

SI Prefixes

prefix	symbol	factor
peta	P	10^{15}
tera	T	10^{12}
giga	G	10^9
mega	M	10^6
kilo	k	10^3
milli	m	10^{-3}
micro	μ	10^{-6}
nano	n	10^{-9}
pico	p	10^{-12}
femto	f	10^{-15}

Unit Conversions

Length:	
1 inch (in)	= 2.54 cm
1 foot (ft)	= 0.3048 m = 12 in
1 yard (yd)	= 0.9144 m = 3 ft
1 furlong	= 10 chains
	= 220 yd
1 mile (mi)	= 1609.3 m
	= 1760 yd
1 lightyear (ly)	= 9.4605×10^{15} m

Area:	
1 mm ²	= 10^{-6} m ²
1 cm ²	= 10^{-4} m ²
1 hectare	= 10^4 m ²
1 km ²	= 10^6 m ²
1 in ²	= 6.4516 cm ²
1 ft ²	= 929.03 cm ²
1 acre	= 4046.9 m ²
	= 4840 yd ²

Speed:	
1 km/h	= 0.27778 m/s
1 mph	= 0.44704 m/s
1 ft/s	= 0.3048 m/s

Volume:	
1 cm ³	= 10^{-6} m ³
	= 1 ml = 1 cc
1 dm ³ (litre)	= 10^{-3} m ³
1 in ³	= 16.387 cm ³
1 ft ³	= 28317 cm ³
1 US fluid oz	= 29.574 ml
1 US quart	= 946.35 ml
	= 32 fl oz
1 US gallon	= 3.7854 ℓ
	= 128 fl oz
1 imper. gal	= 4.5461 ℓ

Mass:	
1 ounce (oz)	= 28.350 g
1 pound (lbm)	= 453.59 g
1 slug	= 14.594 kg
1 stone	= 14 lbm
1 short ton	= 2000 lbm
1 tonne (t)	= 1000 kg = 1 Mg
1 (long) ton	= 2240 lbm

Answer to The Ultimate Question Of Life, the Universe and Everything

answer = 42

Constants

name	symbol	value
Air, density of	ρ_{air}	1.293 kg/m ³ (@ STP)
Air, speed of sound in		331.5 m/s (@ STP)
Air, viscosity of	μ_{air}	1.71×10^{-5} Pa·s (@ STP)
Aluminum, Young's Mod.	E_{Al}	≈ 70 GPa
Avogadro's number	N_A	6.0221×10^{23} mol ⁻¹
Boltzmann constant	k_B	1.3806×10^{-23} J/K
Copper, specific heat cap.	$C_p H$	0.385 kJ/kg·K
Electron, rest mass	m_e	9.1094×10^{-31} kg
Electronvolt	eV	1.6022×10^{-19} J
Elementary charge	e	1.6022×10^{-19} C
Faraday constant	F	96.485 kC/mol
Glass, refractive index	n_g	1.52 (Crown glass)
Gravitational acceleration	g	9.8067 m/s ²
		32.174 ft/s ²
Gravitational constant	G	6.6742×10^{-11} m ³ /kg·s ²
Neutron, rest mass	m_n	1.6749×10^{-27} kg
Permeability of free space	μ_0	$4\pi \times 10^{-7}$ H/m
Permittivity of free space	ϵ_0	8.8524×10^{-12} F/m
Planck's constant	h	6.6261×10^{-34} J·s
Proton, rest mass	m_p	1.6726×10^{-27} kg
Rydberg constant	R_{∞}	1.0974×10^{-7} m ⁻¹
Speed of light (in vacuum)	c	2.9979×10^8 m/s
Steel, Young's Modulus	E_{steel}	≈ 210 GPa
Stefan-Boltzmann constant	σ	5.6704×10^{-8} W/m ² ·K ⁴
Universal gas constant	R	8.3144 kJ/K·kmol
		1545.3 ft·lbf/lbmol·°R
		1.9859 Btu/lbmol·°R
Water, refractive index	n_w	1.333 (liquid, 25°C)
Water, specific heat cap.	$C_p H$	4.1813 kJ/kg·K (liquid)
Water, liquid, viscosity	μ_w	1.002 mPa·s (20°C)

More Unit Conversions

Temperature:	
Kelvin (K)	[K] = [°C] - 273.15
Celsius (°C)	[°C] = [K] + 273.15
Fahrenheit (°F)	[°F] = (9/5)[°C] + 32
	= [°R] + 459.67
Rankine (°R)	[°R] = (9/5)[K]

Force, Energy & Power:

1 newton (N)	= 1 kg·m/s ²
1 pound-force (lbf)	= 4.4482 N
1 joule (J)	= 1 N·m
1 foot pound-force (ft·lbf)	= 1.3558 J
1 calorie (cal)	= 4.1868 J
1 Calorie (Cal)	= 1 kcal
1 British thermal unit (Btu)	= 1.0551 kJ
1 kilowatt-hour (kWh)	= 3.6 MJ
1 therm	= 10^5 Btu
1 watt (W)	= 1 J/s
1 horsepower (hp)	= 745.70 W
	= 550 ft·lbf/s
	= 0.7068 Btu/s

Pressure:

1 pascal (Pa)	= 1 N/m ²
1 pound-force per sq. foot (lbf/ft ²)	= 47.880 Pa
1 mm of mercury (mmHg)	= 133.32 Pa
	= 1 torr
1 inch of water (inH ₂ O)	= 249.09 Pa
1 inch of mercury (inHg)	= 3386.4 Pa
1 pound-force per sq. inch (psi)	= 6894.8 Pa
	= 144 lbf/ft ²
1 bar	= 100 kPa
1 standard atmosphere (atm)	= 101.33 kPa
	= 760 mmHg

Quadratic Formula

Given an equation of the form $ax^2 + bx + c = 0$, $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Important Irrationals

$\pi \approx 3.14159 26535 89793 23846 26433$

$e \approx 2.71828 18284 59045 23536 02874$