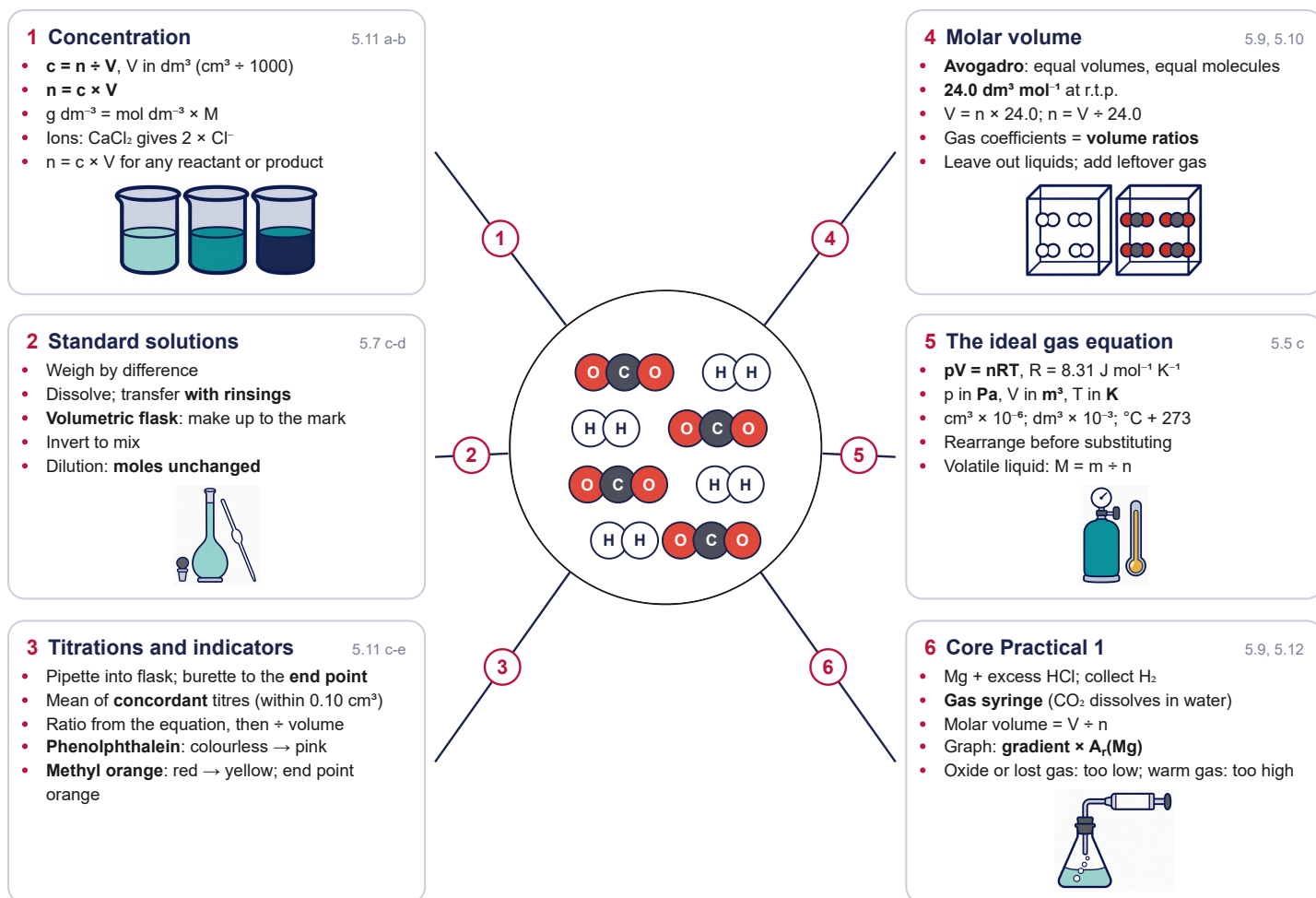


Solutions, Gases and Titrations Map

Edexcel A Level Chemistry · Topic 5 Formulae, Equations and Amounts of Substance · Calculations with Solutions and Gases



Units and conversions convert every quantity before substituting; give answers to the data's significant figures

Quantity	Given in	Calculate in	Convert
Volume	cm^3 or dm^3	m^3	$\text{cm}^3 \times 10^{-6}$; $\text{dm}^3 \times 10^{-3}$; $\text{dm}^3 = \text{cm}^3 \div 1000$
Pressure	kPa	Pa	$\text{kPa} \times 1000$
Temperature	$^\circ\text{C}$	K	$^\circ\text{C} + 273$
Concentration	g dm^{-3}	mol dm^{-3}	$\div M$ ($\times M$ to go back)
Titre	cm^3	dm^3	$\div 1000$ before $n = c \times V$
Gas amount	dm^3 at r.t.p.	mol	$\div 24.0 \text{ dm}^3 \text{ mol}^{-1}$

Worked examples

A dilution

- 25.0 cm^3 of $0.100 \text{ mol dm}^{-3}$
- made up to 250 cm^3
- $0.0100 \text{ mol dm}^{-3}$**

A titration

- $25.0 \text{ cm}^3 \text{ NaOH}$; 12.40 cm^3 of $0.0500 \text{ H}_2\text{SO}_4$
- $n(\text{NaOH}) = 2 \times 6.20 \times 10^{-4}$
- $0.0496 \text{ mol dm}^{-3}$**

$pV = nRT$

- 250 cm^3 , 101 kPa , $25 \text{ }^\circ\text{C}$
- $(101\,000 \times 2.50 \times 10^{-4}) \div (8.31 \times 298)$
- 0.0102 mol**

Titres, gas volumes and masses carry uncertainties: see Uncertainty and Practical Safety. $pV = nRT$ returns in energetics and equilibria.



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