Units and measurement 07042024

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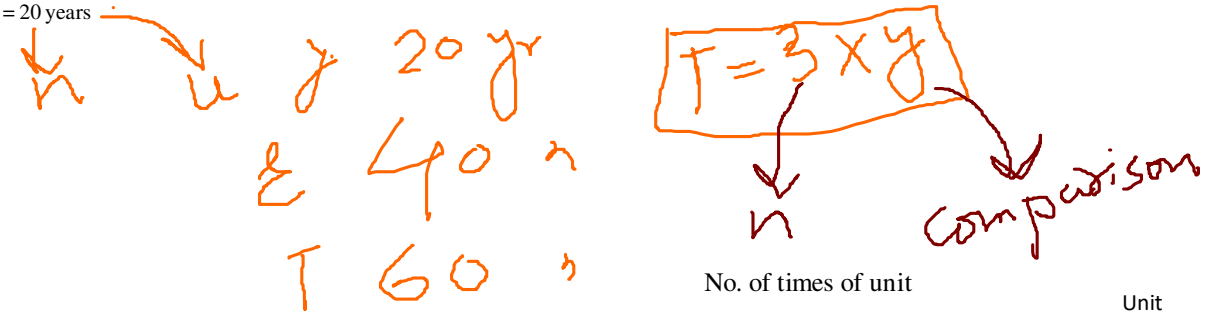
Physics:- Study of Matter and its motion, as well as space and time using concepts such as energy, force, mass and charge.

How Physics laws are invented:- All observation and experiments in physics lead to certain facts. These facts can be explained on the basis of certain laws.

Physical Quantity: (PQ): Magnitude of physical Quantity: numerical value * unit

All the quantities which are used to describe the law of physics are known PQ.

PQ = 20 years



Measurement of any physical quantity involves comparison with certain basic accepted reference standard called unit.

Classification of Physical Quantity:

1. Scalar: magnitude/value. (Mass, Time, pressure etc.)
2. Vector:- Magnitude, direction, Vec. Algebra (Force, mom etc.)

Classification of Physical Quantity Based on their dependency:

1. Fundamental or Base Quantity: These quantities do not need any other PQS to defined them.

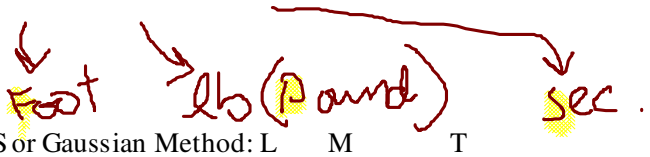
	Symbol	Unit
Length	m	meter
Mass	Kg	Kilogram
Time		
Temperature	K	Kelvin
Current	A	Ampere

Luminous Intensity	Cd	candela
Amount of substance	mol	mol

2. Derived Units: Define such quantities we need to fundamental quantities.
   Eg. Force = mass * accelaration

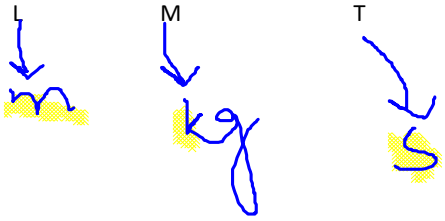
System OF units:

1. FPS or, British Engineering System:
   Length , Mass & Time



2. CGS or Gaussian Method: L M T

3. MKS :

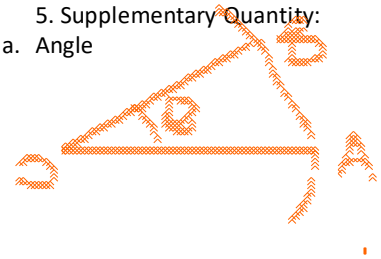


4. SI/ International System of Units:

a. Modification of MKS Sytem
b. Rationalised MKS System
c. Two Supplementary units can be derived

5. Supplementary Quantity:

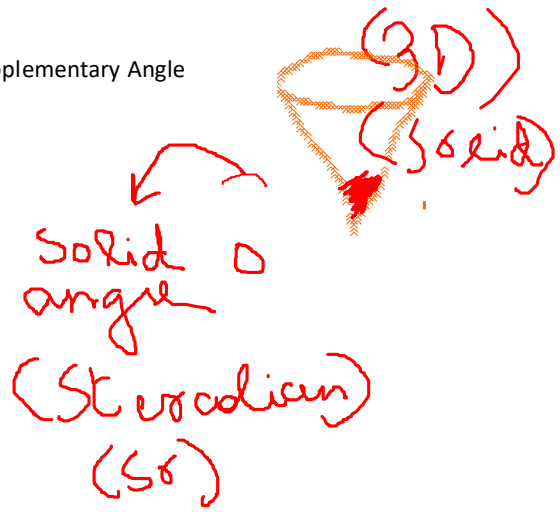
a. Angle



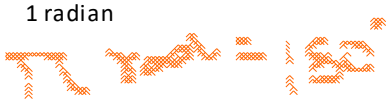
Angle = Arc/ radius (radian)

Length of Arc = radius of cir. Path

b. Supplementary Angle



1 radian



1. In which of the following system if units, a Weber is the unit of magnetic flux?

(a) CGS (b) MKS C) SI 4) FPS