

A useful reference to units and to physical data is:

Tables of Physical and Chemical Constants, compiled by C.W. Kaye and T.H. Laby. Longman, London and New York (1986)

Basic Units

Quantity	Unit	Abbreviation
Length	meter	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A

Composite Units

Quantity	Unit	Abbreviation	Composition
Velocity			m s^{-1}
Acceleration			m s^{-2}
Force	newton	N	$1 \text{ N} = 1 \text{ kg m s}^{-2}$
Energy	joule	J	$1 \text{ J} = 1 \text{ N m}$
Power	watt	W	$1 \text{ W} = 1 \text{ J s}^{-1}$
Magnetic flux density	tesla	T	$1 \text{ T} = 1 \text{ V s m}^{-2}$

A table of physical data is given inside the back cover.

Fundamental Physical Constants

Quantity	Value	Unit
Gravitational constant G	6.668×10^{-11}	$\text{Nm}^2\text{kg}^{-2}$
Acceleration of gravity g (near the surface of the Earth)	9.8	m s^{-2}

Mass of:

Sun	1.99×10^{30}	kg
Earth	5.98×10^{24}	kg
Mars	6.42×10^{23}	kg
Venus	4.89×10^{24}	kg
Jupiter	1.90×10^{27}	kg
Saturn	5.69×10^{26}	kg
Moon (of the Earth)	7.35×10^{22}	kg

Radius (mean radius) of:

Earth	6.37×10^6	m
Moon	1.73×10^6	m
Mars	3.39×10^6	m
Jupiter	7.13×10^7	m
Sun	6.96×10^8	m

Orbital Radius (mean radius) of:

Earth (1 AU = 1 astronomical unit)	1.495×10^{11}	m
Mars	1.52	AU
Venus	0.72	AU
Jupiter	5.20	AU
Moon (around the Earth)	3.84×10^8	m

Orbital Periods (sidereal periods):

Earth (1 year)	3.16×10^7	s
Mars (687 days)	5.94×10^7	s
Moon (27.32 days around the Earth)	2.36×10^6	s

Rotation Period

(relative to the Heliocentric Reference Frame) of

Earth $\approx$ 23 hours 56 min	8.62×10^4	s
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Atomic Units

Mass of electron	9.11×10^{-31}	kg
Mass of proton	1.67×10^{-27}	kg
Charge of proton	1.60×10^{-19}	C
Velocity of light	2.998×10^8	m s^{-1}

Elements of Newtonian Mechanics

Including Nonlinear Dynamics

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