

SCERT Kerala Class 10 Mathematics/ Solids – Chapter 8

Extra Questions for Practice/ Model Questions

Fill in the blanks:

1. ----- have two equal bases and rectangles on the sides.
2. The sides of the polygon forming the base of a pyramid are called ----- and the other sides of the triangles are called -----
3. The top most point of a pyramid is called its -----
4. The volume of a square pyramid is equal to a ----- of the product of the base area and the height.
5. Cylinders are prism-like solids with ----- bases.

Answer the following:

6. What is the surface area of a square pyramid with base edges 2 metres and lateral edges 3 metres?
7. Find the volume of a square pyramid of base edge 10 cm and height 8 cm?
8. A metal cube of edge 15 cm is melted and recast into a square pyramid of base edge 25 cm. What is its height?
9. What is the volume of a square pyramid of base edge 12 cm and slant height 10 cm?
10. All edges of a square pyramid are 18 cm. What is its volume?

ANSWERS:

1. Prisms
2. Base edges, Lateral edges
3. Apex
4. Third
5. Circular
6. Here base area = $4m^2$

$$\text{Slant height} = \sqrt{3^2 - 1^2} = \sqrt{8} = 2\sqrt{2} \text{ metres}$$

The area of each triangular face is $\frac{1}{2} \times 2 \times 2\sqrt{2} = 2\sqrt{2}$ square metres.

So the surface area of the pyramid = $4 + (4 \times 2\sqrt{2}) = 4 + 8\sqrt{2}$ square metres.

7. Volume of a square pyramid = $\frac{1}{3}a^2h$

Given $a = 10$ cm, $h = 8$ cm

$$\text{Volume} = \frac{1}{3} \times 10^2 \times 8 = \frac{800}{3} = 266\frac{2}{3} \text{ cm}^3$$

8. Volume of the cube = 15^3 cm^3

Given volume of cube = volume of pyramid = $\frac{1}{3}a^2h$

$$\text{So } 15^3 = \frac{1}{3} \times 25^2 \times h$$

$$\text{Height } h = \frac{3 \times 15^3}{25^2} = 16.2 \text{ cm}$$

9. Volume of square pyramid = $\frac{1}{3}a^2h$

Given $a = 12$ cm, $l = 10$ cm

$$\text{To find } h, \text{ use the formula } h = \sqrt{l^2 - \left(\frac{a}{2}\right)^2} = \sqrt{10^2 - 6^2} = \sqrt{100 - 36} = \sqrt{64} = 8 \text{ cm}$$

$$\text{Volume} = \frac{1}{3} \times 12^2 \times 8 = 4 \times 12 \times 8 = 384 \text{ cm}^3$$

10. Volume of a square pyramid = $\frac{1}{3}a^2h$

Given $a = 18$ cm

$$l = \sqrt{a^2 - \left(\frac{a}{2}\right)^2} = \sqrt{18^2 - 9^2} = \sqrt{324 - 81} = \sqrt{243} = 9\sqrt{3}$$

$$h = \sqrt{l^2 - \left(\frac{a}{2}\right)^2} = \sqrt{243 - 81} = \sqrt{162} = 9\sqrt{2} \text{ cm}$$

$$\text{Volume} = \frac{1}{3} \times 18^2 \times 9\sqrt{2} = 1371.61 \text{ cm}^3$$
