Ravi Maths Tuition

Surface Areas and Volumes

10th Standard

Maths

Multiple Choice Question 35 x 1 = 35

1) If a solid, cone of base radius 'r' and height 'h' is placed over a solid cylinder having same base radius 'r' and height – 'h' as that of the cone, then the curved surface area of the shape is $\pi\left(\sqrt{h^2+r^2}\right)+2\pi rh$

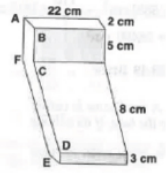
Is it true?

(a) No (b) Yes (c) May be (d) Cannot be determined

2) A cylinder and a cone are of the same base radius and same height. Find the ratio of the volumes of the cylinder of that of the cone.

(a) 1 : 3 (b) 1 : 2 (c) 3 : 1 (d) 2 : 1

3) In the figure, the shape of a solid copper piece (made of two pieces) with dimensions as shown. The face ABCDEFA has uniform cross section. Assume that the angles at A, B, C, D, E and F are right angles. Calculate the volume of the piece.



(a) 840 cm (b) 880 cm^3 (c) 876 cm^3 (d) 890 cm^3

4) A toy is in the form of a cone mounted on a hemisphere of common base radius 7 cm. The total height of the toy is 31 cm. Find the total surface area of the toy.

(a) 465 (b) 912 (c) 769 (d) 858

5) What is the area of a semi–circle of radius 5 cm?

(a) 78.57 cm (b) 71.42 cm (c) 63.18 cm (d) 79.86 cm

6) If a right angled triangle is revolved about one of the sides containing the right angle it forms a

(a) Right circular cone (b) Right triangle (c) Prism (d) Pyramid

7) If the radius of the base of a right circular cylinder is halved keeping the height same, then the ratio of the volume of the cylinder thus obtained to the volume of original cylinder is

(a) 1:2 (b) 2:1 (c) 4:1 (d) 1:4

8) A right circular cylinder of radius r cm and height h cm (h > 2r) just enclosed a sphere of diameter

(a) r cm (b) h cm (c) 2h cm (d) 2r cm

9) If the curved surface area of a right circular cylinder is 1760 cm2 and its radius is 10 cm, then what is its height?

(a) 7 cm (b) 24 cm (c) 28 cm (d) 14 cm

10) A toy is in the form of a cone mounted on a hemisphere of radius 3.5 cm. If the total height of the toy is 15.5 cm, then its total surface area is

(a) 212.6 cm^2 (b) 216.2 cm^2 (c) 214.5 cm^2 (d) 220.6 cm^2

11) Total surface area of a cylinder is equal to

(a) $\pi r + 2\pi rh$ (b) $2\pi rh$ (c) $\pi r^2 h$ (d) $2\pi r(h + r)$

12) If two identical solid cubes each of volume 64 cm3 are joined end to end, then the total surface area of the resulting cuboid is:

(a) 210 cm^2 (b) 200 cm^2 (c) 160 cm^2 (d) 180 cm^2

13) A golf ball has diameter equal to 4.2 cm. Its surface has 200 dimples each of radius 2 mm. Assuming that the dimples are hemispherical, total surface area which is exposed to the surroundings is

(a) 85.82 cm^2 (b) 100 cm^2 (c) 90 cm^2 (d) 80.58 cm^2

14) If H and h be the heights of two cylinders, then the ratio of curved surface areas of two cylinders with equal radii is

(a) $\sqrt{H} : 2\sqrt{h}$ (b) H : h (c) $H^2 : h^2$ (d) 2H : h

15) A circular tent is cylinder to a height of 4 m and conical above it. If its diameter is 105 m and its slant height is 40 m, then the area of canvas required is

(a) 1760 m^2 (b) 3960 m^2 (c) 7920 m^2 (d) 2640 m^2

16) There are two cones. The curved surface area of one is twice that of the other. The slant height of the latter is twice that of the former. The ratio of their radii is

(a) 4:1 (b) 1:3 (c) 2:5 (d) 2:1

17) A toy is in the form of a cone mounted on a hemisphere of diameter 7 cm. The total height of the toy is 14.5 cm. The total surface area of the toy will be

(a) 304 .5 cm^2 (b) 400 cm^2 (c) 203.94 cm^2 (d) 231 cm^2

18) The area of the base of a cone is 616 sq. cm. If its height is 48 cm then its total surface area is:

(a) 8216 cm^2 (b) 2861 cm^2 (c) 2816 cm^2 (d) 2681 cm^2

19) A cylindrical pencil sharpened at one edge is the combination of

(a) A hemisphere and a cylinder (b) Two cylinders (c) A cone and a cylinder

(d) Frustum of a cone and a cylinder

20) The total surface area of a cylinder is 165 π cm2. If the radius of its base is 5 cm, then its height is

(a) 15.5 cm (b) 11.5 cm (c) 16.4 cm (d) 21.3 cm

21) A circus tent is cylindrical to a height of 4 m and conical above it. If its diameter is 105 m and its slant height is 40 m, the total area of the canvas required is

(a) 7920 m^2 (b) 2640 m^2 (c) 1760 m^2 (d) 3960 m^2

22) The total surface area of an open pipe of length 50 cm, external diameter 20 cm and internal diameter 6 cm will be

(a) 4657.71 cm^2 (b) 4757.71 cm^2 (c) 4677.75 cm^2 (d) 4557.81 cm^2

23) rocket is in the form of a circular cylinder closed at the lower end and a cone of the same radius is attached to the top. The radius of the cylinder is 2.5 m and its height is 21 m. Also, the slant height of the cone is 8 m. The total surface area of the rocket is

(a) 200 m^2 (b) 412.5 m^2 (c) 500 m^2 (d) 313.5 m^2

24) If the radius of base of a cylinder is doubled and the height remains unchanged, its curved surface area becomes

(a) No change (b) Half (c) Double (d) three times

25) If the surface area of a sphere is 144 π cm2, then its radius is

(a) 8 cm (b) 10 cm (c) 12 cm (d) 6 cm

26) A bucket is in the form of a frustum of a cone ad holds 28.490 liters of water. The radii of the top and bottom are 28cm and 21cm respectively. Find the height of the bucket.

