MATHS

BOOKS - V PUBLICATION

SOLIDS

Question Bank

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1. What is the surface area of a square pyramid with base edges 10 centimetres and lateral edges 13 centimetres?

2. What is the surface area of a square pyramid of base edge 2 metres and lateral edges 3 metres?

3. A square of side 5 centimetres and four isosceles triangles, of base 5 centimetres and the height 8 centimetres are to be joined to

make a square pyramid. How many square centimetres of paper is needed?

4. A toy in the shape of a square pyramid of base edge 16 centimetres and slant height 10 centimetres. What is the total cost of painting 500 such toys, at 80 rupees per square metre?

5. The lateral faces of a square pyramid are equilateral triangles and the. length of base edge is 30 centimetres. What is its surface area?

6. The perimeter of the base of square pyramid is 40 centimetres and the total length of all its edges is 92 centimetres: Calculate its surface area.

7. Can we make a square pyramid with the lateral surface area equal to the base area?

8. A tent is to be made in the shape of a square pyramid of base edges

6 metres and height 4 metres. How many square metres of canvas

needed to make it?

9. Using a square and four triangles with dimensions as specified in the figure, a square pyramid is made.

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What is the height of the pyramid?

10. What if the square and triangles are like these?

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11. A square pyramid of base edge 10 centimetres and height 12 centimetres is to be made of paper. What should be the dimensions of the triangles?

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12. Prove that in any square pyramid, the squares of the height,

slant height and lateral edge are in arithmetic sequence.

13. A square pyramid is to be made with the triangle shown here as a lateral face. What would be its height? What if the base edge is 40 centimetres instead of 30 centimetres?

14. Can we make square pyramid using any 4 equal isosceles triangles.

15. The base edge of a square pyramid is 8cm , height 3cm , Calculate slant height and lateral edge.

16. The measurements of the lateral surface of a square pyramid are shown in the figure. Calculate the base edge arid slant height of the pyramid.

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17. Slant height of a square pyramid is '10 cm', height '6 cm'.

Calculate total length of the edges.

18. Is it possible to construct a pyramid of base edge '24 cm' and lateral edge '13 cm' ? Why?

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19. The slant height of a square pyramid is '12 cm',

lateral edge '13 cm'.

Calculate height

20. Lateral surface of ,a square pyramid is shown in the figure. All angles are equal.

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Find the total length of all edges of the square pyramid.

Find the slant height.

What is the ratio between the slant height and height?

21. Each edge of a metal cube is 15 centimetres. It is melted and recast into a square pyramid of base edge 25 centimetres. What would be its height?

22. What is the volume of a square pyramid of base edge 10 centimetres and slant height 15 centimetres?

23. Two square pyramids have the same volume. The base edge of one is half that of the other. How many times the height of the second pyramid is the height of the first?

24. The base edges of two square pyramids are in the ratio '1: 2' and their heights are in the ratio '1: 3 .' The volume of the first pyramid is

180 cubic centimetres. What is the volume of the second?

25. All edges of a square pyramid are 18 centimetres. What is its volume?

26. The slant height of a square pyramid is 25 centimetres and its surface area is 896 square

centimetres.What isits volume?

27. All edges of a square pyramid are of the same length and its height is 12 centimetres. What is its volume?

28. What is the surface area of a square pyramid of base perimeter 64 centimetres and

volume 1280 cubic centimetres?

29. The lateral faces of a square pyramid are equilateral triangles. Lateral edge is '20cm'.

a) Calculate the slant height.

b) Find the surface area.

c) Find the volume.

30. The height of a square pyramid is '12 cm', slant height '15 cm', calculate total surface area and volume.

31. The ratio between the base edges of two square pyramids is '1: 2'. The heights ăre also in the same ratio. If the volume of the first pyramid is 100 cubic centimetres , calculate the volume of the second one.

32. The base perimeter of a square pyramid is '48 cm'. Slant hėight is '10 cm'. Calculate lateral surface area and volume.

33. Meera constructed a square pyramid of base edge. '10 cm' and height. '6 cm'. Manu made a square. pyramid having base edge '5 cm' and height '24 cm'.

Find the volume of the pyramids and compare the measurements.

34. A sector of central anigle '45 degree' is cut out from a circle of radius, 12 centimetres, and it is rolled into a cone. What is the radius of the base of this cone and what is its slant height?

35. How do we make a cone of base radius 5 centimetres and slant height 15 centimetres?

36. What are the radius of the base and slant helght of a cone made by rolling up a sector of central angle $60°$ and of radius 10 centimetres cut out from a circle?

37. What is the central angle of the sector to be used to make a cone of base. radius 10 centimetres and slant height 25 centimétres?

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38. What is the ratio of the base-radius and slant height of a cone made by rolling up a semicircle?

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39. To make a conical hat of base-radius 8 centimetres and slant height 30 centimetres, how much square centimetres of paper do we need?

40. What is the area of the curved surface a cone of base radius 12 centimetres and slant height 25 centimetres?

41. What is the surface area of a cone of base diameter 30 centimetres and height 40 centimetres?

42. A conical firework is of base-diameter 10 centimetres and height 12 centimetres. 10000 such fireworks are to be wrapped in colour paper. The price of the colour paper is 2

rupees per square metre. What is the totäl cost?

