NDA-CDS 1 2025

GS

LIVE

PHYSICS

UNITS & DIMENSIONS

MCQS

NAVJYOTI SIR

SSBCrack EXAMS

21 Jan 2025 Live Classes Schedule

9:00AM	21 JANUARY 2025 DAILY DEFENCE UPDATES	DIVYANSHU SIR
10:00AM	21 JANUARY 2025 DAILY CURRENT AFFAIRS	RUBY MA'AM

SSB INTERVIEW LIVE CLASSES

9:30AM	OVERVIEW OF GROUP TASKS	ANURADHA MA'AM

AFCAT 1 2025 LIVE CLASSES

12:30PM	REASONING - VERBAL ANALOGY	RUBY MA'AM
3:00PM	STATIC GK - KNOW YOUR ARMED FORCES	DIVYANSHU SIR
4:30PM	ENGLISH - SPOTTING ERRORS - CLASS 2	ANURADHA MA'AM
5:30PM	MATHS - PERCENTAGE	NAVJYOTI SIR

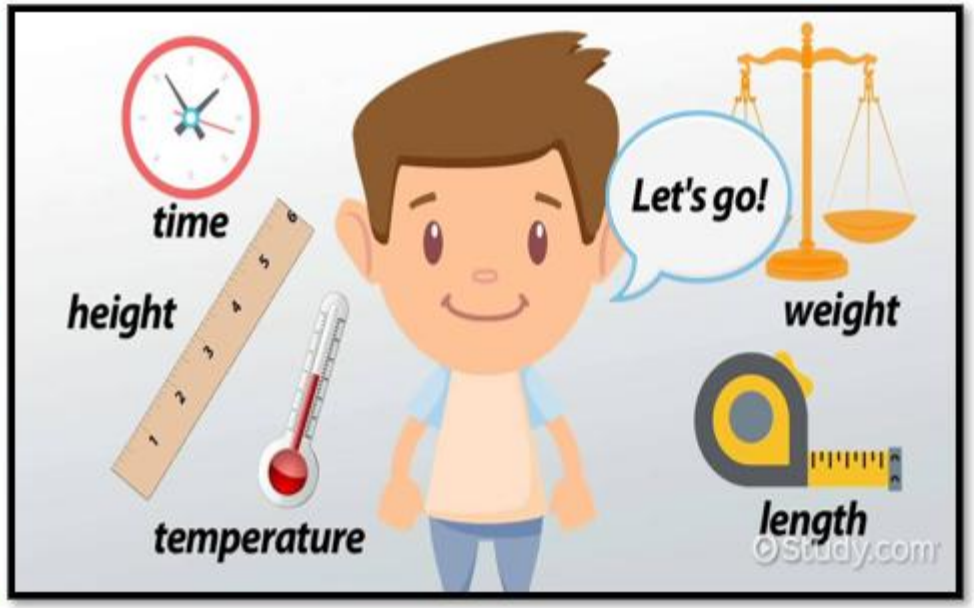
NDA 1 2025 LIVE CLASSES

10:00AM	MATHS - SETS, RELATION AND FUNCTION - CLASS 1	NAVJYOTI SIR
11:30AM	ANCIENT HISTORY - CLASS 1	RUBY MA'AM
1:00PM	PHYSICS - UNITS & DIMENSIONS	NAVJYOTI SIR
4:30PM	ENGLISH - SPOTTING ERRORS - CLASS 2	ANURADHA MA'AM

CDS 1 2025 LIVE CLASSES

11:30AM	ANCIENT HISTORY - CLASS 1	RUBY MA'AM
1:00PM	PHYSICS - UNITS & DIMENSIONS	NAVJYOTI SIR
4:30PM	ENGLISH - SPOTTING ERRORS - CLASS 2	ANURADHA MA'AM
5:30PM	MATHS - PERCENTAGE	NAVJYOTI SIR

MCQ PRACTISE – UNITS AND DIMENSIONS



Which Of The Following Is The Fundamental Unit Of Thermodynamic Temperature ?

A. K

B. ° C

C. ° F

D. None of the Above

(K) ⟶ Kelvin

Which Of The Following Is The Fundamental Unit Of Thermodynamic Temperature ?

