

#16

Chemical Names and Formulas

Skillsheet

Understanding Chemical Terminology

Chemical terminology refers to the process of naming chemicals. This skillsheet focuses on the most basic rules and ideas involved in the naming of compounds.

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

In naming binary compounds, follow these rules:
 1. The element with the positive ionic charge is written first.
 2. The second word is formed by changing the ending of the name of the element to "ide." For example, bromine changes to bromide, fluorine changes to fluoride, and oxygen changes to oxide.

Metals usually have positive ionic charges, or states, while nonmetals (when combined with metals) have negative ionic charges.

Practice Problems

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 for selected elements. Choose the symbols of the elements that usually have positive ionic charges.
- Fe C N Na Sr 5. _____
- Se Mn Mg Al As _____
- H O Ca Ag At

Some transition metals have more than one positive ionic charge. Look at the formulas below.

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

Note that roman numerals follow the names of the positive elements. The numerals indicates the ionic charge of the element in the compound.

Practice Problems

Name the following compounds.

6. SnCl₄ 6. _____
7. Mn₂O₃ 7. _____
8. PbS 8. _____
- 9) CaCO₃ 9. _____
- 10) Mg₃P₂ 10. _____
- 11). Cu₂O 11. _____
- 12.) FeO 12. _____
- 13) CuS 13. _____
- 14) AgCl 14. _____

Write the formula for the following compounds.

Name _____

Formulas

1. sodium chloride _____
2. ammonium hydroxide _____
3. calcium sulfate _____
4. magnesium nitrate _____
5. aluminum phosphate _____
6. zinc chloride _____
7. mercury(II) oxide _____
8. aluminum sulfate _____
9. silver nitrate _____
10. barium hydroxide _____
11. potassium sulfide _____
12. iron(II) sulfate _____
13. mercury(I) chloride _____
14. copper^(II) carbonate _____
15. calcium acetate _____
16. iron(III) sulfate _____
17. calcium phosphate _____
18. zinc sulfide _____
19. ammonium carbonate _____
20. antimony chloride _____
21. potassium oxide _____
22. ammonium sulfide _____
23. mercuric nitrate _____
24. iron(III) chloride _____
25. aluminum oxide _____

26. Gold (III) sulfate _____

27.) Calcium hydroxide _____

28.) magnesium nitrate _____

29.) Potassium Nitride _____

30.) Cobalt + (III) iodide _____

Name: _____

Practice Problems

Name the following compounds.

- 1. N_2O_3 1. _____
- 2. PCl_3 2. _____
- 3. SiO_2 3. _____
- 4. P_2O_5 4. _____
- 5. CS_2 5. _____
- 6. Al_2O_3 6. _____

- 7. $BaSO_4$ 7. _____
- 8. $BaSO_3$ 8. _____
- 9. Na_2CO_3 9. _____
- 10. $NaHCO_3$ 10. _____
- 11. $(NH_4)_3PO_4$ 11. _____
- 12. NH_4OH 12. _____

- 13. $LiCl$ 13. _____
- 14. KBr 14. _____
- 15. CsF 15. _____
- 16. BaF 16. _____
- 17. ZnO 17. _____

- 18. MnO_2 18. _____
- 19. HgO 19. _____
- 20. $FeCl_3$ 20. _____

Practice Problems

Name or give the formula for the following. Label ionic or covalent

- 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. _____

- 29. oxygen difluoride 29. _____

- 30. sodium sulfide 30. _____

- 31. K_2SO_4 31. _____

- 32. $S Cl_2$ 32. _____

- 33. $MgCl_2$ 33. _____

- 34. tetraiodine nonoxide 34. _____

- 35. CS_2 35. _____

- 36. $ZnCO_3$ 36. _____