

The simplest compounds contain just two elements. Sodium chloride, NaCl, is an example of a binary compound. Several other examples are listed below.

Potassium bromide	KBr
Calcium bromide	CaBr ₂
Lithium fluoride	LiF
Lithium oxide	Li ₂ O

To name binary compounds, follow these rules: 1. The element with the positive charge (metal) is written first. 2. To the negative ion (nonmetal) add the suffix "ide." For example, bromine changes to bromide, fluorine changes to fluoride, and oxygen changes to oxide.

Using the rules given above, name the compounds listed below.

1. MgO 1. _____
2. BaS 2. _____
3. K₃P 3. _____
4. Na₃N 4. _____

5. Below are the symbols of some elements. Write down the elements that usually have a positive charge.

- Fe C N Na Sr 5. _____
- Se Mn Mg Al As _____
- H O Ca Ag At

Some elements have more than one oxidation number. See the formulas below.

Cu ₂ O	copper(I) oxide
CuO	copper(II) oxide
FeCl ₂	iron(II) chloride
FeCl ₃	iron(III) chloride

The roman numeral always follows the name of the positive element (metal). The roman numeral indicates the charge on the metal in the compound.

Name the following compounds.

6. SnCl₄ 6. _____
7. Mn₂O₃ 7. _____
8. PbS 8. _____

Some nonmetals form more than one compound with other nonmetals. Because of this, the names of these compounds must show the differences between them. Look at the following examples.

CO	carbon monoxide
CO ₂	carbon dioxide
SO ₂	sulfur dioxide
SO ₃	sulfur trioxide
N ₂ H ₄	dinitrogen tetrahydride

To show differences, prefixes like mono-, di-, tri-, and tetra are used to indicate number of atoms of the nonmetal in the molecule. These and other prefixes with their meanings are listed below. Note that prefixes are only used when naming compounds formed between a metal and a nonmetal.

mono-	one	hexa-	six
di-	two	hepta-	seven
tri-	three	octa-	eight
tetra-	four	nona-	nine
penta-	five	deca-	ten

Name the following compounds.

9. N_2O_3 9. _____
10. PCl_3 10. _____
11. SiO_2 11. _____
12. P_2O_5 12. _____
13. CS_2 13. _____
14. Al_2O_3 14. _____

Certain elements can combine to form charged groups of atoms called polyatomic ions. Polyatomic ions combine with other ions or other polyatomic ions to form compounds. Some common polyatomic ions are listed below.

Formula	Charge	Name
NH_4^+	1 +	ammonium
H_3O^+	1 +	hydronium
OH	1 -	hydroxide
$C_2H_3O_2^-$	1 -	acetate
ClO_2^-	1 -	chlorite
ClO_3^-	1 -	chlorate
SO_3^{2-}	2 -	sulfite
SO_4^{2-}	2 -	sulfate
NO_2^-	1 -	nitrite
NO_3^-	1 -	nitrate
CO_3^{2-}	2 -	carbonate
HCO_3^-	1 -	hydrogen carbonate (bicarbonate)
PO_4^{3-}	3 -	phosphate

Name the following compounds containing polyatomic ions.

15. $BaSO_4$ 15. _____
16. $BaSO_3$ 16. _____
17. Na_2CO_3 17. _____
18. $NaHCO_3$ 18. _____
19. $(NH_4)_3PO_4$ 19. _____
20. NH_4OH 20. _____

Name or give the formula for the following.

21. Iron(III) chloride 21. _____
22. Silver acetate 22. _____
23. $Ca(OH)_2$ 23. _____
24. CCl_4 24. _____
25. Mercury(II) oxide 25. _____
26. $NaClO_3$ 26. _____
27. $(NH_4)_2SO_4$ 27. _____
28. Fe_2S_3 28. _____