



Exercise 20E

Q1

Answer :

Here, $r = 15$ cm

$$\begin{aligned}\therefore \text{Circumference} &= 2\pi r \\ &= (2 \times 3.14 \times 15) \text{ cm} \\ &= 94.2 \text{ cm}\end{aligned}$$

Hence, the circumference of the given circle is 94.2 cm

Q2

Answer :

(i) Here, $r = 28$ cm

$$\begin{aligned}\therefore \text{Circumference} &= 2\pi r \\ &= \left(2 \times \frac{22}{7} \times 28\right) \text{ cm} \\ &= 176 \text{ cm}\end{aligned}$$

Hence, the circumference of the given circle is 176 cm.

(ii) Here, $r = 1.4$ m

$$\begin{aligned}\therefore \text{Circumference} &= 2\pi r \\ &= \left(2 \times \frac{22}{7} \times 1.4\right) \text{ m} \\ &= (2 \times 22 \times 0.2) \text{ m} = 8.8 \text{ m}\end{aligned}$$

Hence, the circumference of the given circle is 8.8 m.

Q3

Answer :

(i) Here, $d = 35$ cm

$$\begin{aligned}
 \text{Circumference} &= 2\pi r \\
 &= (\pi d) \quad [\text{since } 2r = d] \\
 &= \left(\frac{22}{7} \times 35\right) \text{ cm} = (22 \times 5) = 110 \text{ cm}
 \end{aligned}$$

Hence, the circumference of the given circle is 110 cm.

(ii) Here, $d = 4.9$ m

$$\begin{aligned}
 \text{Circumference} &= 2\pi r \\
 &= (\pi d) \quad [\text{since } 2r = d] \\
 &= \left(\frac{22}{7} \times 4.9\right) \text{ m} = (22 \times 0.7) = 15.4 \text{ m}
 \end{aligned}$$

Hence, the circumference of the given circle is 15.4 m.

Q4

Answer :

Circumference of the given circle = 57.2 cm

$\therefore C = 57.2$ cm

Let the radius of the given circle be r cm.

$$C = 2\pi r$$

$$\Rightarrow r = \frac{C}{2\pi} \text{ cm}$$

$$\Rightarrow r = \left(\frac{57.2}{2} \times \frac{7}{22}\right) \text{ cm} = 9.1 \text{ cm}$$

Thus, radius of the given circle is 9.1 cm.

Q5

Answer :

Circumference of the given circle = 63.8 m

$\therefore C = 63.8$ m

Let the radius of the given circle be r cm.

$$C = 2\pi r$$

$$\Rightarrow r = \frac{C}{2\pi}$$

$$\Rightarrow r = \left(\frac{63.8}{2} \times \frac{7}{22} \right) \text{ m} = 10.15 \text{ m}$$

$$\therefore \text{Diameter of the given circle} = 2r = (2 \times 10.15) \text{ m} = 20.3 \text{ m}$$

Q6

Answer :

Let the radius of the given circle be r cm.

Then, its circumference = $2\pi r$

Given:

$$(\text{Circumference}) - (\text{Diameter}) = 30 \text{ cm}$$

$$\therefore (2\pi r - 2r) = 30$$

$$\Rightarrow 2r(\pi - 1) = 30$$

$$\Rightarrow 2r \left(\frac{22}{7} - 1 \right) = 30$$

$$\Rightarrow 2r \times \frac{15}{7} = 30$$

$$\Rightarrow r = \left(30 \times \frac{7}{30} \right) = 7$$

$$\therefore \text{Radius of the given circle} = 7 \text{ cm}$$

Q7

Answer :

Let the radii of the given circles be $5x$ and $3x$, respectively.

Let their circumferences be C_1 and C_2 , respectively.

$$C_1 = 2 \times \pi \times 5x = 10\pi x$$

$$C_2 = 2 \times \pi \times 3x = 6\pi x$$

$$\therefore \frac{C_1}{C_2} = \frac{10\pi x}{6\pi x} = \frac{5}{3}$$

$$\Rightarrow C_1:C_2 = 5:3$$

Hence, the ratio of the circumference of the given circle is 5:3.

Q8

Answer :

Radius of the circular field, $r = 21$ m.

Distance covered by the cyclist = Circumference of the circular field
 $= 2\pi r$

$$= \left(2 \times \frac{22}{7} \times 21 \right) \text{ m} = 132 \text{ m}$$

$$\text{Speed of the cyclist} = 8 \text{ km per hour} = \frac{8000 \text{ m}}{(60 \times 60) \text{ s}} = \left(\frac{8000}{3600} \right) \text{ m/s} = \left(\frac{20}{9} \right) \text{ m/s}$$

$$\begin{aligned} \text{Time taken by the cyclist to cover the field} &= \frac{\text{Distance covered by the cyclist}}{\text{Speed of the cyclist}} \\ &= \left[\frac{132}{\left(\frac{20}{9} \right)} \right] \text{ s} \\ &= \left(\frac{132 \times 9}{20} \right) \text{ s} \\ &= 59.4 \text{ s} \end{aligned}$$

Q9

Answer :

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