

PEARSON EDEXCEL · 4CH1

International GCSE Chemistry Formula Sheet

The ion charges you must know, compound formulas and mole calculations.

1 Ions you must know (specification 1.38)

Learn these charges, then write formulae for compounds formed between them (1.39).

Group 1, 2 and 3 metals	e.g. Na^+ , Mg^{2+} , Al^{3+}
Group 5, 6 and 7 non-metals	e.g. N^{3-} , O^{2-} , Cl^-
Transition and other metals	Ag^+ , Cu^{2+} , Fe^{2+} , Fe^{3+} , Pb^{2+} , Zn^{2+}
Hydrogen, hydroxide and ammonium	H^+ , OH^- , NH_4^+
Carbonate, nitrate and sulfate	CO_3^{2-} , NO_3^- , SO_4^{2-}
Writing a compound formula	balance the charges: Al^{3+} and $\text{SO}_4^{2-} \rightarrow \text{Al}_2(\text{SO}_4)_3$

2 Calculations

Relative masses, moles, yield, concentration and gas volumes.

Amount of substance (moles)	$\text{moles} = \frac{\text{mass (g)}}{\text{molar mass (g/mol)}}$
Percentage yield	$\% \text{ yield} = \frac{\text{actual yield}}{\text{theoretical yield}} \times 100$
Concentration (mol/dm^3) Paper 2	$\text{concentration} = \frac{\text{moles}}{\text{volume (dm}^3\text{)}}$
Gas volume at rtp (24 dm^3 or $24\,000 \text{ cm}^3$ per mole) Paper 2	$\text{volume} = \text{moles} \times 24 \text{ dm}^3$
Rf value (chromatography)	$\text{Rf} = \frac{\text{distance moved by substance}}{\text{distance moved by solvent}}$

3 Chemical formulas of common compounds

Formulas you will use again and again.

Water, carbon dioxide, carbon monoxide	H_2O , CO_2 , CO
Ammonia, methane, sulfur dioxide	NH_3 , CH_4 , SO_2
Hydrochloric, sulfuric and nitric acid	HCl , H_2SO_4 , HNO_3
Sodium hydroxide, sodium chloride	NaOH , NaCl
Calcium carbonate, calcium oxide	CaCO_3 , CaO
Copper(II) sulfate, iron(III) oxide, aluminium oxide	CuSO_4 , Fe_2O_3 , Al_2O_3
Ethene, ethanol, ethanoic acid	C_2H_4 , $\text{C}_2\text{H}_5\text{OH}$, CH_3COOH
Glucose	$\text{C}_6\text{H}_{12}\text{O}_6$

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