SNC 2DO

**NAMING AND FORMULA: IONIC COMPOUNDS**

**WRITING FORMULAS**

There are \_\_\_\_\_\_\_\_ steps to follow when writing the formula for an ionic compound. First determine if it is an ionic compound? In other words, does it contain a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Once you have determined that it is an ionic compound then:

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Example 1: calcium phosphide

Is it ionic?

1. Write the symbols of the elements with the metal first, then the non-metal.

Ca P

2. Write the ionic charge (valence) of each element, above and to the right, for each element.

Ca2+ P3-

3. Criss-cross the numbers down to become subscripts on the opposite element.

Ca2+ P3-

Ca3P2

4. Cancel to the lowest ratio by dividing by the largest common factor.

Ca3P2

Example 2: Beryllium oxide

Is it ionic?

1.

2.

3.

4.

Once you have the hang of things, you can start to do some of the steps in your head.

Example 3: sodium selenide

Example 4: Silver nitride

**Practice Questions**

1. sodium fluoride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 6. zinc bromide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. barium iodide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 7. gallium hydride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. potassium telluride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 8. cesium chloride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. aluminum phosphide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 9. indium sulphide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. calcium oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 10. lithium astatide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**WRITING NAMES**

When naming an ionic compound, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is first then the

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The first element's name does not change. The second element ends in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Example 1

MgCl2 - metal non-metal

Mg Cl

magnesium chlorine

name: magnesium chlor**ide**

Example 2

Al2S3 - metal non-metal

\_\_\_\_\_ \_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Example 3

Li3N metal non-metal

\_\_\_\_\_ \_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Practice Questions**

1. Be3N2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 5. ZnO \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. CaCl2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 6. Rb3P \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. BaS \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 7. Na2Se \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. AgI \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 8. LiBr \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**MULTIVALENT METALS**

Some metals have more than one possible \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or valence. Some of these elements include:

|  |  |  |
| --- | --- | --- |
| **Element** |  |  |
| Copper |  |  |
| Iron |  |  |
| Lead |  |  |
| Gold |  |  |
| Nickel |  |  |
| Tin |  |  |
| Platinum |  |  |
| Mercury |  |  |

When **naming** these elements, you must first determine the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the metal and then indicate it by a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in brackets after the metal in the name.

Example 1 - AuCl

1. Uncross the subscripts to determine the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Au1Cl1

2. Double check that the valence on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ matches what the periodic table says it should be.

Cl has a charge of 1; therefore, the valence of Au is also 1.

3. Write the name of the compound, remembering both the\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the \_\_\_\_\_\_\_\_\_\_\_ ending.

gold **(I)** chlor**ide**

Example 2 - SnO

1.

2.

3

When writing the **formula**, we following the same rules as before but remember to use the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in brackets as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Example 1 - lead (IV) sulphide

1.

2.

3.

4.

Example 2 - cobalt (III) chloride

1.

2.

3.

4.

Example 3 - mercury (I) oxide