A. K

B. ° C

C. ° F

D. None of the Above

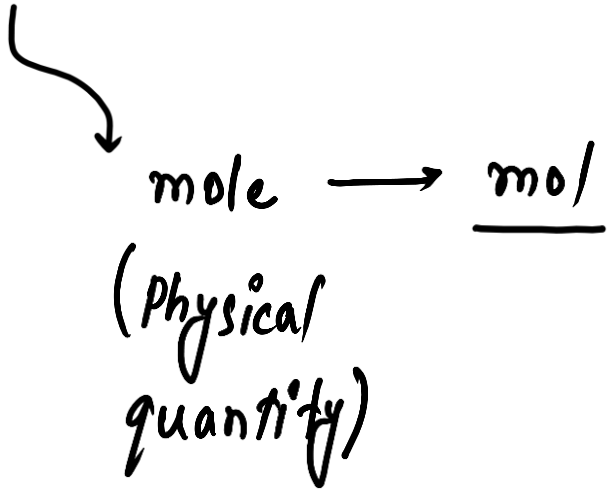
The Symbol To Represent unit of Amount Of Substance Is

A. K

B. A

C. Cd

D. mol



The Symbol To Represent Amount Of Substance Is

A. K

B. A

C. Cd

D. mol

The Smallest Value Which Is Measured Using An Instrument Is Known As

A. Absolute Count

B. Precision

C. Accurate Count

D. Least Count ✓✓

(15 cm)

$$\text{Least count} = \frac{1\text{ cm}}{10} = \frac{0.1\text{ cm}}{\text{or}\ 1\text{ mm}}$$

The Smallest Value Which Is Measured Using An Instrument Is Known As

A. Absolute Count

B. Precision

C. Accurate Count

D. Least Count

Which of the following is not a Physical Quantity ?

A. Density

B. Momentum

C. Work

D. Kilogram → it is a unit ⟶ unit of Mass

(not a physical quantity)

Which of the following is not a Physical Quantity ?