43. Prove that for a cone made by rolling up a semicircle, the curved surface area is twice the base area.

44. The radius of a cone is '5 cm', slant height '13 cm'. Calculate its height

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45. The central anglé of a sector is $288°$. If this sector is rolled up to make a cone, Fnd the ratio between the radius and slant height of the cone.

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46. The ratio between the radius and slant height of a cone is '2: 3'.

Find the central angle of the sector to make thẻ cone.

47. The central angle of a circle is divided in the ratio $2:3$ to form two sectors. Two cones are made by rolling up the two sectors.Find out the ratio between the base perimeters of the cones.

48. Find the ratio between the radius and slant height of a cone by rolling up a sector with central angle $120°$. If the curved surface area is '108 pi'.

- Find the radius and slant height of the cone.

49. The base-radius and height of a cylindrical block of wood are 15 centimetres and 40 centimetres. What is the volume of the largest cone that can be carved out of this?

50. The base radius and height of a solid metal cylinder are 12 centimetres and 20 centimeters. By melting it and recasting, how

many cones of baseradius 4 centimetres and height 5 centimetres can be made?

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51. A sector of central angle $216°$ and radius '25 cm' has been rolled up to a make a cone. Find the radius, height and volume of the cone.

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52. The base-radii of two cones are in the ratio '3: 5' and their heights are in the ratio '2: 3 .' What is the ratio of their volumes?

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53. Two cones have the same volume and their base - radiį are in the ratio '4: 5'. What is the ratio of their heights?

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54. A sector of radius '15 cm' and central angle $144°$ is folded in such a way as to make a cone.

What is the slant heighit of the.cone. Calculate volume.

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55. Calculate the surface area and volume of a sphere of radius '3 cm .'

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56. The ratio between the radius and slant height of a cone is '2: 3'.

Find the central angle of the sector to make thẻ cone.

57. A sector of central angle $216°$ and radius '25 cm' has been rolled up to a make a cone.

Find the radius, height and volume of the cone.

58. The radius and height of wax made cylinder are '6 cm' and '12 cm' respectively. A cone of same base radius and height has been made from this cylinder by cutting out.

a) Find the volume of cone.

b) How many candles with '1 cm' radius and '12 cm' height can be made using the remaining wax?

59. What is the surface area of the largest sphere that can be carved out from a cube of side 8 centimetres?

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60. A solid sphere of radius 12 centimetres is cut into two equal halves. What is the surface area of each hemisphere?

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61. A water tank is in the shape of a hemisphere attached to a cylinder. Its radius is '1.5' metres and total height is '2.5' metres. How many litres of water can it hold?

62. The surface: area of a solid sphere is 120 square centimetres. If it is cut into two halves, what would be the surface area of each hemisphere?

63. The volumes of two spheres are in the ratio '27: 64 .' What is the ratio of their radii? And the ratio of their surface areas?

64. The base radius and height of a metal. cylinder are 4 centimetres and 10 centimetres. If it is melted and recast. into spheres of

radius 2 centimetres each, how many spheres

can be made?

65. A metal sphere of radius 12 centimetres is

melted and recast into '27 .' small spheres of

equal size. What is the radius of each small

sphere?

66. From a solid sphere of radius 10 centimetres, a cone of height 16 centimetresis carved out Whatfraction of the volume of the sphere is the volume of the cone?

67. The picture below shows the dimensions of a petrol tank.

'(##VPU_TTT_MAT_X_P02_C08_E11_009_Q01##)'

How mariy litres of petrol can it hold?

68. A solid sphere is cut into two hemispheres. From one,a square pyramid and from the other a cone, each of maximum possible size are carved out. What is the ratio of their volumes?

69. What is the speciality of the lateral faces of a square pyramid of maximum volume that

can be cut out from a solid hemisphere?

70. What is the radius of a sphere having volume and surface area are equal numerically. How many small spheres of radius. '1 cm' can be made by melting that metallic spheres?

71. What is the change in volume and surface area of a sphere if its radius become three times.

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72. Find the ratio of the surface area if the radii of two spheres are in the ratio '2: 3 .'

What is the ratio of their volume?

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73. A solid sphere of radius '7 cm' is melted and recast into a cone of same radius of the sphere.

Calculate the height of the cone.

74. The shape of a tent in the form of a square pyramid fixed on the top of a cube (see fig). The length of the side of the cube is 8 metres, and total height of the tent is 11 metres. How much canvas is needed to make such a tent?

75. The shape of a toy is in the form of a cone.fixed over a hemisphere

The radius of the sphere and cone is '3 cm', and the total height of the toy is '6 cm'. How much cubic centimetres of wood is needed to make this?

76. The shape of the figure of a petrol tank and its measurements is given below.

'(##VPU_TTT_MAT_X_P02_C08_E13_003_Q01##)'

Find the capacity of thẻ tank in litres.

77. The figure shows the unfolded form of a solid made of cardboard. What is the most suitable.name of the solid? When the cardboard, is folded in the form of a solid

what is the slant height of the solid? Find the total surface area of this solid?

