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'.

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,

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

$$2512 = \frac{(3.14)(5k)(5k)(12k)}{3}$$

$$k^3 = 8$$

$$k = 2$$

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

Hence the radius of the cone is $\boxed{10\ \text{cm}}$

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

$$l^2 = r^2 + h^2$$

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

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

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

$$= \sqrt{676}$$

$$= 26$$

Therefore the slant height of the given cone is $\boxed{26\ \text{cm}}$

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'.

So, $V_1 = 4k$

$V_2 = 5k$

It is also given that the ratio between the base radiuses 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'.

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 $\boxed{9:5}$

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