



# MATHS

## BOOKS - V PUBLICATION

### PRISMS

#### Questionbank

1. The base of a prism is an equilateral triangle of perimeter 15 centimetres and its height is 5 centimetres. Calculate its volume.



[Watch Video Solution](#)

2. A hexagonal hole of each side 2 meters is dug in the school ground to collect rain water. It is 3 meters deep. It now has water one meter deep. How much liters of water is in it?



[Watch Video Solution](#)

3. A hollow prism of base a square of side 16 centimeters contains water 10 centimeters

high. If a solid cube of side 8 centimeters is immersed in it, by how much would the water level rise?



[Watch Video Solution](#)

4. The base of a prism is an equilateral triangle of perimeter 12 centimetres and its height is 5 centimetres. What is its total surface area?



[Watch Video Solution](#)

5. Two identical prisms with triangle as base are joined to form a rectangular prism as shown below: What is its total surface area?



[Watch Video Solution](#)

6. A water trough in the shape of prism has trapezoidal faces. The dimensions of a base are shown in this picture:

'(##VPU\_HSS\_MAT\_IX\_C11\_E02\_003\_Q01##)'

The length of the trough is 80 centimetres. It

is to be painted inside and outside. How much would be the cost at 100 rupees per square metre?



[Watch Video Solution](#)

7. The length of the trough is 80 centimetres. It is to be painted inside and outside. How much would be the cost at 100 rupees per square metre?



[Watch Video Solution](#)

8. The base edge of a regular hexagonal prism is  $6\text{cm}$  and height is  $10\text{cm}$  :

a) Find its base area and lateral surface area.

b) Find its total surface area.

c) Find its volume.



[Watch Video Solution](#)

9. A plastic water tank in a place in the shape of a rectangular prism' with length 6 metre. Breadth  $4\text{m}$  and depth  $3\text{m}$ . There is water at a height of  $1\text{m}$  in this tank.

a) How many liter of water in it?

b) How many litres of water needed. to fill the tank?



[Watch Video Solution](#)

**10.** The length, breadth and height of a rectangular prism are respectively 10 cm,  $6\text{cm}$  and  $20\text{cm}$  How many unit cubes (cubes of side  $1\text{cm}$  ) can be cut off from it?



[Watch Video Solution](#)

**11.** A water tank is in the shape of a rectangular prism. It has length  $2m$  breadth  $1m$  and height  $50cm$ . There

a) Find its volume.

b) What is your suggestion to double its volume?



**Watch Video Solution**

**12.** The height of prism, with base perimeter  $20cm$  and base area  $30cm^2$  is  $8cm$ .



a) Find its lateral surface area.

b) Find its total surface area.



[Watch Video Solution](#)

**13.** The diagram shows a prism which is cut and laid flat.'

a) Write the suitable name of the base of the prism.

b) Find the perimeter and area of the base.

c) Find the volume of the prism.



[Watch Video Solution](#)

**14.** A water tank in the shape of a prism has isosceles trapeziums as bases whose dimensions are shown below.

'(##VPU\_HSS\_MAT\_IX\_C11\_E03\_007\_Q01##)'

The length of the tank is 80 centimetres. How many litres of water can it contain?



**Watch Video Solution**

**15.** The volume of a square prism is 3600 cubic centimetres and its base area is 144 square

centimetres. What is its surface area?



[Watch Video Solution](#)

**16.** The base radius of an iron cylinder is 15 centimetres and its height is 32 centimetres. It is melted and recast into a cylinder of base radius 20 centimetres. What is the height of this cylinder?'



[Watch Video Solution](#)

**17.** The base radii of two cylinders of the same height are in the ratio  $3:4$ . What is the ratio of their volumes?



**Watch Video Solution**

**18.** The base radii of two cylinders are in the ratio  $2:3$  and their heights are in the ratio  $5:4$ .

i) What is the ratio of their volumes?

ii) The volume of the first cylinder is 720

centimetres. What is the volume of the second?



