

Basic

②

$$\begin{aligned}\text{Distance} &= 200 \text{ km} \\ &= 200 \times 10^3 \text{ m} \\ &= 2,00,000 \text{ m}\end{aligned}$$

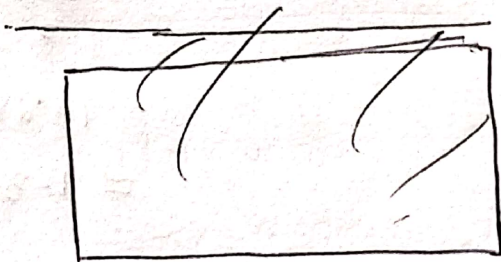
③

$$660 \text{ km} = \frac{?}{?}$$

$$1 \text{ km} = 10^3 \text{ m}$$

$$\Rightarrow 660 \text{ km} = 660 \times 10^3 \text{ m}$$

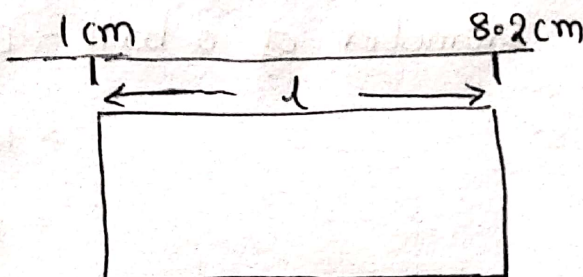
④



$$24x = 4.8$$

$$x = \frac{4.8}{24} = 0.2 \text{ mm}$$

④



According to given data

$$\begin{aligned}\text{length} &= 8.2 - 1 \\ &= 7.2 \text{ cm}\end{aligned}$$

⑥

Given that

$$\text{Thickness of dozen coins} = 40 \text{ cm}$$

$$\text{For 12 coins thickness} = 40 \text{ cm}$$

$$\begin{aligned} \text{For 1 coin thickness} &= \frac{40}{12} \\ &= 3.33 \text{ cm} \end{aligned}$$

⑦

Given that

$$\text{Thickness of 50 turns of wire} = 64 \text{ cm}$$

$$\therefore \text{Thickness of 1 wire} = \frac{64}{50} \text{ cm}$$

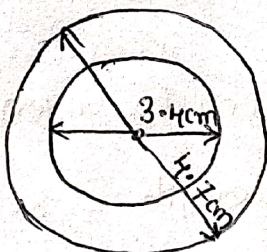
$$= \frac{6.4}{5} \text{ cm}$$

$$= 1.28 \text{ cm}$$

$$\approx 1.3 \text{ cm}$$

⑧

According to given data.



$$\therefore \text{Diameter of a ball} = D_2 - D_1$$

$$= 4.7 - 3.4$$

$$= 1.3 \text{ cm}$$

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Thickness of each coin is $x = 4 \text{ mm}$

$$x = 0.4 \text{ cm}$$

Total thickness of 'n' coins is $= 6.8 \text{ cm}$

$$\therefore nx = 6.8$$

$$\Rightarrow n(0.4) = 6.8$$

$$\Rightarrow n = \frac{6.8}{0.4} = \frac{68}{4}$$

$$\Rightarrow n = 17.$$

10

No. of coins $n = 24$.

Total thickness of 'n' coins $= 4.8 \text{ cm}$.

$$\Rightarrow nx = 4.8 \text{ cm}$$

where 'x' is the thickness of each coin

$$\Rightarrow x = \frac{4.8}{n} \text{ cm}$$

$$= \frac{4.8}{24} \text{ cm}$$

$$= \frac{48 \times 10^{-1}}{24} \text{ cm}$$

$$= 2 \times 10^{-1} \text{ cm}$$

$$= 2 \text{ mm}$$

(17)

length of the school $l = 20 \text{ m}$

Breadth of the school $b = 12 \text{ m}$.

we know that $1 \text{ km} = 10^3 \text{ m}$; $1 \text{ mm} = 10^{-3} \text{ m}$

$$\Rightarrow 1 \text{ m} = 10^{-3} \text{ km} \quad \Rightarrow 1 \text{ m} = 10^3 \text{ mm}$$

