

# Multivalent Compounds: Naming and Writing Formulas

July 22, 2015 11:58 AM

- referring to the **transition metals**
- these are usually after atomic # 20
- these have more than one charge
  - ex Lead  $+2, +4$
  - Iron  $+3, +2$
  - Gold  $+1, +3$

When naming these compounds, you must use **Roman Numerals** to indicate which ion charge has been used

I	1	III	3	V	5	VII	7
II	2	IV	4	VI	6	VIII	8

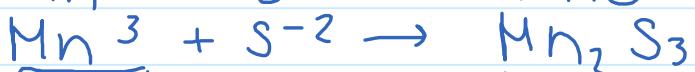
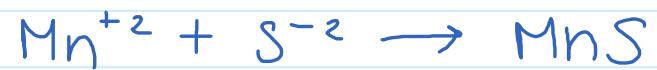
## Naming STEPS

- 1 Write the name of the **metal** element first, the **non-metal** second and change its ending to "ide"
- 2 Write the **metal** ion **charge** in **roman numerals**, inside **BRACKETS**, after the metal

Ex. #1

- (a) AuCl  $\rightarrow$  Gold (I) chloride
- $$[\text{Au}^{+1}] + \text{Cl}^{-1} \rightarrow \text{AuCl}$$
- (b) Fe<sub>2</sub>O<sub>3</sub>  $\rightarrow$  Iron (III) oxide
- $$\begin{array}{l} [\text{Fe}^{+3}] + \text{O}^{-2} \rightarrow \text{Fe}_2\text{O}_3 \\ \text{Fe}^{+2} + \text{O}^{-2} \rightarrow \text{FeO} \end{array}$$
- (c) MnS<sub>2</sub>  $\rightarrow$  Manganese (IV) sulphide

(c)  $MnS_2$  → Manganese (IV) sulphide



Writing formulas

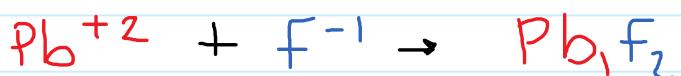
1. Write the metal and non-metal elements in their ion form

# the roman numeral tells you which ion charge to use!!!

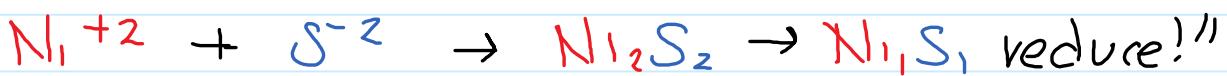
2. Re-write the elements without ion charges and criss-cross the numbers  
# if there is a common factor → REDUCE!!

Ex. #2

(a) Lead (II) fluoride  $PbF_2$  3 atoms



(b) Nickel (II) sulphide  $Ni_1S$  2 atoms



(c) Tin (IV) oxide  $SnO_2$  3 atoms