[Watch Video Solution](#)

**19.** The inner diameter of a well is 2.5 meter and it is 8 meters deep. What would be the cost of cementing its inside. at 350 rupees per square meter?



[Watch Video Solution](#)

20. The diameter of a road roller is 80 centimetres and it is 1,20 metres long:

What is the area of levelled surface, when it rolls once?



[Watch Video Solution](#)

21. The base area and the curved surface area of a cylinder are equal. What is the ratio of the base radius and height?



[Watch Video Solution](#)

**22.** What is the area of the curved surface of a cylinder of base radius 4 centimetres and height 10 centimetres?



**Watch Video Solution**

**23.** The inner diameter of a well 2.5 metres and it is 8 metres deep. What would be the cost of cementing its inside from the top to a depth  $2\frac{1}{2}$  metres at the rate of 350 rupees per square metre?



[Watch Video Solution](#)

**24.** The tent for an exhibition is as shown below, with a half - cylinder on top of a rectangular prism.

What is the cost of making it, at the rate of 2000 rupees per square meter?



[Watch Video Solution](#)



**25.** The figure of a plaster roll is given below. The radius of its base is  $5\text{cm}$  and height is  $8\text{cm}$ . We have to make a cylindrical tin case in which this plaster roll can be inserted accurately. How many such cylinders can be made from a rectangular tin sheet having a length of  $1.6$  metre and breadth  $32\text{cm}$ ?

'(##VPU\_HSS\_MAT\_IX\_C11\_E06\_004\_Q01##)'



**Watch Video Solution**

**26.** What is the volume of a cylinder of base radius 4 centimetres and height 20 centimetres?



**Watch Video Solution**

**27.** A block of wood in the shape of a square prism has the sides of its base. 10 centimetres long and it is 20 centimetres high. What is the volume of the largest cylinder that can be carved out from it?





[Watch Video Solution](#)

**28.** The base radius of an iron cylinder is 15 centimetres and its height is 32 centimetres. It is melted and recast into a cylinder of base radius 20 centimetres. What is the height of this cylinder?'



[Watch Video Solution](#)

**29.** A solid metal cylinder is of base radius 18 centimetres and height 40 centimetres. By

melting this down, how many cylinders of base radius 2 centimetres. and height 5 centimetres can be made?



[Watch Video Solution](#)

**30.** Two rectangular sheets, each of sides 10 centimetres and 6 centimetres are rolled to form cylinders, one along the longer edge 'and the other along the shorter edge, to make two cylindrical cans. Which.has the larger capacity?



[Watch Video Solution](#)

**31.** A rectangular piece of land is 32 meters long and 24 meters wide. A rectangular pond 4 meters long, 3 meters wide and 1.5 metre deep is dug in it. The dug up earth is spread evenly in the plot itself. By how much does the ground level of the plot rise?



**Watch Video Solution**

**32.** In the newly constructed auditorium in the school, there are 8 cylindrical shaped pillars of

same size. Each pillar has a height of  $4\text{m}$ .

Diameter of the pillar is 1 meter.

i. Find the curved surface area of a pillar.

ii. Find the curved surface area of 8 pillars.

iii. If it cost 160 rupees to paint one square metre, how much will it cost?



[Watch Video Solution](#)

**33.** A cylinder piece of wood has diameter  $8\text{cm}$  and height  $15\text{cm}$ . A square prism of the same height and side of the base  $2\text{cm}$  is scooped

out from it. What is the volume of the remaining piece?



[Watch Video Solution](#)

**34.** A piece of wood in the shape of a square prism has each side of the base  $4\text{cm}$  long and its height is  $50\text{cm}$ . What is the maximum volume of a cylinder that can be carved from it?



[Watch Video Solution](#)

**35.** The volume of a cylindrical vessel is  $6838.92 \text{ cu.cm}$  and its height is  $18\text{cm}$ . Find the area of its curved surface, taking  $\pi = 3.14$ .



