

MEASUREMENT

Kinds of Units :

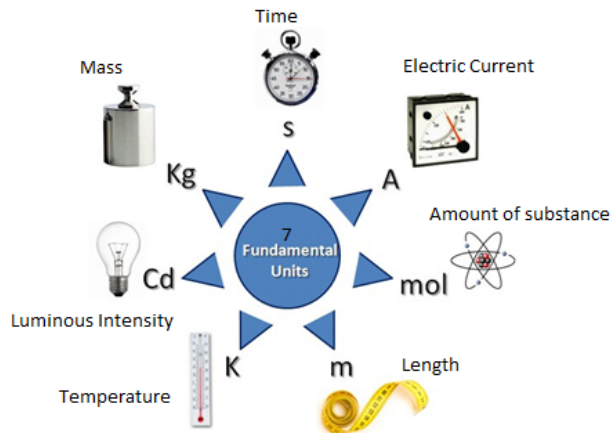
1. Fundamental or basic units

Derived Units :

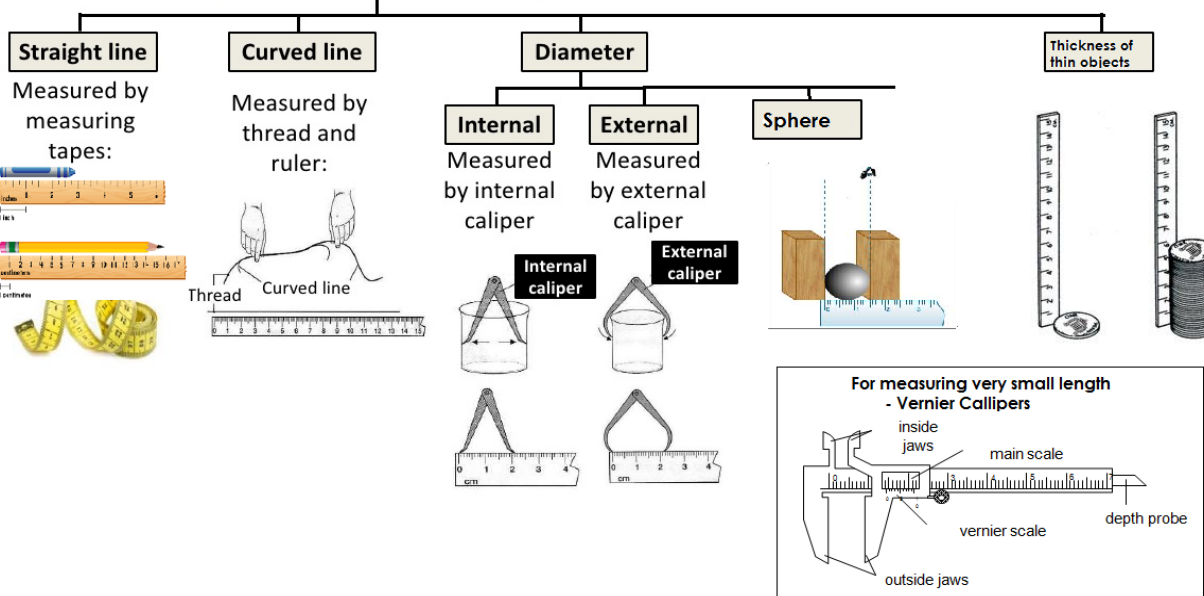
Quantity	Definition	Derived Unit (Name)
Area	Length x length	m ² (meters squared)
Volume	area x length	m ³ (cubic meters)
Speed	distance / unit time	m/s (meters per second)
Density	mass / unit volume	kg/m ³ (kilogram per cubic meter)
Acceleration	Change in speed / unit time	m/s ² (meter per second squared)
Force	Mass x acceleration	kg.m/s ² (newton, N)
Energy	Force x distance	kg.m ² /s ² (joule, J)
Pressure	Force / unit area	kg/(m.s ²) (pascal, P)

	Systems		
	SI	CGS	FPS
Length	meter (m)	centimeter (cm)	foot (ft)
Mass	kilogram (kg)	gram (g)	pound
Time	second (s)	second (s)	second (s)

Fundamental units in S.I. System



MEASURING LENGTH

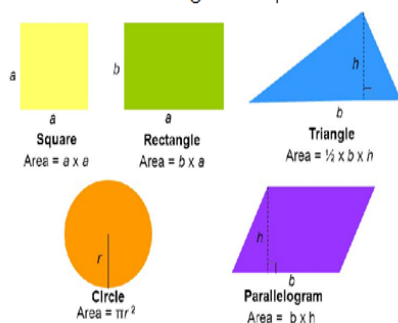


Multiple and sub-multiple units :

