

## Spicy Worksheet

### Practice:

1. Each pair of elements includes a metal and non-metal that will form an ionic bond.
  - a) Write the charge that each atom will have.
  - b) Write the ionic compound formula.

sodium chloride _____	magnesium sulfide _____	beryllium phosphide _____
calcium fluoride _____	potassium oxide _____	strontium bromide _____
potassium iodide _____	lithium bromide _____	barium nitride _____

### *Transition Metals*

- Where are the transition metals on the periodic table? **Take 30 seconds to label these metals.**
- Transition Metals often have the ability to **lose a different number of electrons**. This way they can create **multiple ions** with **different charges**.

Ion Symbol	Ion Name	Ion Symbol	Ion Name
$\text{Cu}^+$	Copper(I) ion	$\text{Sn}^{2+}$	Tin(II) ion
$\text{Cu}^{2+}$	Copper(II) ion	$\text{Sn}^{4+}$	Tin(IV)
$\text{Fe}^{2+}$	Iron(II) ion	$\text{Cr}^{2+}$	Chromium(II) ion
$\text{Fe}^{3+}$	Iron(III) ion	$\text{Cr}^{3+}$	Chromium(III) ion
$\text{Hg}^{1+}$	Merury(I) ion	$\text{Mn}^{2+}$	Manganese(II) ion
$\text{Hg}^{2+}$	Mercury(II) ion	$\text{Mn}^{3+}$	Manganese(III) ion
$\text{Pb}^{2+}$	Lead(II) ion	$\text{Co}^{2+}$	Cobalt(II) ion
$\text{Pb}^{4+}$	Lead(IV) ion	$\text{Co}^{3+}$	Cobalt(III) ion

In your Interactive Notebook, answer the following question:

*Based on the above chart, try to explain the meaning of the **ROMAN NUMERAL**.*

### Practice!

Write the formula or determine the Chemical Name for the following compounds.

Hint: Use the criss-cross rule, but use the proper charge!

<p>Hint: Use the criss-cross rule, but use the proper charge, given in the roman numeral!</p> <ol style="list-style-type: none"><li>1. Copper(I) and Fluorine:</li><li>2. Mercury(II) and Oxygen:</li><li>3. Lead (II) and Sulfur:</li><li>4. Iron (III) and Oxygen:</li><li>5. Lead (IV) and Nitrite:</li></ol>	<p>Hint: Use the reverse criss-cross method. Then use the charge to write the name!</p> <ol style="list-style-type: none"><li>1. <math>\text{CrBr}_2</math></li><li>7. <math>\text{Co}_2\text{S}_3</math></li><li>8. <math>\text{PbO}</math></li><li>9. <math>\text{FeCl}_3</math></li><li>10. <math>\text{CrF}_2</math></li></ol>
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Determine the correct Chemical name for the compounds from the formulas shown below.

- 1)  $\text{CuBr}$  \_\_\_\_\_
- 2)  $\text{Fe}_3\text{N}_2$  \_\_\_\_\_
- 3)  $\text{K}_2\text{O}$  \_\_\_\_\_
- 4)  $\text{SnO}_2$  \_\_\_\_\_
- 5)  $\text{V(V)O}$  \_\_\_\_\_

### Multiple Choice Practice

1. A barium atom attains a stable electron configuration when it bonds with....  
(Annotation - write the charge and number of atoms needed for each element)
  - a) one chlorine atom
  - b) two chlorine atoms
  - c) one sodium atom
  - d) two sodium atoms

2. In which compound have electrons been transferred to the oxygen atom? (which represents an ionic compound made of a metal and a non-metal? – label all elements as M or NM)
- (1) CO<sub>2</sub>
  - (2) NO<sub>2</sub>
  - (3) N<sub>2</sub>O
  - (4) Na<sub>2</sub>O
3. Which formula represents an ionic compound?  
(Hint: Think about each element to determine which has the M and NM pair)
- (1) NaCl
  - (2) N<sub>2</sub>O
  - (3) HCl
  - (4) H<sub>2</sub>O
4. Which elements combine by forming an ionic bond?  
(Hint: Think about each element to determine which has the M and NM pair)
- (1) sodium and potassium
  - (2) sodium and oxygen
  - (3) carbon and oxygen
  - (4) carbon and sulfur
5. Which type of bond is formed when electrons are transferred from one atom to another?
- (1) covalent
  - (2) ionic
  - (3) hydrogen
  - (4) metallic
6. Base your answer to the question on the balanced equation below.  
 $2\text{Na(s)} + \text{Cl}_2\text{(g)} \rightarrow 2\text{NaCl(s)}$   
Explain, in terms of electrons, why the bonding between NaCl is ionic?
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7. If X<sub>1</sub>Cl<sub>2</sub> represents an ionic compound where X stands for an unknown metal, which element could be X?  
(Annotation: What charge will the carbon atoms have? What charge must “X” have?)
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|--------|--------|
| (a) N  | (b) Li |
| (c) Mg | (d) F  |
8. If X<sub>2</sub>O<sub>1</sub> represents an ionic compound where X stands for an unknown metal, element X could be a member of which group? (Annotation: What charge will the carbon atoms have? What charge must “X” have?)
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|--------------|-------------|
| (a) Group 1  | (b) Group 2 |
| (c) Group 16 | (d) Group 1 |