



Surface Area and volume of A Right Circular cone Ex 20.1 Q15

Answer :

It is given that the curved surface area (C.S.A) of the cone is 308 cm^2 and that the slant height is 14 cm. The formula of the curved surface area of a cone with base radius ' r ' and slant height ' l ' is given as

$$\text{Curved Surface Area} = \pi r l$$

$$\text{Hence, base radius, } r = \frac{(C.S.A)}{\pi l}$$

Substituting the values of C.S.A and the slant height and using $\pi = \frac{22}{7}$ in the above equation we get

$$r = \frac{(308)(7)}{(22)(14)}$$

$$r = 7$$

Hence the value of the base radius is **7 cm**

The formula of the total surface area of a cone with base radius ' r ' and slant height ' l ' is given as

$$\text{Total Surface Area} = \pi r(l + r)$$

Substituting the values of $r = 7 \text{ m}$ and $l = 14 \text{ cm}$ in the above equation and using $\pi = \frac{22}{7}$ in specified formula,

$$\text{Total Surface Area} = \frac{(22)(7)(7 + 14)}{7}$$

$$= (22)(21)$$

$$= 462$$

Therefore the total surface area of the given cone is **462 cm²**

Surface Area and volume of A Right Circular cone Ex 20.1 Q16

Answer :

The formula of the curved surface area of a cone with base radius ' r ' and slant height ' l ' is given as

$$\text{Curved Surface Area} = \pi r l$$

The base diameter is given as 14 m. Hence the base radius, $r = 7 \text{ m}$.

Substituting the values of $r = 7 \text{ m}$ and $l = 25 \text{ m}$ in the above equation and using $\pi = \frac{22}{7}$

$$\text{Curved Surface Area} = \frac{(22)(7)(25)}{7}$$

$$= (22)(25)$$

$$= 550$$

The curved surface area of the conical tomb to be white-washed is 550 m^2

The cost of white washing is given as Rs. 210 per 100 m^2

This works out to Rs. 2.10 per m^2

Total cost (T.C) of white washing the conical tomb is

$$\text{T.C.} = (\text{Total area to be white-washed}) (\text{Cost per } \text{m}^2)$$

$$= (550)(2.10)$$

$$= 1155$$

So the total cost of white-washing the given curved surface area is **Rs. 1155**

Surface Area and volume of A Right Circular cone Ex 20.1 Q17

Answer :

It is given that the vertical height ' h ' = 10 m and base radius ' r ' = 24 m.

To find the slant height ' l ' we use the following relation

Slant height,

$$l = \sqrt{r^2 + h^2}$$

$$= \sqrt{24^2 + 10^2}$$

$$= \sqrt{576 + 100}$$

$$= \sqrt{676}$$

$$l = 26 \text{ m}$$

Hence the slant height of the given cone is **26 m**

The amount of canvas required to make a cone would be equal to the curved surface area of the cone.

The formula of the curved surface area of a cone with base radius ' r ' and slant height ' l ' is given as

Curved Surface Area = πrl

Now, substituting the values of $r = 24$ m and slant height $l = 26$ m and using $\pi = \frac{22}{7}$ in the formula of C.S.A.

$$\text{We get Curved Surface Area} = \frac{(22)(24)(26)}{7}$$

$$= \frac{13728}{7}$$

Therefore the Curved Surface Area of the cone is $\frac{13728}{7} \text{ m}^2$

The cost of the canvas is given as Rs. 70 per m^2

The total cost of canvas = (Total curved surface area) (Cost per m^2)

$$= \left(\frac{13728}{7} \right) (70)$$

$$= 137280$$

Hence the total amount required to construct the tent is **Rs. 137280**

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