[Watch Video Solution](#)

**36.** Two cylindrical cans of radii  $15\text{-cm}$ ,  $10\text{-cm}$  and heights  $25\text{-cm}$ ,  $18\text{-cm}$  are filled with oil. Both cans are emptied into another cylindrical can and the oil level reaches  $30\text{-cm}$  in. the new can. What is the radius of the new can?



[Watch Video Solution](#)



**37.** Find the surface area of a cylinder of volume  $448\pi$  cu.cm and height 7cm :



**Watch Video Solution**

**38.** What is the height of a rectangular prism of volume 7 litres, length  $25\text{cm}$  and breadth  $20\text{cm}$  ?



**Watch Video Solution**

**39.** A cylindrical vessel contains oil and when 3 litres of oil is removed from it, the level of oil decreased by  $10\text{ cm}$ . What is the radius of the vessel?



**Watch Video Solution**

**40.** A copper block length  $5\text{ cm}$ , breadth  $4\text{ cm}$  and thickness  $2\text{ cm}$  is melted and made into a cylindrical rod of radius  $2\text{ mm}$ . What is the length of the rod?



 [Watch Video Solution](#)

41. A tin in the shape of a rectangular prism of dimensions  $50\text{-cm}$ ,  $40\text{-cm}$  and  $20\text{-cm}$  is full of sugar, which is to be measured by a cylindrical can of radius  $4\text{-cm}$  and height  $15\text{-cm}$ . How many  $x$  must the measuring be used to measure off the entire quantity of sugar?



[Watch Video Solution](#)

**42.** The ratio of the diameters of two cylinders is  $1:2$  and the ratio of the length is  $3:1$ . What is the ratio of their volumes?



**Watch Video Solution**

**43.** The base of a wooden prism is a regular hexagon. Its base perimeter is  $30\text{cm}$  and height is  $5\text{cm}$ .

a) What is the lateral surface area of the prism?

b) If it is divided into 6 equal equilateral triangular prisms, what will be the lateral surface area of each triangular prism?



[Watch Video Solution](#)

**44.** a) Radius of a cylinder is  $10\text{cm}$  and its height is  $5\text{cm}$ . Find the base area and the curved surface area of the cylinder.

b) The curved surface area of a cylinder is equal to its base area and its height is  $12\text{cm}$ .

What is its radius?



[Watch Video Solution](#)

**45.** Base area of a metallic triangular prism is  $36 \text{ sq.cm}$  and its height is  $18 \text{ cm}$ .

a) What is its volume?

b) If it is melted and recast into a square prism of base edge  $2 \text{ cm}$ , what, will be its height?



[Watch Video Solution](#)

**46.** The radii of two cylinders are in the ratio  $2:3$  and their height are in the ratio  $9:4$ .

a) What is the ratio of their. volume?

b) The radii of two cylinders are in the ratio 1:2. Find the ratio of their heights, if their volumes are same.



[Watch Video Solution](#)

**47.** Height of a wooden square prism is  $20\text{cm}$  and the length of a base edge is  $10\text{cm}$

. a). What is the volume?

b) What is the volume of the largest cylinder

that can be carved out from the above square  
prisms?



[Watch Video Solution](#)

**48.** Height of a prism is  $15\text{cm}$ . Its base is a triangle and the perpendicular sides of the triangle are of lengths  $6\text{cm}$  and  $8\text{cm}$ .

a) What is the volume of the prism?

b) Find the lateral surface area of the prism.



[Watch Video Solution](#)



49. a) A water tank in the shape of a cylinder contains water to a depth of 1 metre. Radius of the cylinder is 2 metre and its height is 11 metres. How many litres of water is there in tank? ( $\pi = 3.14$ , 1 cubic metre = 1000 litres)
- b) How much more litres of water is required to fill the tank completely?



