_\_\_\_\_

b.  $\text{PbBr}_4$  \_\_\_\_\_

c.  $\text{Pb}_3\text{N}_2$  \_\_\_\_\_

d.  $\text{Fe}_2\text{O}_3$  \_\_\_\_\_

e.  $\text{FeI}_2$  \_\_\_\_\_

11. What is unusual about Mercury I? Peroxide?

### Section Three: Quiz on Sept 23<sup>rd</sup>/24<sup>th</sup> ( questions 12-18)

**Go to Tutorials:** *Binary Compounds with Variable Charge Cation(Stock); 2. Given name, write the formula*

12. What is the following steps:

Step#1: the first word tells you the \_\_\_\_\_

Step #2: the Roman numeral WILL tell you \_\_\_\_\_

Step #3: the anion symbol and charge comes from the second name \_\_\_\_\_

Step #4: remembering the rule that a formula \_\_\_\_\_

13. Write yourself examples of :

Copper (I) oxide \_\_\_\_\_

Iron (III) sulfide \_\_\_\_\_

14. Practice with these, then check your answers:

a. iron (II) chloride \_\_\_\_\_

b. copper (I) sulfide \_\_\_\_\_

c. lead (IV) iodide \_\_\_\_\_

d. tin (II) fluoride \_\_\_\_\_

e. mercury (I) bromide \_\_\_\_\_

**Go to Tutorials:** *Covalent Binary Compounds (Greek Prefix); 1. Given formula, write the name*

15. How will you recognize these compounds?

16. Write the Greek prefixes for 1-10.

17. Write yourself rules for naming binary molecular compounds.

18. Give yourself two examples (you choose!)

## Section Four: Quiz on Oct 13<sup>th</sup>/14<sup>th</sup> (questions 19-23)

19. Practice with these, then check your answers.

- a.  $\text{As}_4\text{O}_{10}$  \_\_\_\_\_
- b.  $\text{BrO}_3$  \_\_\_\_\_
- c.  $\text{BN}$  \_\_\_\_\_
- d.  $\text{N}_2\text{O}_3$  \_\_\_\_\_

**Go to Tutorials:** Covalent Binary Compounds (Greek Prefix); 2. Given name, write the formula

20. Write yourself steps for determining formulas of these compounds.

21. Give yourself two examples (you choose!)

22. What rule can you make about the use of the prefix MONO-?

23. Practice with these, then check your answers.

- a. chlorine monoxide \_\_\_\_\_
- b. oxygen difluoride \_\_\_\_\_
- c. boron phosphide \_\_\_\_\_
- d. dinitrogen monoxide \_\_\_\_\_

## Section Five: Quiz on Nov 11<sup>th</sup>/12<sup>th</sup> (questions 24-31)

**Go to Tutorials:** Polyatomics I. Given formula, write the name

24. How will you recognize this type of compound?

25. How should parentheses be used?

26. Write two steps for determining the formula:

Step 1:

Step 2:

27. Give yourself the examples: (note use or absence of parentheses)

$\text{Fe}(\text{NO}_3)_2$  \_\_\_\_\_

$\text{Ca}(\text{ClO}_3)_2$  \_\_\_\_\_

28. Practice with these, then check your answers:

a.  $\text{AlPO}_4$  \_\_\_\_\_

b.  $\text{KNO}_2$  \_\_\_\_\_

c.  $\text{NaHCO}_3$  \_\_\_\_\_

d.  $\text{CaCO}_3$  \_\_\_\_\_

e.  $\text{Mg}(\text{OH})_2$  \_\_\_\_\_

f.  $\text{Na}_2\text{CrO}_4$  \_\_\_\_\_

***Go to Tutorials: Polyatomics; 2. Given name, write the formula***

29. Write yourself a set of steps for determining the formula.

30. Give yourself two examples:

Copper (II) chlorate \_\_\_\_\_

Sodium phosphate \_\_\_\_\_

31. Practice with these, then check your answers:

a. Silver carbonate \_\_\_\_\_

b. potassium hydrogen phosphate \_\_\_\_\_

c. aluminum hydroxide \_\_\_\_\_

d. sodium hydrogen carbonate \_\_\_\_\_

e. calcium acetate \_\_\_\_\_

f. potassium permanganate \_\_\_\_\_