

Writing Chemical Formulas

Use prefixes to write the formula. The prefix tells you HOW MANY of each element. Mono- is not used on the first element.

1 mono-	2 di-
3 tri-	4 tetra-
5 penta-	6 hexa-
7 hepta-	8 octa-
9 nano-	10 deca-

Are both elements Non-metals?
NO YES

Determine the symbol and charge on the positive ion.

Determine the symbol and charge on the negative ion.

Is the second part a Polyatomic ion?
Yes No

Use the symbol of polyatomic ion

Does it begin with a transition metal (group 3-12)?
NO YES

Is the second a Halogen (Group 7A - Column 17)?
Yes No

Use the symbol and a charge of 1-

Is the metal an Alkali Metal (Group 1A Column 1)?
NO YES

Does it start with Silver, Zinc, or Cadmium?
YES NO

Use Ag^+ , Zn^{2+} , or Cd^{2+}

Is the metal an Alkaline Earth Metal (Group 2A Column 2)?
NO YES

The Roman Numerals shows the charge of the metal.

It must be nitride, N^{3-}
Oxide, O^{2-}
Sulfide, S^{2-}

Is it Aluminum!
NO YES

Use Al^{3+}

It must be Ammonium. Use NH_4^+

Use the symbol with a 2+ charge

Use the symbol with a 1+ charge

Balance charges (same number of positives, + as negatives, -): CATION "C" ALWAYS WRITTEN BEFORE ANION "A"
 If C^+ combines with A^- then it balances as CA .
 If C^{2+} combines with A^- then it balances as CA_2 .
 If C^{3+} combines with A^- then it balances as CA_3 .
 If C^+ combines with A^{2-} then it balances as C_2A .
 If C^{2+} combines with A^{2-} it also balances as CA .
 If C^{3+} combines with A^{2-} then it balances as C_2A_3 .
 If C or A is a polyatomic ion AND you need more than one, surround with ()'s.

Naming Compounds Flow Chart

Does it begin with a transition metal (group 3-12)?

NO

YES

Name the first element followed by its charge number (Roman Numerals)

Examples:
Iron(III)
Copper(I)
Tin(IV) Lead(II)
Manganese(III)

Does the formula contain a polyatomic ion?

NO

YES

Are both elements Non-metals?

NO

YES

Name the first element then the second with an -ide ending.

Examples:
Iron(III) oxide
Sodium chloride
Tin(IV) fluoride
Calcium bromide

Name the **first** element with the proper prefix (except mono-) to indicate HOW MANY of the first element. Name the **second** element with the proper prefix to indicate HOW MANY of the second element and change the ending to -ide.

1 mono-	2 di-
3 tri-	4 tetra-
5 penta-	6 hexa-
7 hepta-	8 octa-
9 nano-	10 deca-

Examples:
Carbon dioxide
Diphosphorus trichloride
Nitrogen monoxide
Tetrasulfur pentabromide

Examples:
Iron(III) oxalate
Magnesium acetate
Copper(II) chromate
Barium phosphate

Name the first element then the polyatomic ion.