

## Surface Area and volume of A Right Circular cone Ex 20.2 Q3 Answer:

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

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

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

It is given that the ratio between the heights of the two cones is 1: 3.

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

So, 
$$h_1 = 1k$$

$$h_2 = 3k$$

It is also given that the ratio between the base radiuses of the two cones is 3: 1.

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

So, 
$$r_1 = 3p$$

$$r_2 = 1p$$

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

$$\frac{\text{Volume of cone}_1}{1} = \frac{(\pi)(3p)(3p)(1k)(3)}{1}$$

Volume of cone<sub>2</sub> 
$$-\frac{1}{(3)(\pi)(1p)(1p)(3k)}$$

$$=\frac{3}{1}$$

Hence we see that the ratio between the volumes of the two given cones is [3:1]

## Surface Area and volume of A Right Circular cone Ex 20.2 Q4

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

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

The volume of the cone is given as  $314m^3$ 

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

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

$$314 = \frac{(3.14)(5k)(5k)(12k)}{3}$$

$$k^3 = 1$$

$$k = 1$$

Therefore the actual value of the base radius is r = 5 m and h = 12 m.

Hence the radius of the cone is 5 m

We are given that r = 5 m and h = 12 m. We find l using the relation

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

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

$$=\sqrt{5^2+12^2}$$

$$=\sqrt{25+144}$$

$$=\sqrt{169}$$

$$= 13.$$

Therefore, the slant height of the given cone is 13 m

Hence the radius of cone and slant height is 5 m and 13 m respectively