

Chemical Name and Formula Rules

* Before naming any compound, you **MUST** determine if it is ionic or molecular.

Ionic Compounds (a metal and non-metal(s))

Writing Formulas: Cross over Method

Step 1: Find the charge on each element or polyatomic (groups of non-metals with an overall charge).

Step 2: Cross over charge #'s to quantity #'s. Use brackets to designate more than one polyatomic - they are usually treated as a single unit because they move as a group.

Step 3: Reduce if possible

Ex. Magnesium Fluoride Mg^{2+} F^- = MgF_2

Magnesium Oxide =

Silver Nitrate =

Iron (III) Sulphate =

Naming:

Step 1: Give the metal its full name.

Step 2: Add a Roman numeral for metals that have more than one charge.

Step 3: If ending is

- a) A non-metal: Name non-metal and change the ending to 'ide'
- b) A polyatomic: Leave as polyatomic name (don't change).

Ex. FeCl_2 = Iron (II) Chloride

NaCl =

BaSO_4 =

PbO =

PbO_2 =

Molecular Compounds (2 or more non-metals)

Naming:

Step 1: Give the first atom its full name. Use a prefix on element name to indicate the # of atoms it contains.

Step 2: Give the second atom its full name. Use a prefix on element name to indicate the # of atoms it contains.

Step 3: Change the ending to "ide"

# of atoms	Prefix
1	Mono **except on the first non-metal**
2	Di
3	Tri
4	Tetra
5	Penta
6	Hexa
7	Hepta
8	Octa
9	Nona
10	Deca

Ex. CO_2 = Carbon Dioxide

S_2O =

C_3H_8 =

Writing Formulas

Use the prefixes to determine how many of each atom you have of each element!

Note: DO NOT reduce molecular compounds.

Ex. Phosphorous Pentabromide =

Dichlorine Moniodide =

Dicarbon Hexahydride =

Ionic Compounds Worksheet:

Write the formula for:

- a) Magnesium oxide _____
- b) Sodium Carbonate _____
- c) Sodium fluoride _____
- d) Copper (I) Bromide _____
- e) Potassium Hydroxide _____
- f) Iron (III) Sulfate _____
- g) Lead (II) oxide _____
- h) Potassium sulfide _____
- i) Lithium iodide _____
- j) Ammonium Chloride _____
- k) Tin (IV) sulfide _____
- l) Magnesium Nitride _____
- m) Aluminum Phosphate _____
- n) Copper (II) Nitrate _____

Write the names for:

- a) AlCl_3 _____
- b) CuCl_2 _____
- c) K_2SO_4 _____
- d) FeBr_3 _____
- e) Li_2CO_3 _____
- f) Na_3N _____
- g) PbS _____
- h) KBr _____
- i) CaCO_3 _____
- j) NiO _____
- k) $\text{Al}(\text{OH})_3$ _____
- l) BeF_2 _____
- m) $\text{Pb}_3(\text{PO}_4)_2$ _____
- n) Mg_3P_2 _____

Molecular Compounds Worksheet:

Name the following compounds.

- a) NI_3 _____
- b) CCl_4 _____
- c) OF_2 _____
- d) P_2O_5 _____
- e) N_2O _____
- f) SO_2 _____
- g) N_2O_4 _____
- h) ICl _____
- i) H_2O_2 _____
- j) BrF_5 _____

2. Write the formula for each compound.

- a) Carbon monoxide _____
- b) Sulphur tetraoxide _____
- c) Dinitrogen tetraoxide _____
- d) Carbon disulphide _____
- e) Nitrogen tribromide _____
- f) Selenium difluoride _____
- g) Phosphorous triiodide _____
- h) Iodine heptafluoride _____
- i) Tricarbon octahydride _____
- j) Pentacarbon nonachloride _____

Naming Compounds

Before you begin, label beside each compound I for Ionic, or M for Molecular.

Write the formulas for the following:

1) sodium bromide

2) lead(IV) chloride

3) cobalt(III) nitrate

4) diphosphorous monosulfide

5) aluminum chloride

6) iron(II) oxide

7) aluminum hydrogen carbonate

8) magnesium sulfate

9) lithium oxide

10) dinitrogen tetroxide

11) mercury(II) nitride

12) calcium oxide

13) phosphorous pentabromide

14) strontium hydroxide

15) magnesium fluoride

16) chromium(II) sulfide

Name the following compounds:

1) KCl _____

2) Cu₂O _____

3) KOH _____

4) P₂O₃ _____

5) Li₂O _____

6) FeCO₃ _____

7) Al₂(SO₄)₃ _____

8) SeCl₄ _____

9) Pb(OH)₂ _____

10) P₄O₇ _____

11) CaBr₂ _____

12) FePO₄ _____

13) CrO _____

14) MnF₂ _____

15) PbI₂ _____

16) SCl₆ _____

17) CaS _____

18) RbI _____