'(##VPU_TTT_MAT_X_P02_C08_E13_004_Q01##)'

78. A metallic hemisphere has radius '66 cm'. It is made up of a metal 'X'. To increase its weight, a conical hole is drilled and is completely filled with metal Y.

The conical hole has.a radius of '2 cm' and depth '7/2 cm'.

(a) Find the volume of the conical part.

(b) Calculate the ratio of the volume of metal 'X' to the volume of metal 'Y'.

79. Using glass plates a vessel is made as shown in the figure.

'(##VPU_TTT_MAT_X_P02_C08_E13_006_Q01##)'

Total height of the vessel is 50 'cm' and height of the cubical part is '20 cm'. Find the capacity of the vessel in litres.

80. A metal sphere of diameter 24 centimetres is melted and recast into cones of base radius and height 6 centimetres. How many such cones are made?

81. A solid hemisphere of wax with radius 12 centimetres is melted and made into. a cone

of base radius 6 centimetres, compute the height of the cone.

82. A top is in the shape of a hemisphere of equal radius joined to the base of a cone. The total height of the top is 15 centimetres and the height of the cone is 12 centimetres: Find the volume of the top.

83. A metallic sphere of radius '4 cm' is melted and recast. How many small spheres of radius '1 cm' will get from it?

84. The given figure is the lateral face of a square pyramid 'A B=A C=25' centimetres and 'B D=D C=15' centimetres.

'(##VPU_TTT_MAT_X_P02_C08_E14_001_Q01##)'

a) What is the length of its. base edge?

b) Find the lateral surface area of the pyramid.

85. A cicular sheet of paper is devided into two sectors. Central angle of one of them is 160°. These sectors are bent into cones of maximum volume. If the radius of the small cone is 8 centimetres, what is the radius of the other?

86. Radius of a cylinder is equal to its height. If the radius is taken as 'r', volúme of the cylinder is 'pi r^2 times r=pi r^3' Like this find the volumes of the solids, with the following. measures.

'(##VPU_TTT_MAT_X_P02_C08_E14_003_Q01##)'

a) What is the ratio of the volumes of cone, hemisphere, cylinder and the sphere?

b) A solid metal sphere of radius. 6 centimetres is melted and recast into solid cones of radius 6 centimetres and height 6 centimetres. Find the number of cones.

87. The radius and height of a cone are 12 centimetres, and 6 centimetres respectively.

a) What is its volume?

b) If this cone is, cut parallel to its base, along the midpoint of its height,what is. the radiús of the small cone obtained?

c) What is the volume of the small cone?

d) Find the ratio of the volumes of the small cone and the first cone.

88. If a square is inscribed in a circle of diameter 4 cm, what will be the length of a side of the square?

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89. A solid is made by fixing a hemisphere of same radius on the flat face of a cone. The height of the cone is 12 centimetres, and its slant height is 13 centimetres.

a) What is the radius of the cone?

b) What is the curved surface area of the hemisphere.

c) What is the total surface area of the solid?

90. The perimeter of the base of a square pyramid is '96 cm' and its height is '16' cm.

a) What is the length of the base edge?

b) What is the slant height?

c) Find the lateral surface area.

91. A circular sheet with radius '36 cm is divided into four equal sectors and one of them bent into a cone.

a) What is the slant height of the cone?

b) What is the radius of the cone?

c) What is the curved surfaće area?

92. The picture shows the shape of a boiler. Total height of the boiler is '12 m' and the diameter is 6 metres, height of the cylindrical part is 6 metres.

'(##VPU_TTT_MAT_X_P02_C08_E16_003_Q01##)'

a) What is the height of the cone?

b) How many litres can the boiler hold?

'(1 m^3=1000.' litre.)

93. The radius of two spherical tanks are in the ratio '3: 4'. The volume of the first tank is 540 litres. Find the volume of the second tank.

94. A square pyramid of base edge 10 centimetres and height 12 centimetres is to be made of paper.

a) Calculate the slant height of the pyramid?

b) What is the area of the paper needed to make the square pyramid?

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95. A cone is made from a sector of radius 10 centimetre and central angle '216 degree

a) What is the slant height and radius of the the cone?

b) Find the volume of the cóne.

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96. All edges of a square pyråmid are of såme léngth and height is $6\sqrt{2}$ centimetres

a) Find the length of the base edge

b) What is its volume?

97. A sector with central angle '120 degree is cut and removed. from a circular disc of radius 12 centimetres and a cone is made oút of it.

a) What is the slant height of the cone?

b) Calculate radius of the cone.

98. All the 8 edges of a pyramid are of equal length. If the length of one edge is '10 cm',

a) What is the total length of all edges?

b) What is the total total surface area of the pyramid?

99. The slant height of a square pyramid is 13 'cm' and the length of the base edge is. 10 'cm .'

a) What is the height of the square pyramid?

b) Calculate the length of the lateral edge?

c) Write the squares of height, slant height, lateral edge respectively and establish the. relationship between them.

100. The base perimeter of a cone is '12 pi' centimeter and height be '8 cm'. What is its slant height?