brzina $\vec{v} = \frac{d\vec{r}}{dt}$ (jedinica $\frac{m}{s}$)

ubrzanje $\vec{a} = \frac{d\vec{v}}{dt} = \frac{d^2\vec{r}}{dt^2}$ (jedinica $\frac{m}{s^2}$)

moment kretanja $\vec{p} = m \cdot \vec{v}$ ($\frac{kg\,m}{s}$) (Zakon održanja momenta kretanja)

sila $\vec{F} = \frac{d\vec{p}}{dt} = \frac{d(m\vec{v})}{dt} = m\frac{d\vec{v}}{dt} = m\vec{a}$ ($\frac{kg\,m}{s^2} = N$) (njutn)

rad $W = \vec{F} \cdot \vec{d} = Fd\cos\Theta$ ($\vec{d}$ – pređeni put)

($\frac{kg\,m^2}{s^2} = N \cdot m = Pa\,m^3 = W \cdot s$ = J (džul))

$W = \int_C \vec{F} \cdot d\vec{x} = \int_C \vec{F} \cdot \vec{v}\,dt$

snaga $P = \frac{dW}{dt} = \vec{F} \cdot \vec{v}$ ($\frac{kg\,m^2}{s^3} = \frac{J}{s} = W$) (vat)

površina $A = d^2$ (m^2)

pritisak $p = \frac{F}{A}$ ($\frac{N}{m^2} = \frac{kg}{m \cdot s^2} = Pa$)

Q – fizička veličina

$\delta(Q)$ – fizička dimenzija

$\delta_1, \dots, \delta_k$ – osnovne dimenzije

$Q = v(Q) \cdot [Q]$

$[Q]$ – jedinica $[\delta_i]$ – osnovne jedinice

$v(Q)$ – numerička vrednost

SI derived unit

From Wikipedia, the free encyclopedia

The International System of Units (SI) specifies a set of seven base units from which all other units of measurement are formed, by products of the powers of base units. These other units are called **SI derived units**, for example, the SI derived unit of area is square metre (m^2), and of density is kilograms per cubic metre (kg/m^3). The number of derived units is unlimited.

The names of SI units are always written in lowercase. The symbols of units named after persons, however, are always written with an uppercase initial letter (e.g., the symbol of hertz is Hz; but metre is m).

Contents

Derived units with special names

In addition to the two dimensionless derived units radian (rad) and steradian (sr), 20 other derived units have special names.

Named units derived from SI base units

Name	Symbol	Quantity	Expression in terms of other units	Expression in terms of SI base units
hertz	**Hz**	frequency	1/s	s^{-1}
radian	**rad**	angle	m/m	dimensionless
steradian	**sr**	solid angle	m^2/m^2	dimensionless
newton	**N**	force, weight	$kg \cdot m/s^2$	$kg \cdot m \cdot s^{-2}$
pascal	**Pa**	pressure, stress	N/m^2	$kg \cdot m^{-1} \cdot s^{-2}$
joule	**J**	energy, work, heat	$N \cdot m = C \cdot V = W \cdot s$	$kg \cdot m^2 \cdot s^{-2}$
watt	**W**	power, radiant flux	$J/s = V \cdot A$	$kg \cdot m^2 \cdot s^{-3}$
coulomb	**C**	electric charge or quantity of electricity	$s \cdot A$	$s \cdot A$
volt	**V**	voltage, electrical potential difference, electromotive force	W/A = J/C	$kg \cdot m^2 \cdot s^{-3} \cdot A^{-1}$
farad	**F**	electric capacitance	C/V	$kg^{-1} \cdot m^{-2} \cdot s^4 \cdot A^2$
ohm	**Ω**	electric resistance, impedance, reactance	V/A	$kg \cdot m^2 \cdot s^{-3} \cdot A^{-2}$
siemens	**S**	electrical conductance	1/Ω = A/V	$kg^{-1} \cdot m^{-2} \cdot s^3 \cdot A^2$
weber	**Wb**	magnetic flux	J/A	$kg \cdot m^2 \cdot s^{-2} \cdot A^{-1}$
tesla	**T**	magnetic field strength, magnetic flux density	$V \cdot s/m^2 = Wb/m^2 = N/(A \cdot m)$	$kg \cdot s^{-2} \cdot A^{-1}$
henry	**H**	inductance	$V \cdot s/A = Wb/A$	$kg \cdot m^2 \cdot s^{-2} \cdot A^{-2}$
degree Celsius	**°C**	temperature relative to 273.15 K	K	K
lumen	**lm**	luminous flux	$cd \cdot sr$	cd
lux	**lx**	illuminance	lm/m^2	$m^{-2} \cdot cd$
becquerel	**Bq**	radioactivity (decays per unit time)	1/s	s^{-1}
gray	**Gy**	absorbed dose (of ionizing radiation)	J/kg	$m^2 \cdot s^{-2}$
sievert	**Sv**	equivalent dose (of ionizing radiation)	J/kg	$m^2 \cdot s^{-2}$
katal	**kat**	catalytic activity	mol/s	$s^{-1} \cdot mol$

