How big is that?

(Updated 30 August 2009; values supersede those found in our textbooks.)

Diameter of hydrogen atom	1.06×10^{-8} cm
Diameter of the Moon	3.5×10^{3} km
Diameter of the Earth	1.3×10^{4} km
Diameter of the Sun	1.4×10^{6} km
Diameter of the Milky Way	1.7×10^{5} ly
Distance to the Moon	3.8×10^{5} km
Distance to the Sun	1.5×10^{8} km
Distance to the next nearest star	4.2 ly
Distance to the center of the Milky Way	2.8×10^{4} ly
Distance to the nearest galaxy	1.7×10^{5} ly
Mass of hydrogen atom	1.67×10^{-24} gm
Mass of the Moon	7.4×10^{25} gm
Mass of the Earth	6.0×10^{27} gm
Mass of the Sun	2.0×10^{33} gm $\left(1M_{\odot}\right)$
Mass of the Milky Way	$3\times10^{12}M_{\odot}$
Luminosity of the Sun	3.8×10^{33} erg/s $\left(1L_{\odot}\right)$
Luminosity of the largest stars	$10^{5}L_{\odot}$
Luminosity of the Milky Way	$2\times10^{10}L_{\odot}$
Luminosity of quasar 3C 273	$10^{12}L_{\odot}$
Earth's rotation period	8.64×10^{4} s (1 day)
Moon's revolution period	27.322 days
Earth's revolution period	365.25 days (1 year)
Sun's revolution period within Milky Way	2.4×10^{8} years
Age of the solar system	4.6×10^{9} years
Expected life span of the Sun	1.5×10^{10} years
Age of the Universe	1.4×10^{10} years
Earth's equator rotation speed	0.47 km/s
Earth's revolution speed	30 km/s
Sun's speed within the Milky Way	250 km/s
Milky Way's speed within the local Universe	550 km/s

Typical lengths:

Normal star diameter	10^{6} km
Distance between stars	a few ly
Normal galaxy diameter	10^{5} ly
Distance between galaxies	10^{6} ly

Typical masses:

Smallest star	$0.08M_{\odot}$
Normal star	$1M_{\odot}$
Giant star	$10M_{\odot}$
Normal galaxy	$10^{11}-10^{12}M_{\odot}$
Galaxy cluster	$10^{14}-10^{15}M_{\odot}$

Typical luminosities:

Normal star	$1L_{\odot}$
Giant star	$10^{3}-10^{5}L_{\odot}$
Normal galaxy	$10^{9}-10^{10}L_{\odot}$
Quasar	$10^{12}-10^{13}L_{\odot}$

Typical timespans:

Planetary revolution	1 year
Galaxy rotation	$10^{7}-10^{9}$ years
Life of giant stars	$10^{6}-10^{9}$ years
Life of normal star	10^{10} years

Typical speeds:

Planetary orbits	10 km/s
Stellar motion in galaxy	100 km/s
Between nearby galaxies	100 km/s

Other important constants:

1 ly = 9.46×10^{12} km = 9.46×10^{17} cm

1 Mly = 10^{6} ly

1 km = 10^{5} cm

1 hour = 3600 s

1 year = 3.16×10^{7} s

1 erg = 1 gm cm^2/s^2

$\pi = 3.14159265359$

Speed of light: c = 2.99792458×10^{5} km/s = 2.99792458×10^{10} cm/s = 1 ly/year

Newton's gravitational constant:

$G = 6.67\times10^{-8}\ \mathrm{cm}^3/\left(\mathrm{gm\ s}^2\right)$

Hubble's constant: H_0 = 20 km/(sec Mly)

Hubble time: $1/H_0 = 1.5\times10^{10}$ years