A. Density

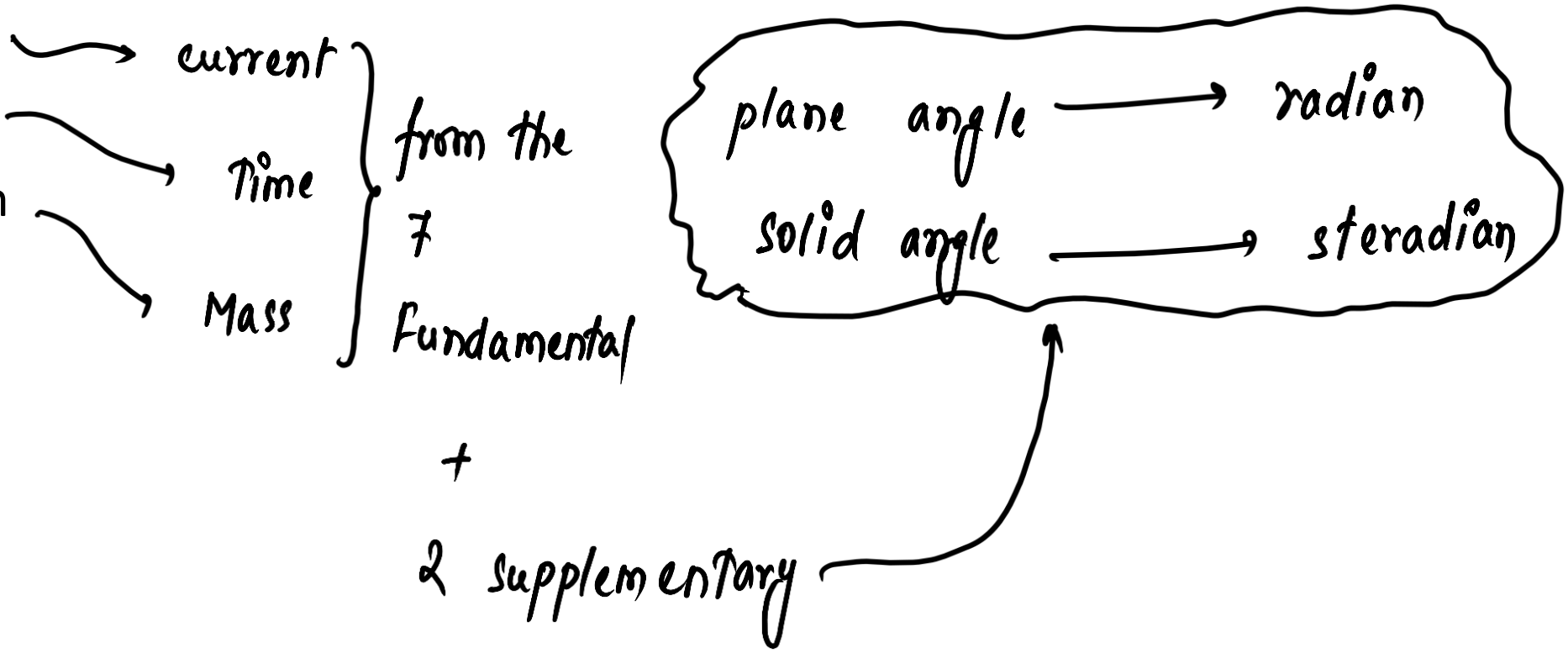
B. Momentum

C. Work

D. Kilogram

Which among the following is a Supplementary Fundamental Unit?

A. Ampere
B. Second
C. Kilogram
D. Radian



Which among the following is a Supplementary Fundamental Unit?

A. Ampere

B. Second

C. Kilogram

D. Radian

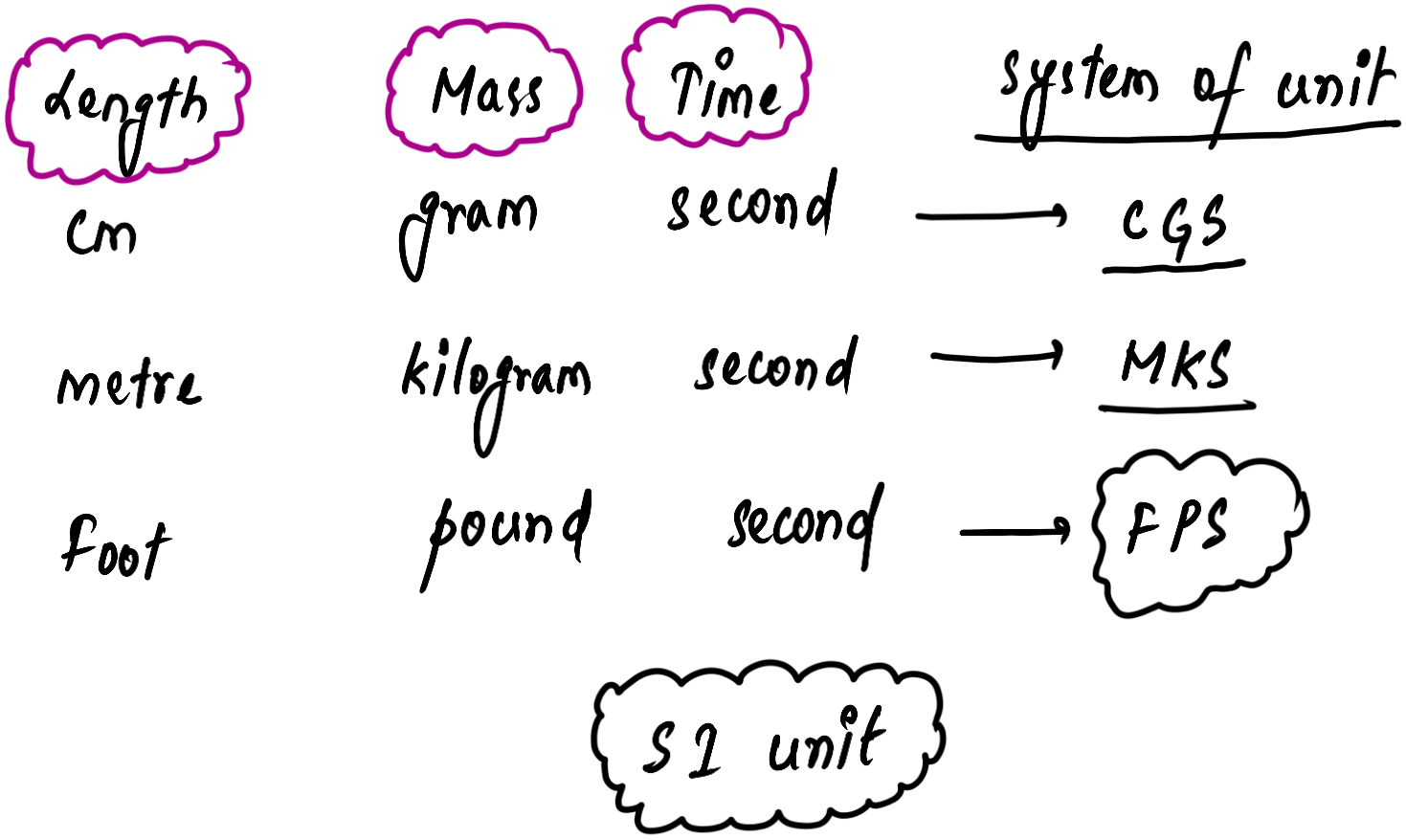
Which Of The Following Is A System Of Unit ?

