

We will combine elements from groups 1A, 2A and Boron and Aluminum from 3A with the following nonmetals, Nitrogen, Phosphorus, Oxygen, Sulfur, Fluorine, Chlorine, Bromine, and Iodine. These are the groups of elements that will typically form ionic compounds.

Give the names to the following binary ionic compounds

Rules for naming:

1. Give the name of the cation first with no change to the element name
2. Give the name of the anion second changing the element name slightly and adding IDE to the end
3. The subscripts in these ionic compounds are ignored when naming the compounds

LiF

NaBr

KI

RbF

CsCl

BeCl₂

Ca₃N₂

SrO

BaCl₂

Ra₃P₂

BN

AlBr₃

Al₂O₃

BF₃

AlP

Give the Chemical formula for the following binary ionic compounds.

Rules for writing formulas.

1. The net charge on the compound must be zero – The charges of all the atoms of both the cation and anion must equal zero.
2. Write out the two elements involved in the compound with their respective charges
3. Cross over the charges as shown below to know what subscripts to use for each element.
4. If the charges of the two ions are equal the elements are in a 1:1 relationship and no subscripts will be used.
5. The number 1 is never used as a subscript.

Lithium Phosphide

Sodium Bromide

Potassium Nitride

Rubidium Oxide

Cesium Sulfide

Francium Chloride

Beryllium Fluoride

Magnesium Nitride

Calcium Oxide

Strontium Chloride

Barium Phosphide

Radium Iodide

Boron Phosphide

Aluminum Chloride

Aluminum Nitride

Boron Oxide

Aluminum Sulfide

The following ionic compounds contain cations that have more than one ion. Give the names to the following ionic compounds containing cations that have more than one ion. See the handout for the list of cations (transition metals) that have more than one ion

Rule for naming (similar to naming binary ionic compounds)

1. Give the name of the cation first
2. Include a Roman numeral in parenthesis indicating the charge of the cation
3. Give the anion name changing to the IDE ending

CuO

Cu₂O

CuF

CuCl₂

FeO

Fe₂O₃

FeN

PbS

PbBr₄

HgF₂

Give the chemical formula for the following binary ionic compounds containing cations that have more than one ion.

Rules for writing formulas

1. The net charge on the compound must be zero – The charges of all the atoms of both the cation and anion must equal zero.
2. Write out the two elements involved in the compound with their respective charges. Remember that the Roman numeral represents the + charge on that ion
3. Cross over the charges as shown below to know what subscripts to use for each element.
4. If the charges of the two ions are equal the elements are in a 1:1 relationship and no subscripts will be used.
5. The number 1 is never used as a subscript.

Copper (II) Chloride

Copper (1) Sulfide

Iron (II) Nitride

Iron (III) Bromide

Lead (II) Oxide

Lead (IV) Sulfide

Mercury (II) Phosphide