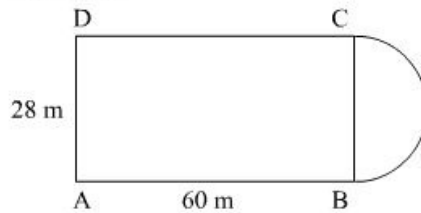Areas Related to Circles Ex 15.4 Q1

Answer :

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

AB = 60 m

BC = 28 m

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

$r = \dfrac{28}{2}$ m

$= 14$ m

$$\text{Area of semicircle} = \dfrac{1}{2} \times \pi r^2$$

$$= \dfrac{1}{2} \times \dfrac{22}{7} \times 14 \times 14$$

$$= 308 \text{ cm}^2$$

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

$$= 60 \times 28$$

$$= 1680 \text{ cm}^2$$

Now,

Area of plot = Area of rectangle + Area of semicircle

$$= 1680 + 308 \text{ cm}^2$$

$$= \boxed{1988 \text{ cm}^2}$$

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,

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

$$= 12.25 \text{ cm}$$

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

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

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

Area of rectangle $= l \times b$

$$= 36 \times 24.5$$

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

Thus, the area of playground is

Area of play ground = Area of rectangle + 2 × 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

radius of inner circle = radius of outer circle - 14

$$= 84 - 14$$

$$= 70 \text{ m}$$

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

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

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

Now,

Area of circular track = Area of outer circle - 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 **********

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