A. SMS

B. MKP ✗

C. CJS ✗

D. FPS ✓



Which Of The Following Is A System Of Unit ?

A. SMS

B. MKP

C. CJS

D. FPS

The SI unit of Work is

A. Joules
B. ergs
C. volt
D. Ampere

Work / Energy ⇒ Joules (J)

1 ergs = 1 $g\,cm^2 s^{-2}$

cgs unit of work

W = Force x displacement (d)

= mass x acceleration x d

= $kg\,ms^{-2} \times m$

1 J = 1 kgm^2s^{-2}

Work → dimensional formula → $[ML^2T^{-2}]$

The SI unit of Work is

A. **Joules**

B. ergs

C. volt

D. Ampere

Which of the following is not a unit of time ?

A. Solar Day → 24 hours

B. Leap Year → 366 days

C. Lunar Month → 28/30/31 days

D. Parallactic Second

Which of the following is not a unit of time ?

A. Solar Day

B. Leap Year

C. Lunar Month

D. Parallactic Second

One pico Farad is equal to

A. 10^{-24} Farad

B. 10^{-12} Farad

C. 10^{-18} Farad

D. 10^{-6} Farad

nano → 10^{-9} milli → 10^{-3}

pico → 10^{-12} micro → 10^{-6}

fermi — 10^{-15} m

One pico Farad is equal to

A. 10^{-24} Farad

B. 10^{-12} Farad

C. 10^{-18} Farad

D. 10^{-6} Farad

What is the unit of Force / Energy ?

A. second

B. m^{-1}

C. Kg

D. m^2

$$\frac{\text{Force}}{\text{Work}} = \frac{\text{force}}{\text{force} \times \text{displacement}} = \frac{1}{\text{displacement}}$$

$$= \frac{1}{\text{Length}}$$

As unit of work is the same as of force.

m^{-1}

What is the unit of Force / Energy ?

A. second

B. m^{-1}

C. Kg

D. m^{2}

The Smallest Unit Of Length Is

A. Micrometre 10^{-6}

B. Angstrom 10^{-10}

C. Nanometre 10^{-9}

D. Fermimetre 10^{-15} m

Angstrom = 10^{-10} m

The Smallest Unit Of Length Is

A. Micrometre

B. Angstrom

C. Nanometre

D. Fermimetre

Dimensions Of Kinetic Energy Is The Same As

A. Acceleration

B. Velocity

C. Work

D. Force

Dimensions Of Kinetic Energy Is The Same As

A. Acceleration

B. Velocity

C. Work

D. Force

Unit Of Specific Resistance Is

A. ohm-m^2

B. ohm-m^3

C. ohm / m

D. ohm-m

Specific Resistance / Resistivity, (ρ)

$$\text{Resistance } (R) = \rho \frac{l}{A}$$

$$\rho = \frac{RA}{l}$$

$$\frac{\Omega\,(\text{ohm}) \times m^2}{m} = \text{ohm-m or } \Omega m$$

Unit Of Specific Resistance Is

A. ohm-m^2

B. ohm-m^3

C. ohm / m

D. ohm-m

What Is The Unit Of Luminous Intensity ?

A. mol

B. kg

C. Cd

D. m

→ It is also one of the seven fundamental quantities.

Unit → candela (cd)

What Is The Unit Of Luminous Intensity ?