Examples of derived quantities and units

Some SI derived units

Name	Symbol	Quantity	Expression in terms of SI base units
square metre	m^2	area	m^2

cubic metre	**m^3**	volume	m^3
metre per second	**m/s**	speed, velocity	$m \cdot s^{-1}$
cubic metre per second	**m^3/s**	volumetric flow	$m^3 \cdot s^{-1}$
metre per second squared	**m/s^2**	acceleration	$m \cdot s^{-2}$
metre per second cubed	**m/s^3**	jerk, jolt	$m \cdot s^{-3}$
metre per quartic second	**m/s^4**	snap, jounce	$m \cdot s^{-4}$
radian per second	**rad/s**	angular velocity	s^{-1}
newton second	**N · s**	momentum, impulse	$m \cdot kg \cdot s^{-1}$
newton metre second	**N · m · s**	angular momentum	$m^2 \cdot kg \cdot s^{-1}$
newton metre	**N · m = J/rad**	torque, moment of force	$m^2 \cdot kg \cdot s^{-2}$
newton per second	**N/s**	yank	$m \cdot kg \cdot s^{-3}$
reciprocal metre	**m^{-1}**	wavenumber	m^{-1}
kilogram per square metre	**kg/m^2**	area density	$m^{-2} \cdot kg$
kilogram per cubic metre	**kg/m^3**	density, mass density	$m^{-3} \cdot kg$
cubic metre per kilogram	**m^3/kg**	specific volume	$m^3 \cdot kg^{-1}$
mole per cubic metre	**mol/m^3**	amount of substance concentration	$m^{-3} \cdot mol$
cubic metre per mole	**m^3/mol**	molar volume	$m^3 \cdot mol^{-1}$
joule second	**J · s**	action	$m^2 \cdot kg \cdot s^{-1}$
joule per kelvin	**J/K**	heat capacity, entropy	$m^2 \cdot kg \cdot s^{-2} \cdot K^{-1}$
joule per kelvin mole	**J/(K · mol)**	molar heat capacity, molar entropy	$m^2 \cdot kg \cdot s^{-2} \cdot K^{-1} \cdot mol^{-1}$
joule per kilogram kelvin	**J/(K · kg)**	specific heat capacity, specific entropy	$m^2 \cdot s^{-2} \cdot K^{-1}$
joule per mole	**J/mol**	molar energy	$m^2 \cdot kg \cdot s^{-2} \cdot mol^{-1}$
joule per kilogram	**J/kg**	specific energy	$m^2 \cdot s^{-2}$
joule per cubic metre	**J/m^3**	energy density	$m^{-1} \cdot kg \cdot s^{-2}$
newton per metre	**$N/m = J/m^2$**	surface tension	$kg \cdot s^{-2}$
watt per square metre	**W/m^2**	heat flux density, irradiance	$kg \cdot s^{-3}$
watt per metre kelvin	**W/(m · K)**	thermal conductivity	$m \cdot kg \cdot s^{-3} \cdot K^{-1}$
square metre per second	**m^2/s**	kinematic viscosity, diffusion coefficient	$m^2 \cdot s^{-1}$
pascal second	**$Pa \cdot s = N \cdot s/m^2$**	dynamic viscosity	$m^{-1} \cdot kg \cdot s^{-1}$
coulomb per square metre	**C/m^2**	electric displacement field, polarization vector	$m^{-2} \cdot s \cdot A$
coulomb per cubic metre	**C/m^3**	electric charge density	$m^{-3} \cdot s \cdot A$
ampere per square metre	**A/m^2**	electric current density	$A \cdot m^{-2}$
siemens per metre	**S/m**	conductivity	$m^{-3} \cdot kg^{-1} \cdot s^3 \cdot A^2$
siemens square metre per mole	**$S \cdot m^2/mol$**	molar conductivity	$kg^{-1} \cdot s^3 \cdot mol^{-1} \cdot A^2$
farad per metre	**F/m**	permittivity	$m^{-3} \cdot kg^{-1} \cdot s^4 \cdot A^2$
henry per metre	**H/m**	permeability	$m \cdot kg \cdot s^{-2} \cdot A^{-2}$
volt per metre	**V/m**	electric field strength	$m \cdot kg \cdot s^{-3} \cdot A^{-1}$
ampere per metre	**A/m**	magnetic field strength	$A \cdot m^{-1}$
candela per square metre	**cd/m^2**	luminance	$cd \cdot m^{-2}$
lumen second	**lm · s**	luminous energy	$cd \cdot sr \cdot s$
lux second	**lx · s**	luminous exposure	$cd \cdot sr \cdot s/m^{-2}$
coulomb per kilogram	**C/kg**	exposure (X and gamma rays)	$kg^{-1} \cdot s \cdot A$
gray per second	**Gy/s**	absorbed dose rate	$m^2 \cdot s^{-3}$
ohm metre	**Ω · m**	resistivity	$m^3 \cdot kg \cdot s^{-3} \cdot A^{-2}$

