



### Surface Area and volume of A Right Circular cone Ex 20.2 Q5

**Answer :**

It is given that the ratio between the radius ' $r$ ' and the height ' $h$ ' of the cone is 5: 12.

Since only the ratio is given, to use them in an equation we introduce a constant ' $k$ '.

$$\text{So, } r = 5k$$

$$h = 12k$$

The formula of the volume of a cone with base radius ' $r$ ' and vertical height ' $h$ ' is given as

$$\text{Volume} = \frac{1}{3} \pi r^2 h$$

The volume of the cone is given as  $2512 \text{ cm}^3$

Substituting the values of  $r = 5k$  and  $h = 12k$  and using  $\pi = 3.14$  in the formula for the volume of a cone,

$$\begin{aligned} \text{Volume} &= \frac{1}{3} \pi r^2 h \\ 2512 &= \frac{(3.14)(5k)(5k)(12k)}{3} \end{aligned}$$

$$k^3 = 8$$

$$k = 2$$

Therefore the actual value of the base radius is  $r = 10 \text{ cm}$  and  $h = 24 \text{ cm}$ .

Hence the radius of the cone is **10 cm**

We are given that  $r = 10 \text{ cm}$  and  $h = 24 \text{ cm}$ . We find  $l$  using the relation

$$\begin{aligned} l^2 &= r^2 + h^2 \\ l &= \sqrt{r^2 + h^2} \\ &= \sqrt{10^2 + 24^2} \\ &= \sqrt{100 + 576} \\ &= \sqrt{676} \\ &= 26 \end{aligned}$$

Therefore the slant height of the given cone is **26 cm**

Hence the radius and slant height of the cone are 10 cm and 26 cm respectively

### Surface Area and volume of A Right Circular cone Ex 20.2 Q6

**Answer :**

The formula of the volume of a cone with base radius ' $r$ ' and vertical height ' $h$ ' is given as

$$\text{Volume} = \frac{1}{3} \pi r^2 h$$

Let the volume, base radius and the height of the two cones be  $V_1, r_1, h_1$  and  $V_2, r_2, h_2$  respectively.

It is given that the ratio between the volumes of the two cones is 4: 5.

Since only the ratio is given, to use them in our equation we introduce a constant ' $k$ '.

$$\text{So, } V_1 = 4k$$

$$V_2 = 5k$$

It is also given that the ratio between the base radii of the two cones is 2: 3.

Again, since only the ratio is given, to use them in our equation we introduce another constant ' $p$ '.

$$\text{So, } r_1 = 2p$$

$$r_2 = 3p$$

Substituting these values in the formula for volume of cone we get,

$$\frac{\text{Volume of cone}_1}{\text{Volume of cone}_2} = \frac{(\pi)(2p)(2p)(h_1)(3)}{(3)(\pi)(3p)(3p)(h_2)}$$

$$\frac{V_1}{V_2} = \frac{4h_1}{9h_2}$$

$$\frac{4k}{5k} = \frac{4h_1}{9h_2}$$

$$\frac{h_1}{h_2} = \frac{9}{5}$$

Therefore the ratio between the heights of the two cones is **9 : 5**

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