

List of constants

Fundamental physics constants

speed of light in vacuum	c	$2.998 \cdot 10^8 \text{ m}\cdot\text{s}^{-1}$
permittivity of free space	ε_0	$8.854 \cdot 10^{-12} \text{ F}\cdot\text{m}^{-1}$
permeability of free space	μ_0	$1.257 \cdot 10^{-6} \text{ H}\cdot\text{m}^{-1}$
gravitational constant	G	$6.674 \cdot 10^{-11} \text{ m}^3\cdot\text{kg}^{-1}\cdot\text{s}^{-2}$
Planck constant	h	$6.626 \cdot 10^{-34} \text{ J}\cdot\text{s}$
elementary charge	e	$1.602 \cdot 10^{-19} \text{ C}$
electron mass	m_e	$9.109 \cdot 10^{-31} \text{ kg}$
proton mass	m_p	$1.673 \cdot 10^{-27} \text{ kg}$
atomic mass unit	u	$1.661 \cdot 10^{-27} \text{ kg}$
Avogadro constant	N_A	$6.022 \cdot 10^{23} \text{ mol}^{-1}$
Boltzmann constant	k_B	$1.381 \cdot 10^{-23} \text{ J}\cdot\text{K}^{-1}$
molar gas constant	R_m	$8.314 \text{ J}\cdot\text{mol}^{-1}\cdot\text{K}^{-1}$
Stefan-Boltzmann constant	σ	$5.670 \cdot 10^{-8} \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-4}$

Astronomical constants

mass of Earth	M_{\oplus}	$5.974 \cdot 10^{24} \text{ kg}$
mass of Sun	M_{\odot}	$1.989 \cdot 10^{30} \text{ kg}$
equatorial radius of Earth	R_{\oplus}	$6.378 \cdot 10^6 \text{ m}$
equatorial radius of Sun	R_{\odot}	$6.957 \cdot 10^8 \text{ m}$
nominal solar luminosity	L_{\odot}	$3.828 \cdot 10^{26} \text{ W}$
astronomical unit	au	$149.6 \cdot 10^9 \text{ m}$

Other useful constants

gravity of Earth	g	$9.81 \text{ m}\cdot\text{s}^{-2}$
speed of sound in air*	c	$343 \text{ m}\cdot\text{s}^{-1}$
air density*	ρ	$1.204 \text{ kg}\cdot\text{m}^{-3}$
normal pressure	p_a	101.325 kPa
normal temperature	t	$20 \text{ }^{\circ}\text{C}$
Zero-point of Celsius scale	$0 \text{ }^{\circ}\text{C}$	273.15 K

Properties of water*

specific latent heat of vaporisation	l_v	$2.26 \cdot 10^6 \text{ J}\cdot\text{kg}^{-1}$
specific latent heat of fusion	l_t	$3.34 \cdot 10^5 \text{ J}\cdot\text{kg}^{-1}$
heat capacity	c	$4184 \text{ J}\cdot\text{kg}^{-1}\cdot\text{K}^{-1}$
molar mass	$M_{\text{H}_2\text{O}}$	$18.02 \text{ g}\cdot\text{mol}^{-1}$
index of refraction	n	1.333
density	ρ	$998 \text{ kg}\cdot\text{m}^{-3}$
dynamic viscosity	μ	$1.005 \cdot 10^{-3} \text{ Pa}\cdot\text{s}$
surface tension	σ	$7.27 \cdot 10^{-2} \text{ N}\cdot\text{m}^{-1}$

*Under normal conditions.