2022 CODATA RECOMMENDED VALUES of the Fundamental Constants of Physics

An extensive constants list is available. (ref: NIST wallet size data card, 2018)

quantity	sym	numerical value	units
*^{133}Cs hyperfine transition frequency	$\Delta\nu_{Cs}$	9192631770	Hz
*speed of light in vacuum	c	299792458	m/s
*Planck constant	h	6.62607015E-34	J/Hz
*elementary charge	e	1.602176634E-19	C
*Avogadro constant	N_A	6.02214076E+23	1/mol
*Boltzmann constant	k_B	1.380649E-23	J/K
*luminous efficacy	K_{cd}	683	lm/W
electron volt [e/C]	eV	1.602176634E-19	J
fine-structure constant [$e^2/(2\varepsilon_0 hc)$]	α	∿0.0072973525643	–
h-bar constant [$h/(2\pi)$]	$\hbar$	∿1.054571817E-34	J•s
molar gas constant [$N_A k_B$]	R	∿8.314462618	J/mol/K
Newtonian gravitation constant	G	∿6.67430E-11	N•m²/kg²
Stefan-Boltzmann constant [$(\pi^2 k^4)/(60\hbar^3 c^2)$]	σ	∿5.670374419E-08	W/m²/K⁴
pi (ref: math.com)	π	∿3.14159265358979	–

*Defining SI constants for International System of Units.

2022 CODATA RECOMMENDED VALUES of the Fundamental Constants of Physics

An extensive constants list is available. (ref: NIST wallet size data card, 2018)

quantity	sym	numerical value	units
vacuum permeability [$4\pi\times10^{-7}$]	μ_0	∿1.2566370614E-06	H/m
vacuum permittivity [$1/(\mu_0 c^2)$]	ε_0	∿8.8541878188E-12	F/m
Faraday constant [eN_A]	F	∿96485.332123310	C/mol
Josephson constant [$(2e)/h$]	K_J	∿483597.8484E+09	Hz/V
von Klitzing constant [h/e^2]	R_K	∿25812.80745	Ω
Rydberg frequency [$(\alpha^2 m_e c^2)/(2h)$]	cR_∞	∿3.2898419602500E+15	Hz
(unified) atomic mass unit [$1/12$ m(^{12}C)]	u	∿1.66053906892E-27	kg
electron mass [e^-]	m_e	∿9.1093837139E-31	kg
proton mass [p^+]	m_p	∿1.67262192595E-27	kg
neutron mass [n^o]	m_n	∿1.67492749804E-27	kg
proton-electron mass ratio	m_p/m_e	∿1836.152673426	–
Bohr radius [$\hbar/(\alpha m_e c)$]	a_0	∿5.29177210544E-11	m
Bohr magneton [$(e\hbar)/(2m_e)$]	μ_B	∿9.2740100657E-24	J/T
pi (ref: math.com)	π	∿3.14159265358979	–

SI Metric Prefixes
for Measures in Physics

prefix	abr	exponent		scientific	cardinal NIST
quetta	**Q**	10^{+30}	⬆ increasing	1.0E+30	Nonillion
ronna	**R**	10^{+27}		1.0E+27	Octillion
yotta	**Y**	10^{+24}		1.0E+24	Septillion
zetta	**Z**	10^{+21}		1.0E+21	Sextillion
exa	**E**	10^{+18}		1.0E+18	Quintillion
peta	**P**	10^{+15}		1.0E+15	Quadrillion
tera	**T**	10^{+12}		1.0E+12	Trillion
giga	**G**	10^{+09}		1.0E+09	Billion
mega	**M**	10^{+06}		1.0E+06	Million
kilo	**K**	10^{+03}	⬆	1000	Thousand
hecto	**h**	10^{+02}		100	Hundred
deca	**da**	10^{+01}		10	Ten
–	–	10^{0}		1	One

prefix	abr	exponent		scientific	cardinal NIST
quecto	**q**	10^{-30}	decreasing ⬇	1.0E-30	Nonillionth
ronto	**r**	10^{-27}		1.0E-27	Octillionth
yocto	**y**	10^{-24}		1.0E-24	Septillionth
zepto	**z**	10^{-21}		1.0E-21	Sextillionth
atto	**a**	10^{-18}		1.0E-18	Quintillionth
femto	**f**	10^{-15}		1.0E-15	Quadrillionth
pico	**p**	10^{-12}		1.0E-12	Trillionth
nano	**n**	10^{-09}		1.0E-09	Billionth
micro	**μ**	10^{-06}		1.0E-06	Millionth
milli	**m**	10^{-03}	⬇	0.001	Thousandth
centi	**c**	10^{-02}		0.01	Hundredth
deci	**d**	10^{-01}		0.1	Tenth
–	–	10^{0}		1	One

ref: BIPM, SI Prefix Chart, 2024