Units and Measurements (From openstax uni physics vol-1)

- Units are most basic aspects of any measurements
  example Meter for length, Kilogram for mass, second for time
  without these any measurement is meaningless.

- Different systems : CGS , FPS , MKS

- 7 Base fundamental units

Base Quantity	Units
Length (L)	meter (m)
Mass (M)	kilogram (kg)
Time (T)	second (s)
Electric current (I)	Ampere (A)
Temperature (θ)	Kelvin (K)
Amount of Substance (N)	Mole (mol)
Luminous intensity (J)	Candela (cd)

- Derived units : Derived from fundamental units
- Metric Prefixes for powers of 10

+ve Power of 10	Prefix
10	Deca (da)
10^2	Hecto (H)
10^3	Kilo (k)
10^6	Mega (M)
10^9	Giga (G)
10^{12}	Tera (T)
10^{15}	Peta (P)
10^{18}	Exa (E)

-ve Power of 10	Prefix
10^{-1}	deci (d)
10^{-2}	centi (c)
10^{-3}	milli (m)
10^{-6}	Micro (μ)
10^{-9}	nano (n)
10^{-12}	Pico (P)
10^{-15}	femto (f)
10^{-18}	atto (a)

Dimentional Analysis

- Dimention of a physical quantity : Dependence on base quantities
  (Definition is from openstax unitphy vol-1) Product of base quantity symbols

Notes :

- Area has Dimentions L^2 ; Volume has Dimentions L^3
- Any physical quantity Dimentions can be written as

$$L^a M^b T^c I^d \Theta^e N^f J^g$$

- $[A] = L^2$ $\quad [V] = L^3$ $\quad [\rho] = ML^{-3}$

↑ square brackets

- Any mathematical equation related to physical quantity must be dimentionally consistant.
- Arguments of trigonometric functions, logarithms, exponential functions that appears in the equation must be dimentionless → Pure numbers.