Fundamental Constants

Values consistent with the National Institute of Standards and Technology (NIST) website (`http://www.physics.nist.gov/cuu/`).

Numbers in parentheses are uncertainties in the last two digits of the listed value.

speed of light in vacuum	$c = 299\ 792\ 458\,\mathrm{m/s}$ (exact)
Planck constant	$h = 6.626\ 069\ 57(29) \times 10^{-34}\,\mathrm{J{\cdot}s}$
	$\hbar = 1.054\ 571\ 726(47) \times 10^{-34}\,\mathrm{J{\cdot}s}$
	$hc = 1\ 239.841\ 930(27)\,\mathrm{eV{\cdot}nm}$
constant of gravitation	$G = 6.673\ 84(80) \times 10^{-11}\,\mathrm{N{\cdot}m^2/kg^2}$
Coulomb force constant	$k_\mathrm{C} = 8.987\ 552\ \cdots \times 10^{9}\,\mathrm{N{\cdot}m^2/C^2}$ (exact)
permittivity constant	$\epsilon_0 = 8.854\ 187\ \cdots \times 10^{-12}\,\mathrm{C^2/N{\cdot}m^2}$ (exact)
permeabilitiy constant	$\mu_0 = 4\pi \times 10^{-7} = 12.566\ 370\ \cdots \times 10^{-7}\,\mathrm{N/A^2}$ (exact)
elementary charge	$e = 1.602\ 176\ 565(35) \times 10^{-19}\,\mathrm{C}$
Avogadro constant	$N_A = 6.022\ 141\ 29(27) \times 10^{23}\,\mathrm{molecules/mol}$
Boltzmann constant	$k_B = 1.380\ 6488(13) \times 10^{-23}\,\mathrm{J/K} = 8.617\ 2786(81) \times 10^{-5}\,\mathrm{eV/K}$
electron mass	$m_e = 9.109\ 382\ 91(40) \times 10^{-31}\,\mathrm{kg} = 0.510\ 998\ 928(11)\,\mathrm{MeV}/c^2$
proton mass	$m_p = 1.672\ 621\ 777(74) \times 10^{-27}\,\mathrm{kg} = 938.272\ 046(21)\,\mathrm{MeV}/c^2$
neutron mass	$m_n = 1.674\ 927\ 351(74) \times 10^{-27}\,\mathrm{kg} = 939.565\ 379(21)\,\mathrm{MeV}/c^2$

Miscellaneous Physical Data

gravitational field strength (sea level)		$g = 9.806\ 65\,\mathrm{N/kg}$
sun:	mass $= 1.99 \times 10^{30}\,\mathrm{kg}$	radius $= 6.96 \times 10^{8}\,\mathrm{m}$
earth:	mass $= 5.97 \times 10^{24}\,\mathrm{kg}$	radius $= 6.37 \times 10^{6}\,\mathrm{m}$
moon:	mass $= 7.35 \times 10^{22}\,\mathrm{kg}$	radius $= 1.74 \times 10^{6}\,\mathrm{m}$

mean earth-sun distance $= 1.50 \times 10^{11}\,\mathrm{m}$

mean earth-moon distance $= 3.84 \times 10^{8}\,\mathrm{m}$

Metric Prefixes

centi	$\mathrm{c} = 10^{-2}$		
milli	$\mathrm{m} = 10^{-3}$	kilo	$\mathrm{K} = 10^{3}$
micro	$\mu = 10^{-6}$	mega	$\mathrm{M} = 10^{6}$
nano	$\mathrm{n} = 10^{-9}$	giga	$\mathrm{G} = 10^{9}$
pico	$\mathrm{p} = 10^{-12}$	tera	$\mathrm{T} = 10^{12}$
femto	$\mathrm{f} = 10^{-15}$	peta	$\mathrm{P} = 10^{15}$
atto	$\mathrm{a} = 10^{-18}$	exa	$\mathrm{E} = 10^{18}$