

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

Blk: \_\_\_\_\_ Date: \_\_\_\_\_

**Science 9**  
**Names and Formulas of Ionic Compounds Continued**

Steps for writing formulas of **ionic compounds with multivalent metals:**

Steps	Example 1: Iron (III) sulphide
1. Identify each <b>ion</b> and its appropriate <b>charge</b>  ***The number in brackets tells us the charge on the metal	<b>Iron (III) = Fe<sup>3+</sup></b>  <b>Sulphide = S<sup>2-</sup></b>
2. Drop the <b>(+)</b> and <b>(-)</b> from the ion charge and <b>CRISS-CROSS</b> the numbers, writing them as subscripts (or use ratio method)	<b>Fe<sup>3+</sup></b> <b>S<sup>2-</sup></b>  Fe <sub>2</sub> S <sub>3</sub>
3. Write the Final formula	<b>Fe<sub>2</sub>S<sub>3</sub></b>
4. (if possible) Remember to <b>Reduce</b> subscripts: divide both subscripts by highest common factor	
5. Remember: <b>Drop any 1's</b> from the final formula	<b>Fe<sub>2</sub>S<sub>3</sub></b>

Example 2: Lead (II) oxide

1. Lead (II) = Pb<sup>2+</sup> and Oxide = O<sup>2-</sup>
2. Pb<sup>2+</sup>                      O<sup>2-</sup>

3. PbO

Example 3: Tin (IV) Oxide

1. Tin (IV) = Sn<sup>4+</sup> and Oxide = O<sup>2-</sup>
2. Sn<sup>4+</sup>                      O<sup>2-</sup>

3. Sn<sub>2</sub>O<sub>4</sub> ... reduce

4. SnO<sub>2</sub>

**Now do Practice Problems page 89 #1 a – n**

Steps for writing the **name of ionic compounds with multivalent metals**:

Steps	Example 1. $\text{Cu}_3\text{P}$
1. Identify the <b>metal</b> and list the possible <b>ion charges</b>	<u><math>\text{Cu}^{1+}</math></u> or <u><math>\text{Cu}^{2+}</math></u>
2. Identify the <b>charge</b> on the <b>non-metal</b> ion	<u><math>\text{P}^{3-}</math></u>
3. Write the names of the atoms - <b>Separate</b> metal and non-metal with brackets	<u><b>Copper ( ) phosphorus</b></u> <u><b>Copper ( ) phosphide</b></u>
4. <b>UN-CRISS CROSS</b> (from subscript to charge position) to find the charge (or use ratios)	<u><b><math>\text{Cu}_3\text{P}</math></b></u>
5. Ensure charge of <b>non-metal matches</b> periodic table: Only <b>ONE</b> possible charge	<u><math>\text{P}^{3-}</math></u>
6. If non-metal charge does <b>NOT</b> match, multiply by <b>lowest common multiple</b> to match the charge on periodic table -apply this to the <b>metal</b> too	
7. Write charge on metal as <b>roman numeral</b> inside <b>brackets</b>	<u><b>Copper (I) phosphide</b></u>

Example 2.  $\text{MnO}$

1.  $\text{Mn}^{2+}$  or  $\text{Mn}^{3+}$  or  $\text{Mn}^{4+}$
2.  $\text{O}^{2-}$
3. Manganese ( ) oxide

$\text{MnO}$  - Does not match PT therefore x2

4. Manganese (II) oxide

Example 3.  $\text{SnO}_2$

1.  $\text{Sn}^{4+}$  or  $\text{Sn}^{2+}$
2.  $\text{O}^{2-}$
3. Tin ( ) oxide

$\text{SnO}_2$  - Does not match PT therefore x2

4. Tin (IV) oxide

**Now do Practice Problems page 90 #1 a-o**

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

Blk: \_\_\_\_\_ Date: \_\_\_\_\_

**Science 9**  
**Names and Formulas of Ionic Compounds Continued**

Steps for writing formulas of \_\_\_\_\_  
\_\_\_\_\_ :

Steps	Example 1: Iron (III) sulphide
1. Identify each _____ and its appropriate _____  ***the number in brackets tells us the charge on the metal	_____ = _____  _____ = _____
2. Drop the <b>(+)</b> and <b>(-)</b> from the ion charge and <b><u>CRISS-CROSS</u></b> the numbers, writing them as subscripts (or use ratio method)	
3. Write the final formula	
4. (If possible) remember to _____ subscripts: divide both subscripts by the highest common factor	
5. Remember: _____ from the final formula	_____

Example 2: Lead (II) oxide

1.

2.

3.

Example 3: Iron (III) nitride

1.

2.

3.

4.

**Now do Practice Problems page 89 #1 a – n**

Steps for writing the **name of ionic compounds with multivalent metals**:

Steps	Example 1. Cu <sub>3</sub> P
1. Identify the _____ and list the possible _____	or
2. Identify the _____ on the _____ ion	
3. Write the names of the atoms - _____ metal and non-metal with brackets	
4. _____ (from subscript to charge position) to find the charge (or use ratios)	
5. Ensure charge of _____ periodic table: Only <b>ONE</b> possible charge	
6. If non-metal charge does <b>NOT</b> match, multiply by _____ to match the charge on periodic table -apply this to the _____ too	
7. Write charge on metal as _____ inside _____	_____

Example 2. MnO

- 1.
- 2.
- 3.

4.

Example 3. SnO<sub>2</sub>

- 1.
- 2.
- 3.

4.

**Now do Practice Problems page 90 #1 a-o**