Widely used units in the SI system

A list of the widely used units in the SI system is provided in the table.

International System of Units (SI)

	unit	abbreviation	physical quantity
Base units	metre	m	length
	second	s	time
	kilogram	kg	mass
	ampere	A	electric current
	kelvin	K	thermodynamic temperature
	candela	cd	luminous intensity
	mole	mol	amount of substance

	unit	abbreviation	number of metres	approximate U.S. equivalent
Length	kilometre	km	1,000	0.62 mile
	centimetre	cm	0.01	0.39 inch
	millimetre	mm	0.001	0.039 inch
	micrometre	μm	0.000001	0.000039 inch
	nanometre	nm	0.000000001	0.000000039 inch

	unit	abbreviation	number of square metres	approximate U.S. equivalent
Area	square kilometre	sq km, or km^2	1,000,000	0.3861 square mile
	hectare	ha	10,000	2.47 acres
	are	a	100	119.60 square yards
	square centimetre	sq cm, or cm^2	0.0001	0.155 square inch

	unit	abbreviation	number of cubic metres	approximate U.S. equivalent

International System of Units (SI)

	unit	abbreviation		physical quantity
Volume	cubic metre	m^3	1	1.307 cubic yards
	cubic centimetre	cu cm, cm^3, or cc	0.000001	0.061 cubic inch

	unit	abbreviation	number of litres	approximate U.S. equivalent
Capacity	kilolitre	kl	1,000	1.31 cubic yards
	litre	l	1	61.02 cubic inches
	centilitre	cl	0.01	0.61 cubic inch
	millilitre	ml	0.001	0.061 cubic inch
	microlitre	µl	0.000001	0.000061 cubic inch

	unit	abbreviation	number of grams	approximate U.S. equivalent
Mass and weight	metric ton	t	1,000,000	1.102 short tons
	gram	g	1	0.035 ounce
	centigram	cg	0.01	0.154 grain
	milligram	mg	0.001	0.015 grain
	microgram	µg	0.000001	0.000015 grain

	unit	symbol	physical quantity	expressed in base units
Energy	hertz	Hz	frequency	1/s
	newton	N	force, weight	$(m \times kg)/s^2$
	joule	J	work, energy, quantity of heat	$(m^2 \times kg)/s^2$
	pascal	Pa	pressure, stress	$kg/(m \times s^2)$
	watt	W	power	$(m^2 \times kg)/s^3$
	coulomb	C	electric charge	$s \times A$
	volt	V	electric potential difference	$(m^2 \times kg)/(s^3 \times A)$

International System of Units (SI)

unit		abbreviation	physical quantity
farad	F	electric capacitance	$(s^2 \times s^2 \times A^2)/(m^2 \times kg)$
ohm	Ω	electric resistance, reactance	$(m^2 \times kg)/(s^3 \times A^2)$
siemens	S	electric conductance	$(s^3 \times A^2)/(m^2 \times kg)$
weber	Wb	magnetic flux	$(m^2 \times kg)/(s^2 \times A)$
tesla	T	magnetic induction	$kg/(s^2 \times A)$
henry	H	inductance	$(m^2 \times kg)/(s^2 \times A^2)$
lumen	lm	luminous flux	$cd \times sr$
lux	lx	illuminance	$(cd \times sr)/m^2$

Prefixes and units used in the metric system

Prefixes and units used in the metric system are provided in the table.

Metric system

	physical quantity	unit	symbol
*The metric system of bases and prefixes has been applied to many other units, such as decibel (0.1 bel), kilowatt (1,000 watts), megahertz (1,000,000 hertz), and microhm (one-millionth of an ohm).			
Base units*	length	metre	m
	area	square metre	square m, or m^2
		are (100 square metres)	a
	volume	cubic metre	cubic m, or m^3
		stere (1 cubic metre)	s
	weight	gram	g
		metric ton (1,000,000 grams)	t
	capacity	litre	l
	temperature	degree Celsius	°C

