



Surface Area and volume of A Right Circular cylinder Ex 19.2 Q7

Answer :

Given data is as follows:

$$h = 63 \text{ cm}$$

Girth is nothing but the outer circumference of the roller, which is 440 cm.

Thickness of the roller = 4 cm

We have to find the volume of the roller.

We have been given the outer circumference of the roller. Let R be the external radius.

We have,

$$2\pi R = 440$$

$$2 \times \frac{22}{7} \times R = 440$$

$$R = 70$$

Also, thickness of the cylinder is given which is 4 cm. So we can easily find out the inner radius 'r'.

$$r = R - 4$$

$$= 70 - 4$$

$$= 66 \text{ cm}$$

Now, since we know both inner and outer radii, we can easily find out the volume of the hollow cylinder.

$$\text{Volume} = \pi(R^2 - r^2)h$$

$$= \frac{22}{7} \times (70^2 - 66^2) \times 63$$

$$= \frac{22}{7} \times 4 \times 136 \times 63$$

$$\boxed{\text{Volume} = 107712 \text{ cm}^3}$$

Surface Area and volume of A Right Circular cylinder Ex 19.2 Q8

Answer :

Given data is as follows:

$$\text{Total Surface Area} = 231 \text{ cm}^2$$

$$\text{Curved Surface Area} = \frac{2}{3} (\text{Total Surface Area})$$

We have to find the volume of the cylinder.

We have,

$$\text{Total Surface Area} = 231 \text{ cm}^2$$

$$2\pi rh + 2\pi r^2 = 231$$

Where, $2\pi rh$ is nothing but the Curved Surface Area.

$$\text{Curved Surface Area} = \frac{2}{3} (\text{Total Surface Area})$$

$$\text{Curved Surface Area} = \frac{2}{3} \times 231 = 154$$

Let us replace $2\pi rh$ in the above equation with the value of Curved Surface Area we have just obtained.

$$154 + 2\pi r^2 = 231$$

$$2\pi r^2 = 77$$

$$2 \times \frac{22}{7} \times r^2 = 77$$

$$r^2 = \frac{77 \times 7}{2 \times 22} = \frac{7 \times 7}{2 \times 2}$$

$$r = \frac{7}{2}$$

Now, let us find the value of h by using the Curved Surface Area.

Curved Surface Area = 154 cm^2

$$2\pi rh = 154$$

Since we know that $r = \frac{7}{2}$,

$$2 \times \frac{22}{7} \times \frac{7}{2} \times h = 154$$

$$h = 7$$

Now that we know the value of both h and r , we can easily find the volume of the cylinder.

Volume of the cylinder = $\pi r^2 h$

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

Volume of the cylinder = 269.5 cm^3

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