Name: _____ **Date:** _____ **Class Notes**
IPC

Naming Compounds

Most compounds are either ionic or covalent and consist of two parts (binary). The general rule is to put the more metallic element first and the less metallic element second. The more metallic element uses its full name and less metallic element is named with its **root** and the suffix "**-ide**".

Common Nonmetallic Roots

H = _____ B = _____ C = _____ N = _____

O = _____ F = _____ P = _____ S = _____

Cl = _____ Br = _____ I = _____

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.

Metal Ions

COMMON METAL IONS (new system)

_____ copper(I) _____ mercury(I) _____ manganese(II)

_____ copper(II) _____ mercury(II) _____ cobalt(II)

_____ nickel(II) _____ chromium(III) _____ lead(II)

_____ tin(II) _____ iron(II) _____ lead(IV)

_____ tin(IV) _____ iron(III) _____ aluminum

COMMON NONMETAL IONS

_____ sulfide _____ bromide _____ fluoride _____ hydride

_____ chloride _____ iodide _____ oxide _____ phosphide

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 metals of Groups IIIA, IV, and VA have more than one oxidation metal. 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

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 be able to determine the charge of the polyatomic ion.

EXAMPLE:

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

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

COMMON POLYATOMIC IONS

_____ hydroxide ion _____ carbonate ion _____ chlorate ion

_____ phosphate ion _____ nitrate ion _____ acetate ion

_____ ammonium ion _____ sulfate ion _____ iodate ion

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

PRACTICE

_____ SF_6

_____ $BaCrO_4$

_____ SF_2

_____ SiO_2

_____ $NH_4C_2H_3O_2$

_____ Cl_2O_7

_____ N_2O_5

_____ KH_2PO_4

_____ $NaHCO_3$

_____ NaH

_____ $TiCl_4$

_____ $Ca_3(PO_4)_2$

_____ NI_3

_____ $KMnO_4$

_____ CuI_2

_____ $NaCl$

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

