Name	Symbol	Value	Unit
Speed of light in vacuum	c	299 792 458 (0)	$m \cdot s^{-1}$
Permeability of vacuum	μ_o	$4\pi \times 10^{-7}$	$N \cdot A^{-2}$
Permittivity of vacuum	ε_o	$8.854\ 187\ 817...\ (0) \times 10^{-12}$	$C^2 \cdot N^{-1} \cdot m^{-2}$
Avogadro constant	N_A	$6.022\ 140\ 857(74) \times 10^{23}$	mol^{-1}
Atomic mass unit	u	$1.660\ 539\ 040(20) \times 10^{-27}$	kg
Elementary charge	e	$1.602\ 176\ 6208(98) \times 10^{-19}$	C
Electron mass	m_e	$9.109\ 383\ 56(11) \times 10^{-31}$	kg
Proton mass	m_p	$1.672\ 621\ 898(21) \times 10^{-27}$	kg
Neutron mass	m_n	$1.674\ 927\ 471(21) \times 10^{-27}$	kg
Proton-electron mass ratio	m_p / m_e	1836.152 673 89(17)	
Constant of gravitation	G	$6.674\ 08(31) \times 10^{-11}$	$N \cdot m^2 \cdot kg^{-2}$
Boltzmann constant	k	$1.380\ 648\ 52(79) \times 10^{-23}$	$J \cdot K^{-1}$
Molar gas constant Molar gas constant Molar gas constant	R R R	8.314 4598(48) 1.987 2036(11) 0.082 057 338(47)	$J \cdot mol^{-1} \cdot K^{-1}$ $cal \cdot mol^{-1} \cdot K^{-1}$ $atm \cdot L \cdot mol^{-1} \cdot K^{-1}$
Molar volume of ideal gas (S.T.P.)	V_m	22.413 962(13)	$L \cdot mol^{-1}$
Faraday constant	F	96 485.332 89(59)	$C \cdot mol^{-1}$
Standard acceleration of gravity	g	9.80665 (0)	$m \cdot s^{-2}$
Coulomb's law constant	k	$8.987\ 551\ 787\ 368...(0) \times 10^9$	$N \cdot m^2 \cdot C^{-2}$
Planck constant	h $\hbar$	$6.626\ 070\ 040(81) \times 10^{-34}$ $1.054\ 571\ 800(13) \times 10^{-34}$	J·s J·s
Rydberg constant (infinite)	R_∞	10 973 731.568 508(65)	m^{-1}
Rydberg constant (hydrogen)	R_H	10 967 758.341	m^{-1}
Radio de Bohr	a_o	$5.291\ 772\ 1067(12) \times 10^{-11}$	m
Stefan-Boltzmann constant	σ	$5.670\ 367(13) \times 10^{-8}$	$W \cdot m^{-2} \cdot K^{-4}$
Earth mass	M_E	$5.972\ 19 \times 10^{24}$	kg
Moon mass	M_M	7.3477×10^{22}	kg
Sun mass	M_S	$1.988\ 55 \times 10^{30}$	kg
Earth equatorial radius	a	$6.378\ 1366 \times 10^6$	m
Moon equatorial radius	R_M	$1.738\ 14 \times 10^6$	m
Sun equatorial radius	R_S	$6.963\ 42 \times 10^8$	m
Pi constant	π	3.14159 26535 89793...(0)	
e constant	e	2.71828 18284 59045...(0)	

S.T.P.: Standard temperature and pressure: $T = 0\ °C = 273.15\ K$, $P = 1\ atm = 101\,325\ Pa$

Constants

Physical constants

The astronomical convention is to use cgs!