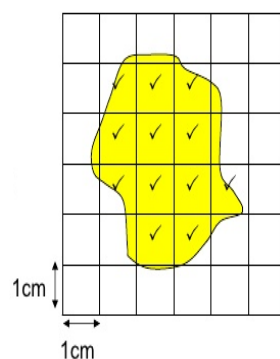
	Prefix	Abbreviation	Power of 10	Number
Multiples	tera	T	10^{12}	1 000 000 000 000
	giga	G	10^9	1 000 000 000
	mega	M	10^6	1 000 000
	kilo	k	10^3	1 000
	hecto	h	10^2	100
Submultiples	deca	da	10^1	10
	deci	d	10^{-1}	0.1
	centi	c	10^{-2}	0.01
	milli	m	10^{-3}	0.001
	micro	μ	10^{-6}	0.000001
	nano	n	10^{-9}	0.000000001
	pico	p	10^{-12}	0.000000000001

MEASUREMENT OF AREA

Area of regular shapes



Area of irregular shape



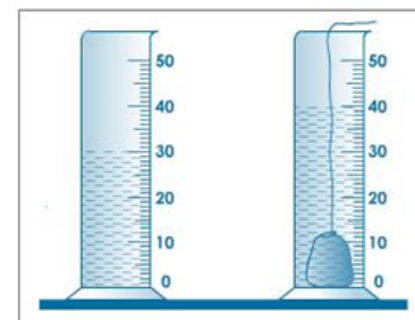
MEASUREMENT OF MASS

MEASUREMENT OF VOLUME

Volume of regular shapes

Figure	Formula	Variables
Cube 	a^3	a = length of edge
Cuboid 	$l \times w \times h$	l = length w = width h = height
Cylinder 	$\pi \times r^2 \times h$	r = radius of circular face h = height
Cone 	$\frac{1}{3} \times \pi \times r^2 \times h$	r = radius of circular base h = height from tip to base
Sphere 	$\frac{4}{3} \times \pi \times r^3$	r = radius

Volume of irregular solids



The difference in the above two readings gives the volume of the solid.

SI Unit - cubic metre

$$1 \text{ m}^3 = 1000000 \text{ cm}^3$$

$$1 \text{ cm}^3 = 1000 \text{ mm}^3$$

$$1 \text{ m}^3 = 1000 \text{ L}$$

$$1 \text{ mL} = 1 \text{ cm}^3$$

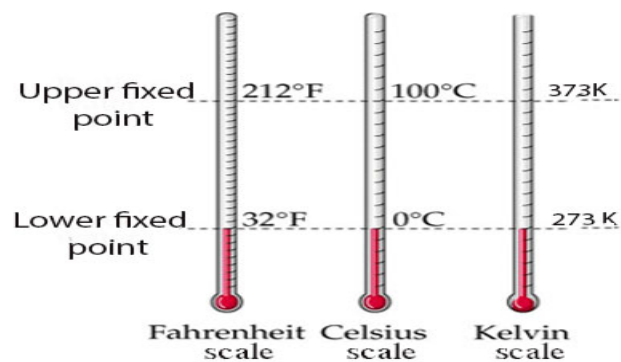
$$1 \text{ L} = 1000 \text{ mL}$$

MEASUREMENT OF TIME

1 year = 365 days
1 year = 12 months
1 year = 52 weeks
1 week = 7 days
1 day = 24 hours
1 hour = 60 minutes
1 minute = 60 seconds

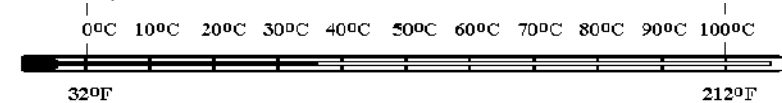


MEASUREMENT OF TEMPERATURE

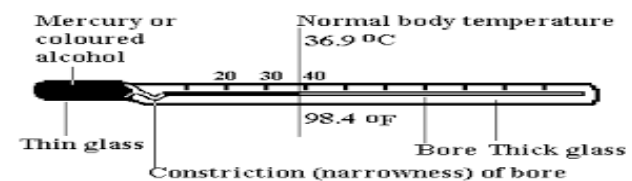


Types of Thermometer :

- Laboratory Thermometer



- Clinical Thermometer



- Maximum-minimum Thermometer (Six Thermometer)