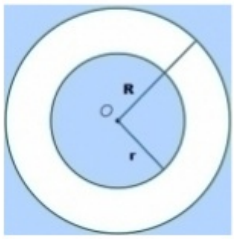
Exercise 20E

Let the inner and outer radii of the track be *r* metres and *R* metres, respectively.



Then, $2\pi r = 528$

$2\pi R = 616$

$\Rightarrow 2 \times \frac{22}{7} \times r = 528$

$2 \times \frac{22}{7} \times R = 616$

$\Rightarrow r = \left(528 \times \frac{7}{44}\right) = 84$

$R = \left(616 \times \frac{7}{44}\right) = 98$

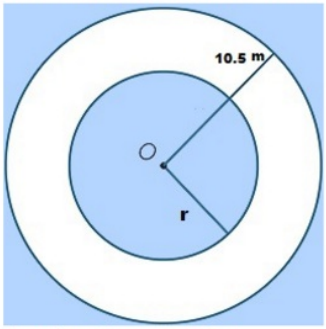
$\Rightarrow (R - r) = (98 - 84)$ m = 14 m

Hence, the width of the track is 14 m.

Q10

Answer :

Let the inner and outer radii of the track be *r* metres and $(r + 10.5)$ metres, respectively.



Inner circumference = 330 m

$\therefore 2\pi r = 330 \Rightarrow 2 \times \frac{22}{7} \times r = 330$

$\Rightarrow r = \left(330 \times \frac{7}{44}\right) = 52.5 \text{ m}$

Inner radius of the track = 52.5 m

$\therefore$ Outer radii of the track = (52.5 + 10.5) m = 63 m

$\therefore$ Circumference of the outer circle = $\left(2 \times \frac{22}{7} \times 63\right) \text{m} = 396 \text{ m}$

Rate of fencing = Rs. 20 per metre

$\therefore$ Total cost of fencing the outer circle = Rs. (396 × 20) = Rs. 7920

Q11

Answer :

We know that the concentric circles are circles that form within each other, around a common centre point.

Radius of the inner circle, *r* = 98 cm

∴ Circumference of the inner circle = $2\pi r$

$= \left(2 \times \frac{22}{7} \times 98\right)$ cm = 616 cm

Radius of the outer circle, R = 1 m 26 cm = 126 cm [since 1 m = 100 cm]

∴ Circumference of the outer circle = $2\pi R$

$= \left(2 \times \frac{22}{7} \times 126\right)$ cm = 792 cm

∴ Difference in the lengths of the circumference of the circles = (792 - 616) cm = 176 cm

Hence, the circumference of the second circle is 176 cm larger than that of the first circle.

Q12

Answer :

Length of the wire = Perimeter of the equilateral triangle

= 3 × Side of the equilateral triangle = (3 × 8.8) cm = 26.4 cm

Let the wire be bent into the form of a circle of radius r cm.

Circumference of the circle = 26.4 cm

$\Rightarrow 2\pi r = 26.4$

$\Rightarrow 2 \times \frac{22}{7} \times r = 26.4$

$\Rightarrow r = \left(\frac{26.4 \times 7}{2 \times 22}\right)$ cm = 4.2 cm

∴ Diameter = $2r$ = (2 × 4.2) cm = 8.4 cm

Hence, the diameter of the ring is 8.4 cm.

Q13

Answer :

Circumference of the circle = Perimeter of the rhombus

= 4 × Side of the rhombus = (4 × 33) cm = 132 cm

∴ Circumference of the circle = 132 cm

$\Rightarrow 2\pi r = 132$

$\Rightarrow 2 \times \frac{22}{7} \times r = 132$

$\Rightarrow r = \left(\frac{132 \times 7}{2 \times 22}\right)$ cm = 21 cm

Hence, the radius of the circle is 21 cm.

Q14

Answer :

Length of the wire = Perimeter of the rectangle

= 2(*l* + *b*) = 2 × (18.7 + 14.3) cm = 66 cm

Let the wire be bent into the form of a circle of radius *r* cm.

Circumference of the circle = 66 cm

$\Rightarrow 2\pi r = 66$

$\Rightarrow \left(2 \times \frac{22}{7} \times r\right) = 66$

$\Rightarrow r = \left(\frac{66 \times 7}{2 \times 22}\right)$ cm = 10.5 cm

Hence, the radius of the circle formed is 10.5 cm.

Q15

Answer :

It is given that the radius of the circle is 35 cm.

Length of the wire = Circumference of the circle

⇒ Circumference of the circle $= 2\pi r = \left(2 \times \frac{22}{7} \times 35\right)$ cm = 220 cm

Let the wire be bent into the form of a square of side *a* cm.

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