



Exercise 20E

Perimeter of the square = 220 cm

$$\Rightarrow 4a = 220$$

$$\Rightarrow a = \left(\frac{220}{4}\right) \text{ cm} = 55 \text{ cm}$$

Hence, each side of the square will be 55 cm.

Q16

Answer :

Length of the hour hand (r) = 4.2 cm.

$$\text{Distance covered by the hour hand in 12 hours} = 2\pi r = \left(2 \times \frac{22}{7} \times 4.2\right) \text{ cm} = 26.4 \text{ cm}$$

$$\therefore \text{Distance covered by the hour hand in 24 hours} = (2 \times 26.4) = 52.8 \text{ cm}$$

Length of the minute hand (R) = 7 cm

$$\text{Distance covered by the minute hand in 1 hour} = 2\pi R = \left(2 \times \frac{22}{7} \times 7\right) \text{ cm} = 44 \text{ cm}$$

$$\therefore \text{Distance covered by the minute hand in 24 hours} = (44 \times 24) \text{ cm} = 1056 \text{ cm}$$

$$\therefore \text{Sum of the distances covered by the tips of both the hands in 1 day} = (52.8 + 1056) \text{ cm} \\ = 1108.8 \text{ cm}$$

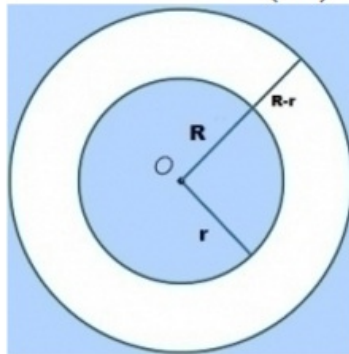
Q17

Answer :

Given:

Diameter of the well (d) = 140 cm.

$$\text{Radius of the well } (r) = \left(\frac{140}{2}\right) \text{ cm} = 70 \text{ cm}$$



Let the radius of the outer circle (including the stone parapet) be R cm.

Length of the outer edge of the parapet = 616 cm

$$\Rightarrow 2\pi R = 616$$

$$\Rightarrow \left(2 \times \frac{22}{7} \times R\right) = 616$$

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

Now, width of the parapet = {Radius of the outer circle (including the stone parapet) - Radius of the well}

$$= \{98 - 70\} \text{ cm} = 28 \text{ cm}$$

Hence, the width of the parapet is 28 cm.

Q18

Answer :

It may be noted that in one rotation, the bus covers a distance equal to the circumference of the wheel.

Now, diameter of the wheel = 98 cm

$$\therefore \text{Circumference of the wheel} = \pi d = \left(\frac{22}{7} \times 98\right) \text{ cm} = 308 \text{ cm}$$

Thus, the bus travels 308 cm in one rotation.

$$\begin{aligned} \therefore \text{Distance covered by the bus in 2000 rotations} &= (308 \times 2000) \text{ cm} \\ &= 616000 \text{ cm} \\ &= 6160 \text{ m} \quad [\text{since } 1 \text{ m} = 100 \text{ cm}] \end{aligned}$$

Q19

Answer :

It may be noted that in one revolution, the cycle covers a distance equal to the circumference of the wheel.

Diameter of the wheel = 70 cm

$$\therefore \text{Circumference of the wheel} = \pi d = \left(\frac{22}{7} \times 70\right) \text{ cm} = 220 \text{ cm}$$

Thus, the cycle covers 220 cm in one revolution.

$$\begin{aligned} \therefore \text{Distance covered by the cycle in 250 revolutions} &= (220 \times 250) \text{ cm} \\ &= 55000 \text{ cm} \\ &= 550 \text{ m} \quad [\text{since } 1 \text{ m} = 100 \text{ cm}] \end{aligned}$$

Hence, the cycle will cover 550 m in 250 revolutions.

Q20

Answer :

Diameter of the wheel = 77 cm

$$\Rightarrow \text{Radius of the wheel} = \left(\frac{77}{2}\right) \text{ cm}$$

$$\begin{aligned} \text{Circumference of the wheel} &= 2\pi r \\ &= \left(2 \times \frac{22}{7} \times \frac{77}{2}\right) \text{ cm} = (22 \times 11) \text{ cm} = 242 \text{ cm} \\ &= \left(\frac{242}{100}\right) \text{ m} = \left(\frac{121}{50}\right) \text{ m} \end{aligned}$$

$$\text{Distance covered by the wheel in 1 revolution} = \left(\frac{121}{50}\right) \text{ m}$$

Now, $\left(\frac{121}{50}\right) \text{ m}$ is covered by the car in 1 revolution.

$(121 \times 1000) \text{ m}$ will be covered by the car in $\left(1 \times \frac{50}{121} \times 121 \times 1000\right)$ revolutions, i.e. 50000 revolutions.

\therefore Required number of revolutions = 50000

Q21

Answer :

It may be noted that in one revolution, the bicycle covers a distance equal to the circumference of the wheel.

Total distance covered by the bicycle in 5000 revolutions = 11 km

$$\Rightarrow 5000 \times \text{Circumference of the wheel} = 11000 \text{ m} \quad [\text{since } 1 \text{ km} = 1000 \text{ m}]$$

$$\text{Circumference of the wheel} = \left(\frac{11000}{5000}\right) \text{ m} = 2.2 \text{ m} = 220 \text{ cm} \quad [\text{since } 1 \text{ m} = 100 \text{ cm}]$$

Circumference of the wheel = $\pi \times$ Diameter of the wheel

$$\Rightarrow 220 \text{ cm} = \frac{22}{7} \times \text{Diameter of the wheel}$$

$$\Rightarrow \text{Diameter of the wheel} = \left(\frac{220 \times 7}{22}\right) \text{ cm} = 70 \text{ cm}$$

Hence, the circumference of the wheel is 220 cm and its diameter is 70 cm.

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