



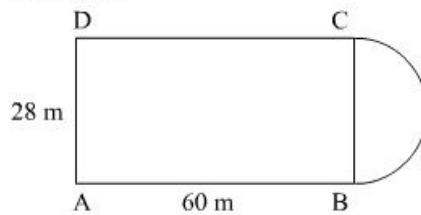
Areas Related to Circles Ex 15.4 Q1

Answer :

It is given that a plot is in form of rectangle ABCD having a semicircle on BC.

$$AB = 60 \text{ m}$$

$$BC = 28 \text{ m}$$



Since BC is the diameter of semicircle. Then, radius of semicircle is

$$r = \frac{28}{2} \text{ m}$$
$$= 14 \text{ m}$$

$$\begin{aligned} \text{Area of semicircle} &= \frac{1}{2} \times \pi r^2 \\ &= \frac{1}{2} \times \frac{22}{7} \times 14 \times 14 \\ &= 308 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of rectangle ABCD} &= l \times b \\ &= 60 \times 28 \\ &= 1680 \text{ cm}^2 \end{aligned}$$

Now,

$$\begin{aligned} \text{Area of plot} &= \text{Area of rectangle} + \text{Area of semicircle} \\ &= 1680 + 308 \text{ cm}^2 \\ &= \boxed{1988 \text{ cm}^2} \end{aligned}$$

Areas Related to Circles Ex 15.4 Q2

Answer :

It is given that a play ground has a shape of rectangle, with two semicircles on its smaller sides as diameter, added to its outside. So,

Area of play ground = Area of rectangle + 2 × Area of semicircle

We have, sides of rectangle $l = 36$ cm and $b = 24.5$ cm .

Since, the diameter of semicircle is $2r = b$. Then,

$$r = \frac{24.5}{2}$$

$$= 12.25 \text{ cm}$$

$$\text{Area of semicircle} = \frac{\pi r^2}{2}$$

$$= \frac{1}{2} \times \frac{22}{7} \times 12.25 \times 12.25 \text{ cm}^2$$

$$= 235.81 \text{ cm}^2$$

$$\text{Area of rectangle} = l \times b$$

$$= 36 \times 24.5$$

$$= 882 \text{ cm}^2$$

Thus, the area of playground is

$$\text{Area of play ground} = \text{Area of rectangle} + 2 \times \text{Area of semicircle}$$

$$= 882 + 2 \times 235.81$$

$$= 882 + 471.62$$

$$= \boxed{1353.62 \text{ cm}^2}$$

Areas Related to Circles Ex 15.4 Q3

Answer :

It is given that the outer circumference C of circular track is 528 m.

We know that the circumference of circle of radius r is

$$C = 2\pi r$$

Substituting the value of C ,

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

$$528 \times 7 = 44r$$

$$r = \frac{528 \times 7}{44}$$

$$r = 84 \text{ m}$$

Thus, the radius of outer circle is 84 m .

Since circular race track is 14 m wide everywhere. Then

$$\text{radius of inner circle} = \text{radius of outer circle} - 14$$

$$= 84 - 14$$

$$= 70 \text{ m}$$

We know that the area of circle of radius r is $A = \pi r^2$

$$\text{So, Area of outer circle} = \frac{22}{7} \times 84 \times 84$$

$$\text{Area of inner circle} = \frac{22}{7} \times 70 \times 70$$

Now,

$$\text{Area of circular track} = \text{Area of outer circle} - \text{Area of inner circle}$$

$$= \frac{22}{7} \times 84 \times 84 - \frac{22}{7} \times 70 \times 70$$

$$= \frac{22}{7} (84 \times 84 - 70 \times 70)$$

$$= \frac{22}{7} \times 2156$$

$$\boxed{\text{Area of circular track} = 6776 \text{ m}^2}$$

It is given that,

The cost of levelling the track per square meter = Rs 0.50

So, The cost of levelling the track 6776 square meter = Rs 0.50 × 6776

$$= \boxed{\text{Rs } 3388 / -}$$

*****END*****