A. mol

B. kg

C. Cd

D. m

Select the pair having the same dimensions ,

A. Kinetic Energy and Surface Tension

B. Torque and Potential Energy

C. Momentum and Force

D. Pressure and Energy / Time

$\gamma = \frac{F}{l} \rightarrow \frac{kg\,m\,s^{-2}}{m} = kg\,s^{-2}$

(A.) $[ML^2T^{-2}]$ $[ML^0T^{-2}]$ — X

(B.) Torque $= [ML^2T^{-2}]$ $[ML^2T^{-2}]$ — ✓

same

Select the pair having the same dimensions ,

A. Kinetic Energy and Surface Tension

B. Torque and Potential Energy

C. Momentum and Force

D. Pressure and Energy / Time

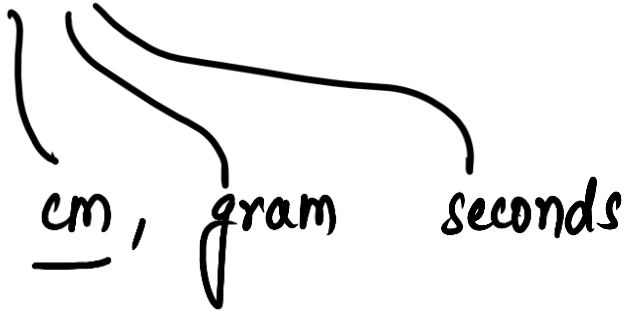
What Is The Unit Of Force In CGS Units ?

A. kg ms^{-2} ✗

B. g ms^{-2} ✗

C. g cms^{-2}

D. None of the Above



Force = mass x acceleration

= kg ms-2

g cm s-2 ⇒ gcms-2 → dyne

What Is The Unit Of Force In CGS Units ?

A. kg ms^{-2}

B. g ms^{-2}

C. g cms^{-2}

D. None of the Above

The density of A cubic material in SI units is 128 kgm^{-3}. In certain units, the edge length is 25 cm and mass is 50 g , then the numerical Value of the density of material in this system of units is

A. 40

B. 640

C. 16

D. 410

$$n_1 u_1 = n_2 (u_2)$$

$$128\ kg\ m^{-3} = n_2 \left(\frac{2}{625}\ g\ cm^{-3}\right)$$

$$\frac{128 \times 625}{2}\ \frac{kg}{g} \times \frac{m^{-3}}{cm^{-3}} = n_2$$

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

$$= \frac{50\ g}{(25\ cm)^3}$$

$$= \frac{2\ 50\ g}{25 \times 25 \times 25\ cm^3}$$

$$= \frac{2}{625}\ g\ cm^{-3}$$

$$\frac{64}{\cancel{128}\times 625}\ \frac{kg}{g}\times\frac{m^{-3}}{cm^{-3}} = n_2$$

$$\frac{64}{}\times\frac{625}{}\times\frac{1000\,\cancel{g}}{\cancel{g}}\times\frac{cm^3}{(1m)^3} = n_2$$

$$n_2 = (4)^3\times(25)^2\times 1000\times\frac{cm^3}{(100\,cm)^3}$$

$$= (4\times25)\times(4\times25)\times4\times1000\times\frac{\cancel{cm^3}}{100\times100\times100\,\cancel{cm^3}}$$

$$= \frac{100 \times 100 \times 4 \times 1000 \times 1}{100 \times 100 \times 100}$$

$$= 4 \times 10$$

$$n_2 = 40$$

The density of A cubic material in SI units is 128 kgm^{-3}. In certain Units, the edge length is 25 cm and mass is 50 g , then the numerical Value of the density of material in this system of units is

