



Writing formulas for ionic compounds

Learning objectives

- 1 Recall the names and formulas of common positive and negative ions.
- 2 Write formulas of ionic compounds.

Introduction

Writing and combining ionic formulas is a crucial skill in chemistry. In this task, you will first build your knowledge of the formulas of some common positive and negative ions. You will then combine these to create formulas of ionic compounds.

Activity 1: ion formulas

Work in groups to complete Activity 1 by writing the names of ions in the appropriate places. Remember:

- For any **transition metal** ions, you must use roman numerals to indicate the charge of the ion e.g. *cobalt(II) ions are Co^{2+}* .
- Negative ions change the second part of their name to end in '-ide' or '-ate'.

Formula	Name of ion
	Sodium ion
K^+	
Ag^+	
	Ammonium ion
Ca^{2+}	
	Magnesium ion
	Lead(II) ion
Zn^{2+}	
Cu^{2+}	
	Iron(II) ion
Fe^{3+}	
	Aluminium ion

Formula	Name of ion
	Chloride ion
Br^-	
I^-	
	Nitrate ion
	Nitride ion
OH^-	
	Carbonate ion
S^{2-}	
SO_4^{2-}	

Activity 2: formulas for ionic compounds

Use the ion formula cards to construct formulas for the following ionic compounds. Then write the formulas into the table.

Worked example

Constructing the formula of sodium carbonate to balance the charges:



Formula is Na_2CO_3

Compound	Formula	Compound	Formula
Magnesium carbonate		Zinc nitrate	
Silver(I) nitrate		Potassium sulfate	
Calcium bromide		Magnesium sulfide	
Copper(II) hydroxide		Aluminium hydroxide	
Iron(II) nitrate		Ammonium chloride	
Iron(III) iodide		Sodium hydrogen carbonate	
Lead sulfate		Iron(III) carbonate	

Review: magnesium nitride vs magnesium nitrate

What do we now know about the differences between magnesium nitride, Mg_3N_2 and magnesium nitrate, $\text{Mg}(\text{NO}_3)_2$?

- Write a short explanation of the different ions these compounds contain.
- You can use diagrams, similar to the ones you used in Activity 2.
- If you came up with other examples of 'ides' and 'ates', do the same for these compounds.