

## BASIC PHYSICAL CONSTANTS

Quantity	Symbol	Value
Gravitational constant	G	$6.67 \times 10^{-11} \text{ N m}^2 \text{ kg}^{-2}$
Gravitational field strength	g	$9.81 \text{ N kg}^{-1}$
Acceleration of free fall	g	$9.81 \text{ N kg}$
Electron charge	e	$-1.61 \times 10^{-19} \text{ C}$
Electron mass	$m_e$	$9.11 \times 10^{-31} \text{ kg}$
Proton mass	$m_p$	$1.673 \times 10^{-27} \text{ kg}$
Neutron mass	$m_n$	$1.675 \times 10^{-27} \text{ kg}$
Unified mass constant	u	$1.661 \times 10^{-27} \text{ kg}$
Planck's constant	h	$6.626 \times 10^{-34} \text{ J s}$
Speed of light in a vacuum	c	$2.998 \times 10^8 \text{ m s}^{-1}$
Molar gas constant	R	$8.31 \text{ J k}^{-1} \text{ mol}^{-1}$
Boltzmann's constant	k	$1.38 \times 10^{-23} \text{ J K}^{-1}$
Avogadro's constant	$N_A$	$6.022 \times 10^{23} \text{ mol}^{-1}$
Permittivity of free space	$\epsilon_0$	$8.85 \times 10^{-12} \text{ F m}^{-1}$
Permeability of free space	$\mu_0$	$4\pi \times 10^{-7} \text{ H m}^{-1} \text{ or N A}^{-2}$