

Physical Units

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Five basic units

- ▶ A *kilogram* is about the mass of a full 1-liter bottle of seltzer water.
- ▶ A *meter* is about the length of an adult human leg.
- ▶ A *second* is about the time between heartbeats.
- ▶ A *radian* is an angle of about 57° .
- ▶ A *kelvin* is a temperature unit.

Basic units

Base quantity		Base unit	
Name	Typical symbol	Name	Symbol
mass	m	kilogram	kg
length	l, x, r , etc.	meter	m
time	t	second	s
angle	θ	radian	rad
temperature	T	kelvin	K

SI prefixes

10^{-24}	yocto	(y)	10^{24}	yotta	(Y)
10^{-21}	zepto	(z)	10^{21}	zetta	(Z)
10^{-18}	atto	(a)	10^{18}	exa	(E)
10^{-15}	femto	(f)	10^{15}	peta	(P)
10^{-12}	pico	(p)	10^{12}	tera	(T)
10^{-9}	nano	(n)	10^9	giga	(G)
10^{-6}	micro	(μ)	10^6	mega	(M)
10^{-3}	milli	(m)	10^3	kilo	(k)
10^{-2}	centi	(c)	10^2	hecto	(h)
10^{-1}	deci	(d)	10	deca	(da)

- You are expected to remember the seven prefixes in bold.

In physics, variables contain units.

Wrong

$$x = vt \text{ m}$$

$$x = 21$$

$$v = 7$$

$$t = 3$$

Correct

$$x = vt$$

$$x = 21 \text{ m}$$

$$v = 7 \text{ m/s}$$

$$t = 3 \text{ s}$$