

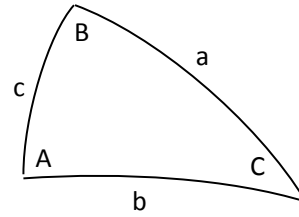


## Astronomical and Physical Constants

Astronomical unit (AU)	$1.4960 \times 10^{11} \text{ m}$
Light year (ly)	$9.4605 \times 10^{15} \text{ m} = 63\,240 \text{ au}$
Parsec (pc)	$3.0860 \times 10^{16} \text{ m} = 206\,265 \text{ au}$
Jansky (Jy)	$10^{-26} \text{ W m}^{-2} \text{ Hz}^{-1}$
1 Å	$10^{-10} \text{ m}$
1 erg	$10^{-7} \text{ J}$
1 dyne	$10^{-5} \text{ N}$
Mass of Earth	$5.9736 \times 10^{24} \text{ kg}$
Mean radius of Earth	$6.371 \times 10^6 \text{ m}$
Equatorial radius of Earth	$6.378 \times 10^6 \text{ m}$
Mass of Moon	$7.3490 \times 10^{22} \text{ kg}$
Radius of Moon	$1.737 \times 10^6 \text{ m}$
Mass of Jupiter	$1.89813 \times 10^{27} \text{ kg}$
Mean Earth – Moon distance	$3.844 \times 10^8 \text{ m}$
Mass of Sun	$1.98892 \times 10^{30} \text{ kg}$
Radius of Sun	$6.96 \times 10^8 \text{ m}$
Effective temperature of the Sun	5780 K
Luminosity of the Sun	$3.96 \times 10^{26} \text{ J s}^{-1}$
Solar constant	$1366 \text{ W m}^{-2}$
Angular diameter of the Sun	30'
Speed of light in vacuum (c)	$2.9979 \times 10^8 \text{ m s}^{-1}$
Gravitational constant (G)	$6.6738 \times 10^{-11} \text{ N m}^2 \text{ kg}^{-2}$
Boltzmann constant (k)	$1.381 \times 10^{-23} \text{ m kg s}^{-2} \text{ K}^{-1}$
Universal gas constant (R)	$8.31 \text{ J K}^{-1} \text{ mol}^{-1}$
Stefan–Boltzmann constant ( $\sigma$ )	$5.6704 \times 10^{-8} \text{ kg s}^{-3} \text{ K}^{-4}$
Planck constant (h)	$6.6261 \times 10^{-34} \text{ J s}$
electron charge (e)	$1.602 \times 10^{-19} \text{ C}$
Mass of hydrogen atom	$1.67 \times 10^{-27} \text{ kg}$
Current inclination of the ecliptic ( $\epsilon$ )	$23^\circ 26.3'$
Coordinates of the northern ecliptic pole for epoch 2000.0 ( $\alpha_E, \delta_E$ )	$18^\text{h} 00^\text{m} 00^\text{s}, +66^\circ 33.6'$
Coordinates of the northern galactic pole for epoch 2000.0 ( $\alpha_G, \delta_G$ )	$12^\text{h} 51^\text{m}, +27^\circ 08'$

Basic equations of spherical trigonometry

$$\begin{aligned}\sin a \sin B &= \sin b \sin A \\ \sin a \cos B &= \cos b \sin c - \sin b \cos c \cos A, \\ \cos a &= \cos b \cos c + \sin b \sin c \cos A.\end{aligned}$$



Rayleigh-Jeans formula (long wavelength approximation of Planck's Law):

$$B_{\nu}(T) = \frac{2kTv^2}{c^2}$$