Some other metric units, such as the litre, are not SI units, but are accepted for use with the SI.

See also

$$Q = Q_1^{a_1} \cdot Q_2^{a_2} \cdots Q_n^{a_n}$$

$$\delta(Q_j) = \delta_1^{m_{1j}} \cdots \delta_k^{m_{kj}}$$

$$[\delta_i] = x_i [\delta_i]_*$$

$$v_*(Q) = v_*(Q_1)^{a_1} \cdots v_*(Q_n)^{a_n} = \prod_{j=1}^{n} v_*(Q_j)^{a_j}$$

$$= \prod_{j=1}^{n} \left(x_1^{m_{1j}} \cdots x_k^{m_{kj}} \, v(Q) \right)^{a_j}$$

$$= \left(\prod_{j=1}^{n} x_1^{m_{1j} a_j} \cdots x_k^{m_{kj} a_j} \right) \left(\prod_{j=1}^{n} v(Q_j)^{a_j} \right)$$

$$= \left(\prod_{i=1}^{k} x_i^{m_{i1} a_1 + \cdots + m_{in} a_n} \right) \cdot v(Q)$$

$$= \left(\prod_{i=1}^{n} x_i^{0} \right) \cdot v(Q)$$

$$= v(Q)$$

Orloj – Prag (1410-1890.)

Zemlja u sredini, kako drugačije u 15. veku. **Sunce** i **Mesec** sa menama, i znaci Zodijaka.

Spoljni prsten, arapske cifre – staro Bohemijsko vreme (Italijansko vreme), dan počinje zalaskom Sunca

Rimske cifre, dva puta I-XII – civilno vreme (Nemačko vreme) uvedeno kao zvanično u Bohemiju 1547. Dan počinje i završava u ponoć, kao danas što merimo.

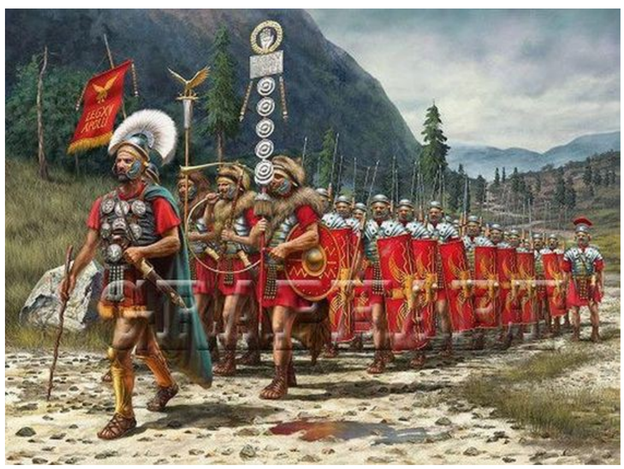
Arapske cifre 1-12 na plavom polju – Vavilonsko vreme, Sunce pokazuje na vreme. Obdanica je podeljena na 12 sati, nejednake dužine u toku godine.

Mala zvezdica (dole) – sideričko, sunčano vreme, Zemljina rotacija u odnosu na nepokretne zvezde, a ne u odnosu na Sunce. Siderička godina se razlikuje za 1 dan od kalendarske.

Jedinice za dužinu:

palac, pedalj, lakat, stopa, korak

Etimologija jedinica: milja za dužinu,



čvor za brzinu