Constants, Formulae, and Conversion Factors

Symbol	Value
c	2.997925×10^{8}m/s
	2.997925×10^{10}cm/s
h	6.6261×10^{-34}J s
	6.6261×10^{-27}erg s
k	1.3807×10^{-23}J/K
	1.3807×10^{-16}erg/K
G	6.67×10^{-11}m^3/(kg s^2)
	6.67×10^{-8} cm^3/(g s^2)
m_p	1.6726×10^{-27} kg
	1.6726×10^{-24}g
m_n	1.6748×10^{-27} kg
	1.6748×10^{-24}g
m_e	9.1091×10^{-31} kg
	9.1091×10^{-28}g
m_{He}	3.97 m_p
σ	5.6693×10^{-8} J/(m^2 s K^4)
	5.6693×10^{-5} erg/(cm^2 s K^4)
	5.6693×10^{-1} erg/(m^2 s K^4)

Symbol	Value
$M_\odot$	1.989×10^{30} kg
	1.989×10^{33} g
$R_\odot$	6.96×10^{8} m
	6.96×10^{10} cm
$L_\odot$	3.90×10^{26} Watts
	3.90×10^{33} erg/sec
$T_\odot$	5785 K
M_{Earth}	5.974×10^{24} kg
	5.974×10^{27} g
R_{Earth}	6.378×10^{6} m
	6.378×10^{8} cm
M_{moon}	7.348×10^{22} kg
	7.348×10^{25} g
$M_{Jupiter}$	1.90×10^{27} kg
	1.90×10^{30} g
A.U.	1.496×10^{11} m
	1.496×10^{13} cm

1 meter = 100 cm = 10^{-3} km = 1000 mm = 10^{6} microns
1 light year = 9.4605×10^{15} meters
1 inch = 2.54 cm
1 mile = 1.609344 km
1 nanometer = 10^{-9} meters
1 Angstrom = 10^{-10} meters
1 parsec = 3.26 light years = 3.08×10^{18} cm
1 year = 365.244 days = 31,557,000 seconds
K = C + 273.15
F = 32 + 1.8×C
1 g = 10^{-3} kg = 1000 mg
1 Joule = 1 kg m^2/s^2 = 10^{7} ergs = 6.2415×10^{18} eV
1 erg = 1 g cm^2/s^2
1 Watt = 1 J/s = 10^{7} ergs/sec
2π radians = 360°
1 radian = 206265″
1° = 3600″

$c = \lambda\nu$
$E = h\nu$
$F = ma$
$E = mc^2$
$E = 0.007Mc^2$
$\lambda_{max}\,(cm) = \frac{0.290}{T\,(\mathrm{K})}$
$F = \sigma T^4$
$L = A \times F = 4\pi d^2 b$
$L = 4\pi R^2 \sigma T^4$
$A = 4\pi R^2$
$t \propto M^{-2.5}$
$P^2 = \left[\frac{4\pi^2}{G(M+m)}\right] a^3$
$KE = \frac{1}{2}mv^2$
$PE = -GMm/R$
$v_{circ} = \sqrt{GM/R}$
$v_{esc} = \sqrt{2GM/R}$
$R_S = 2GM/c^2$
d [pc] $= 1/p$ [arcsec]
$\Theta_{rad} = \frac{\text{diameter}}{\text{distance}}$
$D = \frac{\alpha d}{206265}$ [α in arcsec]
$z = (\lambda - \lambda_0)/\lambda_0 = v/c$
$L = L_o\sqrt{1 - v^2/c^2}$
$T = T_o/\sqrt{1 - v^2/c^2}$

$v = H_0 d$	$1 + z = \lambda_2/\lambda_1 = D(t_2)/D(t_1)$
$\rho_c = 3H_0^2/8\pi G$	$\Omega_0 = \Omega_m + \Omega_{rad} + \Omega_\Lambda$
$\Omega_0 = \rho_0/\rho_c$	$t_0 = f/H_0$