



Writing Ionic Compound Formulas *Binary & Polyatomic*

Writing Ionic Compound Formulas

Follow these general rules when writing formulas for binary ionic compounds.

1. Write the symbols for the cation and anion in that order. This means listing the ion _____ oxidation number first.
2. Above each symbol, write the _____ number of that ion.
3. Check to see if charges are balanced.
Does the _____ = _____?
4. If they are balanced, you are done.

Writing Ionic Compound Formulas

Follow these general rules when writing formulas for binary ionic compounds.

5. If not, determine how many atoms of each you need so that the positive charges equal the negative charges.
6. Apply _____ as necessary using the "criss-cross method".
7. Other General rules:
 - a. Never use '1' as a subscript
 - b. Use the smallest possible subscript numbers – _____ if necessary

Binary Compound

First example:

1. Write the symbols for the cation and anion in that order.
This means listing the ion with a positive oxidation number first.

potassium chloride

2. Above each symbol, write the oxidation number of that ion.
3. Check to see if charges are balanced.
Does the positive = negative?
4. If they are balanced, you are done.

Binary Compound

Second example:

1. Write the symbols for the cation and anion in that order.
This means listing the ion with a positive oxidation number first.

Calcium Sulfide
2. Above each symbol, write the oxidation number of that ion.
3. Check to see if charges are balanced. *Does the positive = negative?*
4. If they are balanced, you are done.

Binary Compound

Third example:

1. Write the symbols for the cation and anion in that order.
This means listing the ion with a positive oxidation number first.

Magnesium Fluoride

2. Above each symbol, write the oxidation number of that ion.
3. Check to see if charges are balanced.
Does the positive = negative?

Criss-Cross Method

In order for magnesium fluoride to exist as a compound, there needs to be _____ atoms for every _____ atom.

Binary Compound

Practice

Sodium Iodide

Barium Oxide

Lithium Nitride

Aluminum Sulfide

Writing Ionic Compound Formulas

Follow the same general rules when writing formulas for **polyatomic compounds** as you used for binary ionic compounds.

HOWEVER

When applying subscripts to balance, you must use

_____ to keep the polyatomic ion together.

sulfate ion

Polyatomic Compound

First example:

1. Write the symbols for the cation and anion in that order.
This means listing the ion with a positive oxidation number first.

calcium carbonate

2. Above each symbol, write the oxidation number of that ion.
3. Check to see if charges are balanced.
Does the positive = negative?
4. If they are balanced, you are done.

Polyatomic Compound

Second example:

1. Write the symbols for the cation and anion in that order.
This means listing the ion with a positive oxidation number first.

magnesium nitrate

2. Above each symbol, write the oxidation number of that ion.
3. Check to see if charges are balanced.
Does the positive = negative?

Criss-Cross Method

Polyatomic Compound

Practice

Potassium Chromate

Barium Cyanide

Aluminum Hydroxide

Sodium Peroxide

Writing Ionic Compound Formulas

Another useful general rule.

Some transition elements have more than one oxidation number. A _____ is used to distinguish between them.

For example: Fe II has an oxidation number of ____
Fe III has an oxidation number of ____

The Roman Numeral tells you the _____.

Practice

Lead IV Oxide

Copper II Bromide

Iron III Sulfate