physical quantity		unit			symbol
prefix	symbol	factor by which base unit is multiplied			example
Prefixes designating multiples and submultiples*	exa-	E	10^{18}	=	1,000,000,000,000,000,000	
	peta-	P	10^{15}	=	1,000,000,000,000,000	
	tera-	T	10^{12}	=	1,000,000,000,000	
	giga-	G	10^{9}	=	1,000,000,000	
	mega-	M	10^{6}	=	1,000,000	megaton (Mt)
	kilo-	k	10^{3}	=	1,000	kilometre (km)
	hecto-, hect-	h	10^{2}	=	100	hectare (ha)
	deca-, dec-	da	10	=	10	decastere (das)
					1	
	deci-	d	10^{-1}	=	0.1	decigram (dg)
	centi-, cent-	c	10^{-2}	=	0.01	centimetre (cm)
	milli-	m	10^{-3}	=	0.001	millilitre (ml)
	micro-, micr-	µ	10^{-6}	=	0.000001	microgram (µg)
	nano-	n	10^{-9}	=	0.000000001	
	pico-	p	10^{-12}	=	0.000000000001	
	femto-	f	10^{-15}	=	0.000000000000001	
	atto-	a	10^{-18}	=	0.000000000000000001	

Metric conversions

A list of metric conversions is provided in the table.

Common equivalents and conversion factors for U.S. Customary and SI systems

approximate common equivalents

*Common term not used in SI.

**Exact.

Source: National Bureau of Standards Wall Chart.

1 inch	= 25 millimetres
1 foot	= 0.3 metre
1 yard	= 0.9 metre
1 mile	= 1.6 kilometres
1 square inch	= 6.5 square centimetres
1 square foot	= 0.09 square metre
1 square yard	= 0.8 square metre
1 acre	= 0.4 hectare*
1 cubic inch	= 16 cubic centimetres
1 cubic foot	= 0.03 cubic metre
1 cubic yard	= 0.8 cubic metre
1 quart (liq)	= 1 litre*
1 gallon	= 0.004 cubic metre
1 ounce (avdp)	= 28 grams
1 pound (avdp)	= 0.45 kilogram
1 horsepower	= 0.75 kilowatt
1 millimetre	= 0.04 inch
1 metre	= 3.3 feet
1 metre	= 1.1 yards
1 kilometre	= 0.6 mile (statute)
1 square centimetre	= 0.16 square inch

Common equivalents and conversion factors for U.S. Customary and SI systems

approximate common equivalents

1 square metre	= 11 square feet
1 square metre	= 1.2 square yards
1 hectare*	= 2.5 acres
1 cubic centimetre	= 0.06 cubic inch
1 cubic metre	= 35 cubic feet
1 cubic metre	= 1.3 cubic yards
1 litre*	= 1 quart (liq)
1 cubic metre	= 264 gallons
1 gram	= 0.035 ounce (avdp)
1 kilogram	= 2.2 pounds (avdp)
1 kilowatt	= 1.3 horsepower

conversions accurate within 10 parts per million

inches × 25.4**	= millimetres
feet × 0.3048**	= metres
yards × 0.9144**	= metres
miles × 1.60934	= kilometres
square inches × 6.4516**	= square centimetres
square feet × 0.0929030	= square metres
square yards × 0.836127	= square metres
acres × 0.404686	= hectares
cubic inches × 16.3871	= cubic centimetres
cubic feet × 0.0283168	= cubic metres
cubic yards × 0.764555	= cubic metres
quarts (liq) × 0.946353	= litres
gallons × 0.00378541	= cubic metres

Common equivalents and conversion factors for U.S. Customary and SI systems

approximate common equivalents

ounces (avdp) × 28.3495	= grams
pounds (avdp) × 0.453592	= kilograms
horsepower × 0.745700	= kilowatts
millimetres × 0.0393701	= inches
metres × 3.28084	= feet
metres × 1.09361	= yards
kilometres × 0.621371	= miles (statute)
square centimetres × 0.155000	= square inches
square metres × 10.7639	= square feet
square metres × 1.19599	= square yards
hectares × 2.47105	= acres
cubic centimetres × 0.0610237	= cubic inches
cubic metres × 35.3147	= cubic feet
cubic metres × 1.30795	= cubic yards
litres × 1.05669	= quarts (liq)
cubic metres × 264.172	= gallons
grams × 0.0352740	= ounces (avdp)
kilograms × 2.20462	= pounds (avdp)
kilowatts × 1.34102	= horsepower