Areas Related to Circles Ex 15.1 Q17

Answer :

Let the radius of circles be r cm, r_1 cm and r_2 cm respectively. Then their circumferences are $C = 2\pi r$ cm, $C_1 = 2\pi r_1$ cm and $C_2 = 2\pi r_2$ cm respectively.

It is given that,

Circumference C of circle = Circumference C_1 of circle+Circumference C_2 of circle

$$2\pi r = 2\pi r_1 + 2\pi r_2$$
$$2\pi r = 2\pi (r_1 + r_2)$$
$$r = r_1 + r_2$$

We have, $r_1 = 19$ cm and $r_2 = 9$ cm

Substituting the values of r_1, r_2

$$r = 19 + 9$$
$$r = \boxed{28 \text{ cm}}$$

Hence the radius of the circle is $\boxed{28 \text{ cm}}$.

We know that the area A of circle is

$$A = \pi r^2$$

Substituting the value of r

$$A = \frac{22}{7} \times 28 \times 28$$
$$= \boxed{2464 \text{ cm}^2}$$

Hence the area of the circle is $\boxed{2464 \text{ cm}^2}$.

Areas Related to Circles Ex 15.1 Q18

Answer :

Let the radius of wheel be r. Thus, circumference C of the wheel

$$C = 2\pi r$$

Since car travels 1 km distance in which wheel makes 450 complete revolutions. Then

The distance covered by wheel in one revolution $= \dfrac{\text{Distance moved}}{\text{Number of revolution}}$

$$= \frac{1000 \text{ m}}{450}$$
$$= \frac{20}{9} \text{ m}$$

We know that,

The distance covered in one revolution = circumference of the wheel

$$\frac{20}{9} = 2 \times \frac{22}{7} \times r$$
$$r = \frac{20 \times 7}{9 \times 2 \times 22}$$
$$= 0.\overline{35} \text{ m}$$
$$\boxed{= 35.35 \text{ cm}}$$

Hence the radius of wheel is $\boxed{35.35 \text{ cm}}$.

Areas Related to Circles Ex 15.1 Q19

Answer :

Let the radius of outer and inner two circles be r_1 and r_2 respectively.

Area enclosed between concentric circles = $\pi r_1^2 - \pi r_2^2$

$\Rightarrow 770 = \frac{22}{7}\left(21^2 - r_2^2\right)$

$\Rightarrow 245 = 21^2 - r_2^2$

$\Rightarrow r_2^2 = 441 - 245$

$\Rightarrow r_2^2 = 196$

$\Rightarrow r_2^2 = 14^2$

$\Rightarrow r_2 = 14 \text{ cm}$

Hence, the radius of inner circle is 14 cm.