[Watch Video Solution](#)

50. Base perimeter of a square prism is 32 *cm* and its height is 15*cm*. What is its lateral

surface area? `



**Watch Video Solution**

**51.** The diameter and height of a cylinder are equal. If the height is  $18\text{cm}$ ,

a) What is its radius?

b) Find the volume of the cylinder.



**Watch Video Solution**

52. The diameters of two cylinders having the same height are in the ratio 2 : 3.

a) What is the ratio of their radii?

b) What is the ratio of their volumes?

c) If volumes of two cylinders having the same height are in the ratio  $a : b$ , then what is the ratio of their radii?



[Watch Video Solution](#)

**53.** The perimeter of a triangular prism is  $36\text{cm}$ . and lateral surface area is  $720\text{ sq.cm}$ . If the base is an equilateral triangle then,

a) What is the height of the prism?

b) Find the total surface area of the prism.



**Watch Video Solution**

**54.** A solid rectangular prism is melted and recast into a square prism of height  $18\text{cm}$ . If the length, breadth, and height of the

rectangular prism are  $15\text{ cm.}$ ,  $10\text{cm.}$  and  $27\text{cm.}$  respectively, then

a) What is the volume of the square prism?

b) What is the length of one base edge of the square prism?

c) If the rectangular prism is melted and recast in to cubes of height  $1\text{cm}$ , the number of cubes will be...



**Watch Video Solution**

**55.** The base of a prism is a regular hexagon of side  $6\text{cm}$ , its lateral surface area is  $180\sqrt{3}\text{cm}^2$

a) What is its base area?

b) What is its total surface area?

c) Without changing the height it is divided into 6 equal equilateral triangular prisms. What will be the lateral surface area of one such triangular prism?



**Watch Video Solution**

**56.** The base area of a cylinder is 25 square centimetres and its volume is, 100 cubic centimetres. What is the area of its lateral surface?



**Watch Video Solution**

**57.** The base perimeter of a prism is 25 centimeters and its height 20 centimetres. What is the area of its lateral surface? `



**Watch Video Solution**

**58.** The base of a prism is a rectangle of sides 5 centimeters and 12 centimeters and its height is 20 centimeters. It is split vertically along a diagonal of the base into two triangular prism. What is the lateral surface area of these triangular prism.



**Watch Video Solution**

**59.** The base diameter of a metallic cylinder is 18 centimetres and its height 24 centimetres.



It is melted and recast into cylinders of base diameter 12 centimetres and height 6 centimetres. How many such small cylinders are got?



[Watch Video Solution](#)

**60.** Of two cubes of sides 3 centimetres, one is split into two equal triangular prisms and the pieces are joined to the other cube to make a solid as shown in the figure. What is the

surface area of the solid.

'(##VPU\_HSS\_MAT\_IX\_C11\_E07\_018\_Q01##)'



**Watch Video Solution**

**61.** The base perimeter of prism is 30 centimetres and its height is 20 centimetres.

What is the area of its lateral surface?



**Watch Video Solution**

**62.** The perimeter of a triangular prism is  $30\text{cm}$  and lateral surface are  $360\text{ sq.cm}$ . If the base is an equilateral triangle, then

a) What is the height of the prism?

b) Find the total surface area of the prism.



**Watch Video Solution**

**63.** The diameter and height of a cylinder are equal. If its height is  $20\text{cm}$ ,

a) What is its radius?

b) Find the volume of the cylinder.



[Watch Video Solution](#)

**64.** Base area of a metallic triangular prism is  $24 \text{ sq. cm}$  and its height is  $16 \text{ cm}$ .

a) What is its volume?

b) If it is melted and recast into a square prism of base edge  $2 \text{ cm}$ , what will be its height?



[Watch Video Solution](#)

**65.** The diameters of two cylinders having the same height are in the ratio 1 : 2.

a) What is the ratio of their radii?

b) What is the ratio of their volumes?



**Watch Video Solution**