A. 40

B. 640

C. 16

D. 410

Electron Volt is the unit of

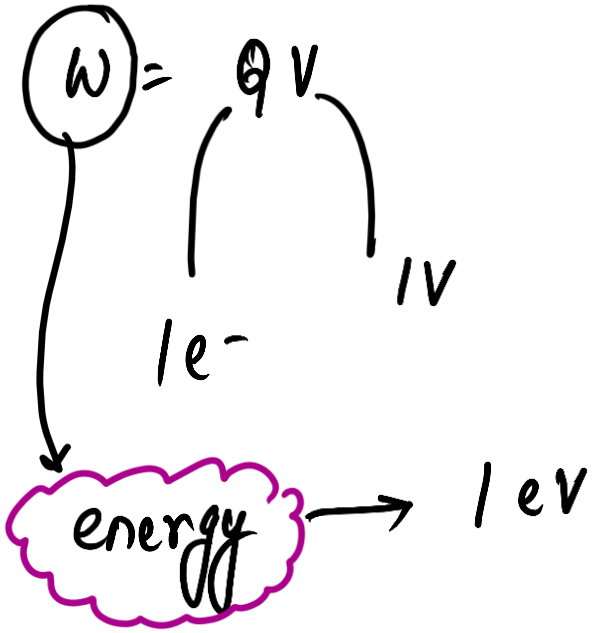
A. Luminosity

B. Force

C. Frequency

D. Energy ✓

$$\text{Voltage (V)} = \frac{\text{Work (W)}}{\text{Charge (q)}}$$



Electron Volt is the unit of

A. Luminosity

B. Force

C. Frequency

D. Energy

If the energy E of a photon is equal to $h\nu$, where ν is the frequency and h is Planck's constant, then the dimensions of Planck's constant is

(a) $[ML^2T^{-3}]$ (b) $[M^0L^2T^{-1}]$

(c) $[ML^2T^{-1}]$ (d) $[ML^2T^{-2}]$

$E = h\nu$

$h = \frac{E}{\nu}$

$[M^1L^2T^{-1}]$

$= \frac{\text{Joules}}{s^{-1}} = \frac{Js}{}$

$= (kg\,m^2s^{-2})\,s$

$= (kg\,m^2s^{-1})$

ν = frequency = $\frac{1}{\text{Time period}} \Rightarrow \frac{1}{s} \Rightarrow s^{-1}$ (Hertz)

If the energy E of a photon is equal to $h\nu$, where ν is the frequency and h is Planck's constant, then the dimensions of Planck's constant is

(a) $[ML^2T^{-3}]$ (b) $[M^0L^2T^{-1}]$

(c) $[ML^2T^{-1}]$ (d) $[ML^2T^{-2}]$

ANSWER : (C)

Photon is quantum of radiation with energy $E = h\nu$ where ν is frequency and h is Planck's constant. The dimensions of h are the same as that of

(a) Linear impulse
(b) Angular impulse ✗
(c) Linear momentum
(d) Angular momentum ✓

$h \rightarrow [ML^2T^{-1}]$

(a) Impulse = force × short time

$(kg\,ms^{-2}) \times (s) = kg\,ms^{-1}$

$[MLT^{-1}]$ ✗

(c) Linear momentum,

mass × velocity

$(kg) \quad (ms^{-1}) = kg\,ms^{-1} = [MLT^{-1}]$ — ✓

Ans. (d)

Which of the following pairs of physical quantities does not have same dimensional formula?

(a) Work and torque. ✓

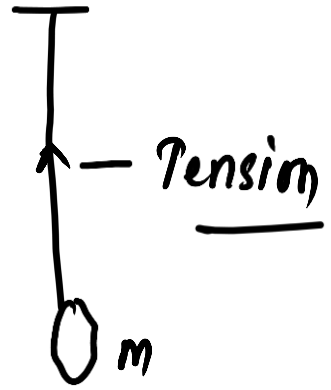
(b) Angular momentum and Planck's constant. ✓

(c) Tension and surface tension. X

(d) Impulse and linear momentum.

Tension = force

surface tension, $\gamma = \left(\frac{\text{force}}{\text{length}}\right)$ X



Which of the following pairs of physical quantities does not have same dimensional formula?

(a) Work and torque.
(b) Angular momentum and Planck's constant.
(c) Tension and surface tension.
(d) Impulse and linear momentum.

ANSWER : (C)

The mean length of an object is 5 cm. Which of the following measurements is most accurate?

(a) 4.9 cm
(b) 4.805 cm
(c) 5.25 cm
(d) 5.4 cm

more near to correct value = more accurate data

(a) ✓

The mean length of an object is 5 cm. Which of the following measurements is most accurate?

(a) 4.9 cm
(b) 4.805 cm
(c) 5.25 cm
(d) 5.4 cm

ANSWER : (A)

Which of the following are *not* a unit of time?

(a) Second ✗
(b) Parsec
(c) Year ✗
(d) Light year

These are units of distances,

Which of the following are *not* a unit of time?

(a) Second
(b) Parsec
(c) Year
(d) Light year

ANSWER : (B) and (D)

NDA-CDS 1 2025

GS

LIVE

PHYSICS

REFLECTION OF LIGHT

MCQS

NAVJYOTI SIR

SSBCrack EXAMS