

NAME: \_\_\_\_\_

## IONIC COMPOUNDS WITH MULTIVALENT ELEMENTS

(Gr.9 – Pg. 162)

What are metals that can form more than one type of ion called?

How do you distinguish between different ions formed by multivalent metals?

What is the purpose of the roman numerals in the name of a metal ion?

Where can you find information about the charges of multivalent metals on the periodic table?

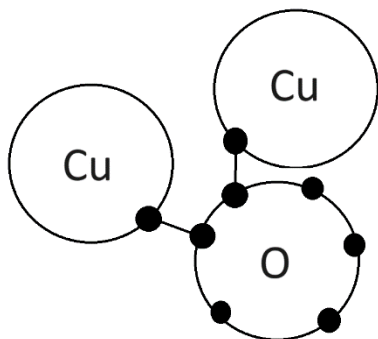
Provide an example of a compound that contains a multivalent metal and name it, including the roman numeral in the middle.

In your own words, how do you write the chemical formula for a compound containing a multivalent metal, and what is the role of the Roman numeral in this process?

# BOHR DIAGRAMS OF IONIC COMPOUNDS

Draw the Bohr Diagrams and show how the elements are connected to each other.

copper (I) oxide     $\text{Cu}_2\text{O}$



$\text{PbS}$

copper (II) bromide     $\text{CuBr}_2$

$\text{PbO}_2$

iron (III) chloride     $\text{FeCl}_3$

$\text{Ni}_3\text{P}_2$

lead (IV) iodide     $\text{PbI}_4$

$\text{Cs}_2\text{S}$

# IONIC COMPOUNDS WITH MULTIVALENT ELEMENTS

Balance the charges to find the compound formula.

| Compound Name         | Metal Ion        | Non-Metal Ion   | Compound Formula |
|-----------------------|------------------|-----------------|------------------|
| iron (II) oxide       | $\text{Fe}^{2+}$ | $\text{O}^{2-}$ | $\text{FeO}$     |
| copper (II) sulfide   |                  |                 |                  |
| lead (II) nitride     |                  |                 |                  |
| cobalt (III) chloride |                  |                 |                  |
| chromium (II) oxide   |                  |                 |                  |

How do you know which ion the metal forms when given the name?

Do you write a roman numeral after the metals name if it is not multivalent?

In your own words, how do you write multivalent ionic compound formulas from their names?

# IONIC COMPOUNDS WITH MULTIVALENT ELEMENTS

Name each element in the compound to find the compound name.

| Compound Formula               | Metal Ion        | Non-Metal Ion   | Compound Name   |
|--------------------------------|------------------|-----------------|-----------------|
| FeO                            | Fe <sup>2+</sup> | O <sup>2-</sup> | iron (II) oxide |
| Fe <sub>2</sub> O <sub>3</sub> |                  |                 |                 |
| TiCl <sub>4</sub>              |                  |                 |                 |
| TiCl <sub>3</sub>              |                  |                 |                 |
| Al <sub>2</sub> S <sub>3</sub> |                  |                 |                 |

Do the roman numerals relate to the metal ion or non-metal ion?

|          |            |
|----------|------------|
| <b>1</b> | <b>I</b>   |
| <b>2</b> | <b>II</b>  |
| <b>3</b> | <b>III</b> |
| <b>4</b> | <b>IV</b>  |
| <b>5</b> | <b>V</b>   |

Do the roman numerals relate to the amount of atoms or the ion charge?

Why are there is no roman numerals for the non-metal?

How do you name multivalent ionic compounds from the compound formula?