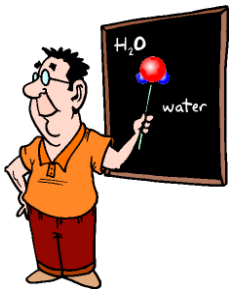
**Name:** _____ **Date:** _____ **Class Notes**
**Chemistry**

# Naming Compounds




In order to properly name chemical compounds you must know the common nonmetallic roots, the Greek numeric prefixes, the common metallic ions with multiple charges, the polyatomic ions and how to read the periodic table. The rest is easy.

## Common Nonmetallic Roots

| | | | |
|---|---|---|---|
| H = _____ | B = _____ | C = _____ | N = _____ |
| O = _____ | F = _____ | P = _____ | S = _____ |
| Cl = _____ | Br = _____ | I = _____ | Si = _____ |

## Numeric Prefixes

| | | | |
|---|---|---|---|
| _____ one | _____ two | _____ three | _____ four |
| _____ five | _____ six | _____ seven | _____ eight |
| _____ nine | _____ ten | | |

**Note:** The "a" or "o" on the end of the prefix is deleted with an element beginning with a vowel.

## Ions

### COMMON METAL IONS (new system)

| | | |
|---|---|---|
| _____ copper(I) | _____ mercury(I) | _____ manganese(II) |
| _____ copper(II) | _____ mercury(II) | _____ cobalt(II) |
| _____ gold (I) | _____ gold (III) | _____ cobalt(III) |
| _____ tin(II) | _____ iron(II) | _____ lead(II) |
| _____ tin(IV) | _____ iron(III) | _____ lead(IV) |
| _____ chromium(II) | _____ nickel (II) | _____ aluminum |
| _____ chromium(III) | _____ chromium(VI) | _____ cadmium |

## GENERAL RULE

Most compounds are **binary**, which means most compounds have only **two** parts.

# BINARY IONIC COMPOUNDS

Binary ionic compounds consist of a **metal cation** and a **nonmetal anion**. The cation is named first and the anion follows with the suffix "**-ide**" added.

### EXAMPLE:

**KBr** potassium + brom + **ide** **$CaCl_2$** calcium + chlor + **ide**

Many of the transition metals and the elements of Groups IIIA, IVA, and VA have more than one oxidation state. These metals can form more than one compound with the same nonmetal. To distinguish among all the possibilities, the oxidation number of the metal is indicated by a Roman numeral in parentheses following its name.

### EXAMPLE:

**$Cu_2O$** ($2\ Cu^{+} + O^{2-}$) copper (I) oxide

**CuO** ($Cu^{2+} + O^{2-}$) copper (II) oxide

# BINARY MOLECULAR COMPOUNDS

Most **binary molecular** compounds are composed of **two nonmetals**. Although many nonmetals have multiple oxidation numbers, their oxidation numbers are not indicated by Roman numerals or suffixes. Instead, elemental parts in a binary molecular compound are indicated by **numeric prefixes**.

### EXAMPLE:

**$SO_2$** sulfur dioxide

**$N_2O_4$** dinitrogen tetroxide

# POLYATOMIC IONS

Some compounds contain polyatomic ions that behave like monatomic ions. These compounds are named as though they were binary ionic compounds. So you must know the charge of the polyatomic ion.

### EXAMPLE:

**$NH_4I$** ($NH_4^{+} + I^{-}$) ammonium iodide

**NaOH** ($Na^{+} + OH^{-}$) sodium hydroxide

# PRACTICE

_____ $SF_6$

_____ $BaCrO_4$

_____ $SF_2$

_____ $SiO_2$

_____ $NH_4C_2H_3O_2$

_____ $Cl_2O_7$

_____ $N_2O_5$

_____ $K_2H_2PO_4$

_____ $NaHCO_3$

_____ $Na_2CO_3$

_____ $TiCl_4$

_____ $Ca_3(PO_4)_2$

_____ $NI_3$

_____ $KMnO_4$

_____ $CuI_2$

_____ $NaCl$

_____ $XeF_6$

_____ $Cu_2O$

_____ $NaF$

_____ $LiH$

**"Don't go around saying the world owes you a living; the world owes you nothing; it was here first." -- Mark Twain**