Symbol	Description	SI		cgs	
		Value	Unit	Value	Unit
c	Speed of light	2.9979 (8)	m s^{-1}	2.9979 (10)	cm^{-1} s^{-1}
h	Planck's constant	6.6261(−34)	J s	6.6261(−27)	erg s
k	Boltzmann's constant	1.3807(−23)	J/K	1.3807(−16)	erg/K
σ_{SB}	Stefan–Boltzmann constant	5.6704 (−8)	W m^{-2} K^{-4}	5.6704 (−5)	erg s^{-1} cm^{-2} K^{-4}
G	Gravitational constant	6.674 (−11)	N m^{-2} kg^{-2}	6.674 (−8)	dyn cm^{-2} g^{-2}
N_A	Avogadro's constant	6.0221 (23)	mol^{-1}	6.0221 (23)	mol^{-1}
m_e	Electron rest mass	9.1094(−31)	kg	9.1094(−28)	g
m_p	Proton rest mass	1.6726(−27)	kg	1.6726(−24)	g
m_u	Atomic mass unit	1.6605(−27)	kg	1.6605(−24)	g
e	Electron charge	1.602 (−19)	C	4.803 (−10)	esu
α	Fine-structure constant	7.2974 (−3)		7.2974 (−3)	

Values $a \times 10^b$ are given as a (b).

Astronomical constants

Symbol	Description	SI		cgs	
		Value	Unit	Value	Unit
AU	Astronomical unit	1.496 (11)	m	1.496 (13)	cm
ly	Light year	9.463 (15)	m	9.463 (17)	cm
pc	Parsec	3.086 (16)	m	3.086 (18)	cm
pc^2	Square parsec	9.5234 (32)	m^2	9.5234 (36)	cm^2
kpc^2	Square kiloparsec	9.5234 (38)	m^2	9.5234 (42)	cm^2
$L_\odot$	Solar luminosity	3.85 (26)	J s^{-1}	3.85 (33)	erg s^{-1}
$M_\odot$	Solar mass	1.989 (30)	kg	1.989 (33)	g
$R_\odot$	Solar radius	6.96 (8)	m	6.96 (10)	cm
$T_\odot$	Solar effective temperature	5.78 (3)	K	5.78 (3)	K
Jy	Jansky	1.00 (−26)	W m^{-2} H z^{-1}	1.00 (−23)	erg s^{-1} cm^{-2} Hz^{-1}

Values $a \times 10^b$ are given as a (b).

Conversion factors

Angles and lengths

Unit/symbol	Description	SI		cgs	
		Value	Unit	Value	Unit
deg	degree	1.745 3 (−2)	rad	1.745 3 (−2)	rad
arcmin	arcminute	2.908 88 (−4)	rad	2.908 88 (−4)	rad
arcsec	arcsecond	4.848 1 (−6)	rad	4.848 1 (−6)	rad
sq deg	degree^2	3.046 (−4)	sr	3.046 (−4)	sr
Å	angstrom	1.0 (−10)	m	1.0 (−8)	cm
μm	micrometer	1.0 (−6)	m	1.0 (−4)	cm

Values $a \times 10^b$ are given as a (b).

SI and cgs units

Description	SI		cgs	
	Value	Unit	Value	Unit
Time	1	s	1	s
	1	year	3.16 (7)	s
Length	1	m	1 (2)	cm
Velocity	1	m s^{-1}	1 (2)	cm s^{-1}
Force	1	N	1 (5)	dyne
Pressure	1	Pa	1 (−1)	dyne cm^{-2}
Energy	1	J	1 (7)	erg
Charge	1	C	2.9979 (9)	esu
Magnetic flux density	1	T	1 (4)	gauss

Values $a \times 10^b$ are given as a (b).

Energy conversion factors

	erg	eV	K	cm^{-1}	Hz
erg	1.00	6.242 (11)	7.243 (15)	5.034 (15)	1.509 (26)
eV	1.602 (−12)	1.00	1.1604 (4)	8064.4	2.418 (14)
K	1.3806 (−16)	8.617 (−5)	1.00	0.695	2.084 (10)
cm^{-1}	1.9865 (−16)	1.240 (−4)	1.4389	1.00	2.9970(10)
Hz	6.626 (−27)	4.136 (−15)	4.798 (−11)	3.336 (−11)	1.00

Values $a \times 10^b$ are given as a (b). To convert from unit in column 1 to units above the rows, multiply by value; e.g., $1\,\text{eV} = 1.602 \times 10^{-12}$ erg.

A useful compendium of constants can be found in C. W. Allen, *Astrophysical Quantities*, (London: The Athlone Press). The website http://physics.nist.gov/cuu/, maintained by the National Institute of Standards and Technology, provides a wealth of information on constants.