Binary Compounds of Metals with Fixed Charges
Given the Formula, Write the Name

A **binary compound** is made of two different elements. There can be one of each element such as in NaCl or KF. There can also be several of each element such as Na_2O or $AlBr_3$.

Please remember that all elements involved in this lesson have **ONLY ONE** charge. That includes **BOTH** the cation **AND** the anion involved in the formula.

Points to remember about naming a compound from its formula

1. The order for names in a binary compound is first the cation, then the anion.
2. Use the name of the cation with a fixed oxidation state (or fixed charge) directly from the periodic table.
3. The name of the anion will be made from the root of the element's name plus the suffix **"-ide."**

Example 1: Write the name of the following formula: **NaCl**
Step #1: Look at the first element and name it. Result of this step = sodium.
Step #2: Look at the second element. Use the root of its full name (which is chlor-) plus the ending "-ide."
Result of this step = Chloride

NaCl = sodium chloride

Example 2: Write the name of the following formula: **$MgBr_2$**
Step #1: Look at the first element and name it. Result of this step = magnesium.
Step #2: Look at the second element. Use the root of its full name (which is brom-) plus the ending "-ide."
Result of this step is = bromide

$MgBr_2$ = magnesium bromide

Practice Problems

Write the correct name for the following:

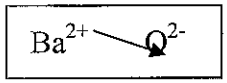
1) MgS
2) KBr
3) Ba_3N_2
4) Al_2O_3
5) NaI
6) SrF_2
7) Li_2S
8) $RaCl_2$
9) CaO
10) AlP

Write the formula for aluminum oxide.

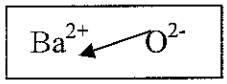
Write down the Ba^{2+} and O^{2-} right next to each other, as in this image:

Ba^{2+} O^{2-}

Using the CRISS-CROSS method, move the positive charge (dropping the sign) to the subscript position of the anion:



Move the negative charge (dropping the sign) to the subscript position of the cation:



The result of this moving is:
(Skip this step is the initial "+" and "-" charges cancel each other)

Ba_2O_2

Since both subscripts have a common factor of two, we are not at a minimum set of subscripts. After reducing, the final answer is:

BaO

Practice Problems

Write the correct formula for:

1) magnesium oxide
2) lithium bromide
3) calcium nitride
4) aluminum sulfide
5) potassium iodide
6) strontium chloride
7) sodium sulfide
8) radium bromide
9) magnesium sulfide
10) aluminum nitride