$\therefore$ length $l = 20 \text{ m}$

$$= 20 \times 10^{-3} \text{ km}$$

$$= 0.02 \text{ km}$$

breadth $= 12 \text{ m}$

$$= 12 \times 10^3 \text{ mm}$$

$$= 12000 \text{ mm}.$$

(18)

we know that $1 \text{ Par sec} = 3.26 \text{ Ly}$

$$\therefore 100 \text{ Par sec} = 3.26 \times 100 \\ = 326 \text{ Ly}.$$

we know that $1 \text{ AU} = 1.496 \times 10^{11} \text{ m}$

$$= 1.496 \times 10^8 \times 10^3 \text{ m}$$

$$= 1.496 \times 10^8 \text{ km}$$

(19)

Given Velocity $= 5 \text{ m/s}$.

we know that $1 \text{ m/s} = 100 \text{ cm/s}$

$$\therefore \text{velocity} = 5 \times 100 \text{ cm/s} = 500 \text{ cm/s}$$



(20)

we know that $1 \text{ km} = 10^3 \text{ m}$ (or)
 $1 \text{ m} = 10^5 \text{ cm}$.

Given distance = 2.3 km .

$$\Rightarrow 2.3 \times 10^3 \text{ m}$$

$$\Rightarrow 2300 \text{ m} \quad (\text{or})$$

$$= 2.3 \times 10^5 \text{ cm}$$

$$= 23000 \text{ cm}.$$

Task / See main level

(11)

we know that $1 \text{ mm} = 10^{-3} \text{ m}$

$$1 \text{ km} = 10^3 \text{ m} \Rightarrow 1 \text{ m} = 10^{-3} \text{ km}$$

$$1 \text{ mm} = 10^{-3} \times 10^{-3} \text{ km}$$

$$= 10^{-6} \text{ km}$$

(17)

we know that

$$1 \text{ Pico meter} = 10^{-12} \text{ m}$$

$$1 \text{ micro meter} = 10^{-6} \text{ m}.$$

$$\therefore \frac{1 \text{ Pico meter}}{1 \text{ micro meter}} = \frac{10^{-12} \text{ m}}{10^{-6} \text{ m}} = 10^{-12} \times 10^6$$
$$= 10^{-12+6}$$
$$= 10^{-6}$$

(18)

we know that

$$1 \text{ nanometer} = 10^{-9} \text{ m}$$

$$1 \text{ millimeter} = 10^{-3} \text{ m}$$

$$\therefore 1 \text{ nanometer} = 10^{-9} \text{ m}$$

$$= 10^{-6} \times 10^{-3} \text{ m}$$

$$1 \text{ nanometer} = 10^{-6} \text{ mm}$$

Given $1 \text{ nanometer} = 10^x \text{ mm}$

By comparing above two we get $x = -6$

Advanced level

(3)

we know that $1 \text{ m/sec}^2 = 100 \text{ cm/sec}^2$

$$\therefore 20 \text{ m/sec}^2 = 20 \times 100 \text{ cm/sec}^2$$
$$= 2000 \text{ cm/sec}^2$$

and $1 \text{ m/sec}^2 = \frac{1}{(60)^2} \text{ m/min}^2$

$$= 3600 \text{ m/min}^2$$

$$\therefore 20 \text{ m/sec}^2 = 20 \times 3600 \text{ m/min}^2$$

$$= 72000 \text{ m/min}^2$$

(4)

(4)

No. of coins $n_1 = 5$; $n_2 = 7$

Thickness $x_1 = 1 \text{ mm}$; $x_2 = 0.5 \text{ mm}$

$\therefore$ when 7 coins are placed over 5 coins

Then the total thickness $= x_1 + x_2$

$$= 1 + 0.5$$

$$= 1.5 \text{ mm}$$

$$= 0.15 \text{ cm.}$$

(10)

Given length $l = 7 \text{ m}$

breadth $b = 5 \text{ m.}$

We know that $1 \text{ mm} = 10^{-3} \text{ m}$; $1 \text{ m} = 100 \text{ cm}$

$$\Rightarrow 1 \text{ m} = 10^3 \text{ mm}$$

$\therefore$ length $l = 7 \text{ m}$

$$= 7 \times 10^3 \text{ mm}$$

$$= 7000 \text{ mm}$$

breadth $b = 5 \text{ m}$

$$= 5 \times 100 \text{ cm}$$

$$= 500 \text{ cm.}$$