

Below are listed some typical magnitudes in units used to measure the physical world. It is useful to get a sense of scale for common events so that we can estimate values for events we encounter in problems. Remember that nature knows nothing of units...they are human constructs, used only to *compare* objects and events.

Times /s

period of electron orbit	1.0×10^{-12}	"a picosecond"
blink of an eye	3.5×10^{-1}	"350 microseconds"
Earth rotation	8.6×10^4	"one day"
Sun's galactic orbit	7.3×10^{15}	"230 million years"
age of universe	4.1×10^{17}	"13 billion years"

Distances /m

atomic radius	5.3×10^{-11}	"half an Ångström"
height of man	1.8	"six feet"
height of mount everest	8.8×10^3	"29 thousand feet"
radius of Earth	6.3×10^6	"4000 miles"
radius of Milky Way	3.9×10^{20}	"50,000 light years"

Speeds /m s⁻¹

grass growth rate	2.0×10^{-8}	" $\frac{1}{16}$ inch per day"
speed of walking	1.3	"3 miles per hour"
speed of driving	25	"55 miles per hour"
speed of sound	330	"mach 1"
speed of light	3.0×10^8	"light speed"

Masses /kg

proton	1.7×10^{-27}	"one atomic unit"
penny	2.5×10^{-3}	" $\frac{1}{12}$ ounce"
car	1000	"a ton"
Earth	6.0×10^{24}	"6 billion trillion tons"
universe	2.0×10^{52}	"3 million trillion trillion Earths"

Temperatures /K

liquid helium	2.7	"2.7 Kelvin"
liquid nitrogen	77	"196 degrees below zero degrees Celsius"
water freezing temperature	273	"zero degrees Celsius"
room temperature	294	"seventy degrees Fahrenheit"
center of the sun	1.4×10^7	"14 million degrees"

Energies /J

air molecule at room temperature	1.0×10^{-21}	"one zJ"
human heartbeat	0.5	" $\frac{1}{10000}$ Calorie"
running for an hour	3.7×10^6	"880 Calories"
Atlantic crossing of airliner	1.0×10^{12}	"a million MJ"
annual US energy consumption	1.1×10^{20}	"29 trillion kWh"