



Surface Area and volume of A Right Circular cone Ex 20.2 Q1

Answer :

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

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

(i) Substituting the values of $r = 6$ cm and $h = 7$ cm in the above equation and using $\pi = \frac{22}{7}$

$$\text{Volume} = \frac{(22)(6)(6)(7)}{(3)(7)}$$

$$= (22) (2) (6)$$

$$= 264$$

Hence the volume of the given cone with the specified dimensions is $\boxed{264 \text{ cm}^3}$

(ii) Substituting the values of $r = 3.5$ cm and $h = 12$ cm in the above equation and using $\pi = \frac{22}{7}$

$$\text{Volume} = \frac{(22)(3.5)(3.5)(12)}{(3)(7)}$$

$$= (22) (0.5) (3.5) (4)$$

$$= 154$$

Hence the volume of the given cone with the specified dimensions is $\boxed{154 \text{ cm}^3}$

(iii) In a cone, the vertical height ' h ' is given as 21 cm and the slant height ' l ' is given as 28 cm.

To find the base radius ' r ' we use the relation between r , l and h .

We know that in a cone

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

$$r^2 = l^2 - h^2$$

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

$$= \sqrt{28^2 - 21^2}$$

$$= \sqrt{784 - 441}$$

$$= \sqrt{343}$$

Therefore the base radius is, $r = \sqrt{343}$ cm.

Substituting the values of $r = \sqrt{343}$ cm and $h = 21$ cm in the above equation and using $\pi = \frac{22}{7}$

$$\text{Volume} = \frac{(22)(\sqrt{343})(\sqrt{343})(21)}{(3)(7)}$$

$$= (22) (343)$$

$$= 7546$$

Hence the volume of the given cone with the specified dimensions is $\boxed{7546 \text{ cm}^3}$

Surface Area and volume of A Right Circular cone Ex 20.2 Q2

Answer :

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

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

(i) In a cone, the base radius ' r ' is given as 7 cm and the slant height ' l ' is given as 25 cm.

To find the base vertical height ' h ' we use the relation between r , l and h .

We know that in a cone

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

$$h^2 = l^2 - r^2$$

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

$$= \sqrt{25^2 - 7^2}$$

$$= \sqrt{625 - 49}$$

$$= \sqrt{576}$$

$$= 24$$

Therefore the vertical height is, $h = 24$ cm.

Substituting the values of $r = 7$ cm and $h = 24$ cm in the above equation and using $\pi = \frac{22}{7}$

$$\text{Volume} = \frac{(22)(7)(7)(24)}{(3)(7)}$$

$$= (22)(7)(8)$$

$$= 1232$$

Hence the volume of the given cone with the specified dimensions is 1232 cm³

(ii) In a cone, the vertical height ' h ' is given as 12 cm and the slant height ' l ' is given as 13 cm.

To find the base radius ' r ' we use the relation between r , l and h .

We know that in a cone

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

$$r^2 = l^2 - h^2$$

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

$$= \sqrt{13^2 - 12^2}$$

$$= \sqrt{169 - 144}$$

$$= \sqrt{25}$$

$$= 5$$

Therefore the base radius is, $r = 5$ cm.

Substituting the values of $r = 5$ cm and $h = 12$ cm in the above equation and using $\pi = \frac{22}{7}$

$$\text{Volume} = \frac{(22)(5)(5)(12)}{(3)(7)}$$

$$= 314.28$$

Hence the volume of the given cone with the specified dimensions is 314.28 cm³

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