CONCEPT: SI UNITS

The International System of Units (SI) provides 9 units of measurement as the foundation from which all other SI units can be derived.

SI Base Units

	SI Base Unit		
Physical Quantity	**Name**	**Symbol**	**Description**
Mass	kilogram	kg	Equal to the mass of a Pt-Ir alloy prototype constructed in 1885.
Length	meter	m	Distance light travels in a vacuum during 3.335×10^{-9} of a second.
Time	second	s	Related to an atomic transition of Cesium-133.
Temperature	kelvin	K	Defined as the triple point of H_2O as 273.15 K and absolute zero as 0 K.
Amount of substance	mole	mol	Number of particles equal to the number of atoms in 0.012 kg of Carbon-12 ($\sim 6.022 \times 10^{23}$).
Electrical Current	ampere	A	A unit of electric current that represents the flow of one coulmob per second.
luminous intensity	candela	cd	Measurement of luminous intensity preceptible by the human eye.
Plane angle	radian	rad	A circle contains 2π radians.
Solid angle	steradian	sr	A sphere contains 4π steradians.

SI Derived Units

Physical Quantity	**Name**	**Symbol**	**SI Derived Units**	**SI Base Units**
Frequency	hertz	Hz	---	$\frac{1}{s}$
Force	newton	N	---	$\frac{m \cdot kg}{s^2}$
Pressure	pascal	Pa	$\frac{N}{m^2}$	$\frac{kg}{m \cdot s^2}$
Energy, work, quantity of heat	joule	J	$N \cdot m$	$\frac{m^2 \cdot kg}{s^2}$
Power	watt	W	$\frac{J}{s}$	$\frac{m^2 \cdot kg}{s^3}$
Electrical Charge	coulomb	C	---	$s \cdot A$
Potential	volt	V	$\frac{W}{A}$	$\frac{m^2 \cdot kg}{s^3 \cdot A}$
Resistance	ohm	Ω	$\frac{V}{A}$	$\frac{m^2 \cdot kg}{s^3 \cdot A^2}$
Capacitance	farad	F	$\frac{C}{V}$	$\frac{s^4 \cdot A^2}{m^2 \cdot kg}$