

Metric System -

Length

- 1 meter (m) = 39.37 inches (in.)
- 1 centimeter (cm) = 0.01 m = 0.3937 in.
- 1 millimeter (mm) = 0.001 m = 0.03937 in.
- 1 kilometer = 1000 m
- 1 Angstrom unit (Å) = 10⁻⁸cm

Volume

- 1 liter (L) = 1.056 quart (qt.)
- 1 milliliter (mL) = 0.001 L

Weight, Mass

- 1 gram (g) = wt. of 1 mL of water at 4°C
- 1 milligram (mg) = 0.001 g
- 1 kilogram (kg) = 1000 g
- 28.35 g = 1 ounce
- 453.6 g = 1 pound

Temperature

- °C = 5/9 (°F-32) K = °C + 273
- °F = 9/5°C + 32

Energy

- 1 calorie (cal) = 4.184 joules (J)

Constants:

- Avogadro's number = 6.023 x 10²³
- molar gas volume (S.T.P.) = 22.4 L
- heat capacity for water = 1.0 cal/g/deg
- heat of fusion for water = 79.7 cal/g
- heat of vaporization for water = 539.6 cal/g
- universal gas constant = 0.082 L atm/mole deg
- velocity of light = 2.9979 x 10¹⁰ cm/sec
- molal boiling point rise for water = 0.512°C/mole kg
- molal freezing point lowering for water = 1.86°C/mole kg

Gas Laws:

- Boyle's Law P₁V₁ = P₂V₂
- Charles' Law V₁/T₁ = V₂/T₂

Combined Law

$$P_1V_1/T_1 = P_2V_2/T_2$$

Dalton's Law

$$P_{\text{total}} = P_1 + P_2 + P_3$$

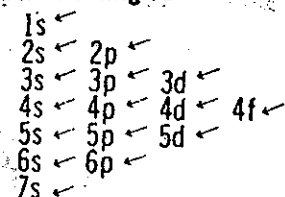
Graham's Law

$$\frac{(\text{Rate of diffusion})_1}{(\text{Rate of diffusion})_2} = \sqrt{\frac{M.W._2}{M.W._1}} = \sqrt{\frac{D_2}{D_1}}$$

General Gas Law Equation

PV = nRT where n = number of moles
and R = universal gas constant

Order of filling subshells



Quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

ELEMENT	SYMBOL	OXIDATION NO.
Aluminum	Al	+3
Arsenic	As	+3, +5
Barium	Ba	+2
Bromine	Br	-1, +1, +3, +5
Calcium	Ca	+2
Chlorine	Cl	-1, +1, +3, +5
Copper	Cu	+1, +2
Fluorine	F	-1
Hydrogen	H	+1
Iodine	I	-1, +1, +3, +5
Iron	Fe	+2, +3
Lead	Pb	+2, +4
Magnesium	Mg	+2
Manganese	Mn	+2, +4, +7
Mercury	Hg	+1, +2
Nickel	Ni	+2
Silver	Ag	+1
Sodium	Na	+1
Sulfur	S	-2, +4, +6
Tin	Sn	+2, +4
Zinc	Zn	+2

POLYATOMIC IONS

Ammonium	NH ₄ ⁺
Acetate	C ₂ H ₃ O ₂ ⁻
Nitrate	NO ₃ ⁻
Hydroxide	OH ⁻
Permanganate	MnO ₄ ⁻
Carbonate	CO ₃ ⁻²
Sulfate	SO ₄ ⁻²
Chromate	CrO ₄ ⁻²
Dichromate	Cr ₂ O ₇ ⁻²
Phosphate	PO ₄ ⁻³
Cyanide	CN ⁻
Silicate	SiO ₃ ⁻²

**SI System, Seven
Basic Units of Measurement**

PROPERTY	NAME	ABBREV.
Length	Meter	m
Mass	Kilogram	kg
Time	Second	s
Electric Current	Ampere	A
Temperature	Kelvin	K
Luminous Intensity	Candela	cd