Measurement Of Angles Ex 4.1 Q11

Let AB be the rail road

$$\angle AOB = 25^0 = 25 \times \frac{\pi}{180} = \left(\frac{5\pi}{36}\right)^c \qquad \left[\because 1^0 = \left(\frac{\pi}{180}\right)^c\right]$$

We know that

$$\theta = \frac{\text{arc}}{\text{radius}}$$

$$\Rightarrow \quad \angle AOB = \frac{AB}{OA}$$

$$\Rightarrow \quad \frac{5\pi}{36} = \frac{40}{r}$$

$$\Rightarrow \quad r = \frac{40 \times 36}{5\pi}$$

$$\Rightarrow \quad r = \frac{288}{\pi} \text{ meter} \qquad \left[\because \pi = \frac{22}{7}\right]$$

$$\Rightarrow \quad r = 91.64 \text{ meter}$$

Measurement Of Angles Ex 4.1 Q12

Let, $\angle AOB = \theta = 1'$

$AB = \text{arc } AB = l$

$OA = OB = r = 5280m$

$\because \quad 1^0 = 60'$

$$\Rightarrow \quad 1' = \left(\frac{1}{60}\right)^0 = \left(\frac{1}{60} \times \frac{\pi}{180}\right)^c \qquad \left[\because 1^0 = \left(\frac{\pi}{180}\right)^c\right]$$

Now,

We know that

$$\theta = \frac{\text{arc}}{\text{radius}}$$

$$\Rightarrow \quad \left(\frac{\pi}{180 \times 60}\right)^c = \frac{l}{5280}$$

$$\Rightarrow \quad l = \frac{5280\pi}{180 \times 60} = 1.5365 \text{ m} \qquad \left[\because \pi = \frac{22}{7}\right]$$

Measurement Of Angles Ex 4.1 Q13

Since A wheel makes 360 revoulation in 1 minutes

$\therefore$ Wheel will make $\frac{360}{60}$ revolution in 1 secons

That is, 6 revoultin in1 second

Now,

In one revolutin the wheel makes 360^0 angle

$\therefore$ In 6 revoulution the wheel will make $360^0 \times 6$ angles

$$= 2160^0$$

$$\because \quad 1^0 = \left(\frac{\pi}{180}\right)^c$$

$$\therefore \quad 2160^0 = \left(\frac{2160}{180} \times \pi\right)^c$$

$$= 12\pi$$

Measurement Of Angles Ex 4.1 Q14

(i) We have,

OA = length of pendulum = 75 cm

= 0.75 m

AB = arc AB = 10 cm

= 0.1 m

Also,

$$\theta = \frac{\text{arc}}{\text{radius}} \qquad \text{---(i)}$$

$$\Rightarrow \quad \theta = \frac{0.1}{0.75} = \left(\frac{2}{15}\right)^c$$

$$\theta = \frac{2}{15} \text{ radian}$$

(ii)

OA = 75 cm = 0.75 m

AB = 15 cm = 0.15 m

From (A)

$$\theta = \frac{0.15}{0.75} = \frac{1}{5} \text{ radian}$$

$$\theta = \frac{1}{5} \text{ radian}$$

(iii)

OA = 75 cm = 0.75 m

AB = 21 cm = 0.21 m

From (A)

$$\theta = \frac{0.21}{0.75} = \frac{7}{25}$$

$$\therefore \quad \theta = \frac{7}{25} \text{ radian}$$

Measurement Of Angles Ex 4.1 Q15

We have,

$OA = OB$ = radius of circle = 30 cm = 0.3 m

AB = chord AB = 30 cm = 0.3 m

Arc $AB = \overset{\frown}{AB} = l$ (say)

Now,

ΔAOB is equilateral triangle as $OA = OB = AB$ = 30 cm

$$\therefore \quad \angle AOB = 60^0 = \frac{\pi}{3} \text{ radian.}$$

$$\therefore \quad \theta = \frac{\text{arc}}{\text{radius}}$$

$$\Rightarrow \quad \frac{\pi}{3} = \frac{l}{0.3}$$

$$\Rightarrow \quad l = \frac{0.3}{3}\pi = 0.1\pi \text{ m}$$

$\therefore$ l = arc $AB = 10\pi$ cm.

********** END **********