



Singapore Physics League: Data Sheet

Acceleration of free fall,	$g = 9.81 \text{ m s}^{-2}$
Newton's gravitational constant,	$G = 6.67 \times 10^{-11} \text{ m}^3 \text{ kg}^{-1} \text{ s}^{-2}$
Speed of light in free space,	$c = 3.00 \times 10^8 \text{ m s}^{-1}$
Permittivity of free space,	$\epsilon_0 = 8.85 \times 10^{-12} \text{ C}^2 \text{ N}^{-1} \text{ m}^{-2}$
Permeability of free space,	$\mu_0 = 4\pi \times 10^{-7} \text{ T m A}^{-1}$
Planck's constant,	$h = 6.63 \times 10^{-34} \text{ J s}$
Elementary charge,	$e = 1.60 \times 10^{-19} \text{ C}$
Atomic mass unit,	$u = 1.66 \times 10^{-27} \text{ kg}$
Rest mass of proton,	$m_p = 1.67 \times 10^{-27} \text{ kg} = 1.007u$
Rest mass of electron,	$m_e = 9.11 \times 10^{-31} \text{ kg} = 0.000549u$
Avogadro constant,	$N_A = 6.02 \times 10^{23} \text{ mol}^{-1}$
Molar gas constant,	$R = 8.31 \text{ J mol}^{-1} \text{ K}^{-1}$
Boltzmann constant,	$k = 1.38 \times 10^{-23} \text{ J K}^{-1}$
Stefan-Boltzmann constant,	$\sigma = 5.67 \times 10^{-8} \text{ W m}^{-2} \text{ K}^{-4}$
Standard atmospheric pressure,	$P_0 = 1.01 \times 10^5 \text{ Pa}$
Density of water,	$\rho_w = 1000 \text{ kg m}^{-3}$
Specific heat capacity of water,	$c_w = 4.19 \times 10^3 \text{ J kg}^{-1} \text{ K}^{-1}$
Speed of sound in air,	$v_s = 340 \text{ m s}^{-1}$