Areas Related to Circles Ex 15.1 Q13

Answer :

We know that the circumference C of a circle of radius r is

$C = 2\pi r$

It is given that cost of fencing around the circular field would be Rs.2640 at the rate of Rs.12 per meter.

So,

$$2\pi r \times 12 = 2650$$

$$24 \times \frac{22}{7} r = 2650$$

$$r = \frac{2650 \times 7}{24 \times 22}$$

$$= 35 \text{ m}$$

We know that the area A of circle of radius r,

$A = \pi r^2$

Substituting the value of r

$$A = \frac{22}{7} \times 35 \times 35$$

$$= 3850 \text{ m}^2$$

Since, cost to plough per m^2 field = Rs. 0.50

Then, cost to plough 3850 m^2 field = Rs. 0.50×3850

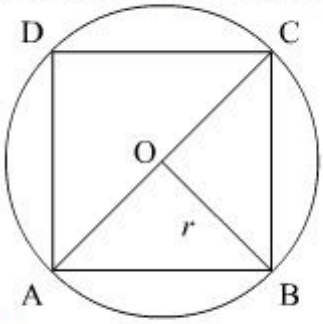
$= \boxed{\text{Rs. } 1925}$

Hence, amount required to plough the field is $\boxed{\text{Rs. } 1925}$.

Areas Related to Circles Ex 15.1 Q14

Answer :

Let ABCD be the square inscribed in a circle of radius r.



Here, OA = OB = r.

$\therefore OA^2 + OB^2 = AB^2$

$\Rightarrow r^2 + r^2 = AB^2$

$\Rightarrow 2r^2 = AB^2$

Now, area of square ABCD $= AB^2 = 2r^2$

Area of circle $= \pi r^2$

Now we will find the ratio of area of the circle and the square.

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

Hence, the ratio of area of the circle and square is $\boxed{\pi : 2}$.

Areas Related to Circles Ex 15.1 Q15

Answer :

Let the radius of circular lawn be r. Then,

Area of circular lawn $= \pi r^2$

It is given that

Area of park excluding lawn = Area of rectangle-Area of circular lawn

$$8700 = 120 \times 100 - \pi r^2$$

$$\pi r^2 = 12000 - 8700$$

$$\frac{22}{7} r^2 = 3300$$

$$r^2 = \frac{3300 \times 7}{22}$$

$$r^2 = 1050$$

$$r = \sqrt{1050}$$

$$r = \boxed{32.40 \text{ m}}$$

Hence, radius of circular lawn is $\boxed{32.40 \text{ m}}$.

Areas Related to Circles Ex 15.1 Q16

Answer :

Let the radius of circles be $r\ cm$, $r_1\ cm$ and $r_2\ cm$ respectively. Then their areas are $A = \pi r^2\ \text{cm}^2$, $A_1 = \pi r_1^2\ \text{cm}^2$ and $A_2 = \pi r_2^2\ \text{cm}^2$ respectively.

It is given that,

Area A of circle = Area A_1 of circle + Area A_2 of circle

$$\pi r^2 = \pi r_1^2 + \pi r_2^2$$

$$\pi r^2 = \pi \left(r_1^2 + r_2^2 \right)$$

$$r^2 = r_1^2 + r_2^2$$

$r^2 = r_1^2 + r_2^2$

We have, $r_1 = 6$ cm and $r_2 = 8$ cm

Substituting the values of r_1, r_2

$$r^2 = 6 \times 6 + 8 \times 8$$

$$r^2 = 36 + 64$$

$$r^2 = 100$$

$$r = \sqrt{100}$$

$$r = \boxed{10 \text{ cm}}$$

Hence, the radius of circle is $\boxed{10 \text{ cm}}$.

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