Useful Information to Learn

Reactivity Series of Metals

Potassium	most reactive ↑
Sodium	
Calcium	
Magnesium	
Aluminium	
Carbon	
Zinc	
Iron	
Tin	
Lead	
Hydrogen	
Copper	
Silver	
Gold	
Platinum	↓ least reactive

(elements in italics, though non-metals, have been included for comparison)

Formulae of Some Common Ions

Positive ions

Name	Formula
Hydrogen	H^{+}
Sodium	Na^{+}
Silver	Ag^{+}
Potassium	K^{+}
Lithium	Li^{+}
Ammonium	NH_4^{+}
Barium	Ba^{2+}
Calcium	Ca^{2+}
Copper(II)	Cu^{2+}
Magnesium	Mg^{2+}
Zinc	Zn^{2+}
Lead	Pb^{2+}
Iron(II)	Fe^{2+}
Iron(III)	Fe^{3+}
Aluminium	Al^{3+}

Negative ions

Name	Formula
Chloride	Cl^{-}
Bromide	Br^{-}
Fluoride	F^{-}
Iodide	I^{-}
Hydroxide	OH^{-}
Nitrate	NO_3^{-}
Oxide	O^{2-}
Sulfide	S^{2-}
Sulfate	SO_4^{2-}
Carbonate	CO_3^{2-}

Moles

Equation	Symbols	Units
$n = g/A_r$ or $n = g/M_r$	n = number of moles g = mass A_r = atomic mass (from the periodic table) M_r = molecular mass (ass up all the A_r 's from the periodic table)	n = moles g = mass in grams (g) M_r = no unit
n = c x v	n = number of moles c = concentration v = volume of **solution**	n = moles c = mol/ dm^3 or mol dm^{-3} v = dm^3
v = n x 24dm^3 (24000 cm^3)	v = volume of **gas** n = number of moles 24dm^3 = the volume of 1 mole of any gas	v = dm^3 n = moles

Electrolysis

Equation	Symbols	Units
1 Faraday = 1 mole of electrons		
96500 Coulombs = 1 Faraday		
Q = <u>Number of Coulombs</u> 1 Faraday (96500 Coulombs)		
Q = I x t	Q = charge I = current t = time	Q = Coulombs I = amps t = secs

Other Useful Equations

Equation	Symbols	Units
% yield = $\frac{\text{actual yield}}{\text{theoretical yield}}$		Actual yield = usually measured in grams (g) Theoretical yield = usually measured in grams (g)
% change = $\frac{\text{final value – initial value}}{\text{initial value}}$		These values are usually measured in mass (g) or volume (dm^3). Note this change could be **negative** if there has been a decrease i.e. a decrease in mass
Finding the percentage of an element in a compound: $\frac{\text{Mass of element}}{\text{Total mass of compound}}$		These values are usually measured in mass
$\frac{(\text{\% of isotope 1} \times \text{mass of isotope 1}) + (\text{\% of isotope 2} \times \text{mass of isotope 2})}{100}$		Note you may have to divide by the total abundance if the abundance is not given as a percentage.
d = m/v	d = density m = mass v = volume	density = g/dm^3 mass = g volume = dm^3