(a) 20 cm (b) 15 cm (c) 10 cm (d) None of the above

27) A petrol tank is a cylinder of base diameter 21cm and length 18cm fitted with conical ends each of axis length 9cm. Determine the capacity of the tank

(a) 8316cm^3 (b) 9456 cm^3 (c) 10160 cm^3 (d) None of the above

28) What is $1-\sqrt{3}$?

(a) Non terminating repeating (b) Non terminating non repeating (c) Terminating

(d) None of the above

29) The volume of the largest right circular cone that can be cut out from a cube of edge 4.2 cm is?

(a) 19.4 cm^3 (b) 12 cm^3 (c) 78.6 cm^3 (d) 58.2 cm^3

30) The sum of the first three terms of an AP is 33. If the product of the first and the third term exceeds the second term by 29, the AP is ?

(a) 2 ,21,11 (b) 1,10,19 (c) -1 ,8,17 (d) 2 ,11,20

31) If the volume of a sphere is $\frac{11}{21}$ cm^3 , then the radius of the sphere is

(a) 2 cm (b) 4 cm (c) $\frac{1}{2}$ cm (d) $\frac{1}{4}$ cm

32) From a solid cube of side 14 cm, a sphere of maximum diameter is carved out. The radius of sphere is

(a) 7 cm (b) 14 cm (c) $\frac{7}{2}$ cm (d) $\sqrt{14}$ cm

33) Figure 1 below is a solid cuboid made of unit cubes. Figure 2 is obtained after removing some unit cubes from figure 1.

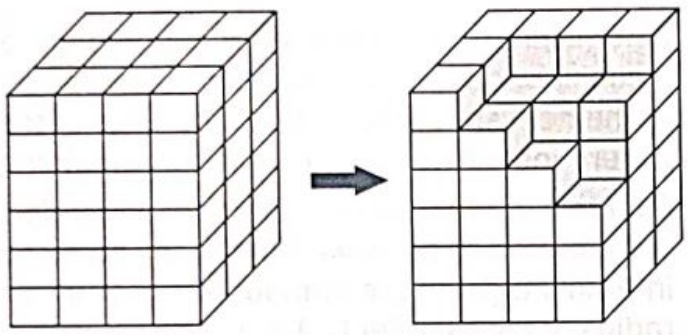


Fig. 1 Fig. 2

(Note The figures are not to scale.)

Based on the figures shown above, the surface area of the cuboid in Figure 1 is _____ the surface area of the solid in Figure 2.

(a) less than (b) more than (c) equal to (d) cannot be concluded with the given information

34) A container with a grey hemispherical lid has radius R cm. In figure 1, it contains water upto a height of R cm. It is, then inverted as shown in figure 2.

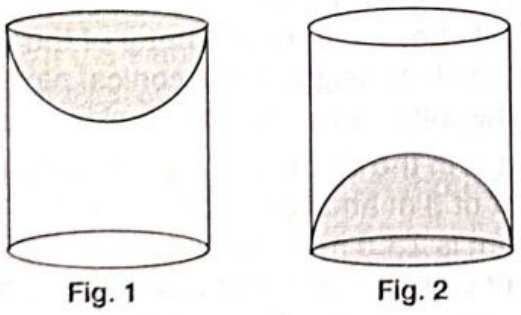


Fig. 1 Fig. 2

What is the height of water in figure 2?

(a) R cm (b) $\frac{5R}{3}$ cm (c) 2 R cm (d) $\frac{7R}{3}$ cm

35) A surahi is the combination of

(a) a sphere and a cylinder (b) a hemisphere and a cylinder (c) two hemispheres

(d) a cylinder and a cone

Fill up / 1 Marks 16 x 1 = 16

36) Total surface area of a cone= .....

37) Frustum is a latin word, meaning .....

38) The slant height of the frustum of cone (l) = ...

39) Toy (Latto) is a solid which is a combination of ..... and .....

40) Volume of a spherical shell = ...

41) If the surface area of a sphere is 6161 cm^2, then its radius is equal to .....

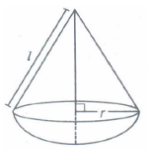
42) If the ratio between the volume of two spheres is 27 : 8, then ratio between their surface areas is .....

43) The shape of a gilli in the gilli danda game is a combination of .....

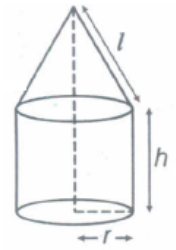
44) Volume of the frustum of a cone is .....

45) A hollow sphere of internal and external radii 2 cm and 4 cm respectively is melted into a cone of base radius 4 cm, the height of the cone is .....

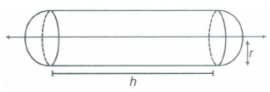
46) Surface area of' given figure $= \pi r(\ldots + \ldots)$



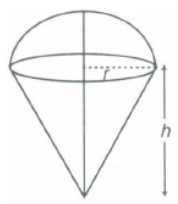
47) Curved surface area at given figure = ... (...+ ...)



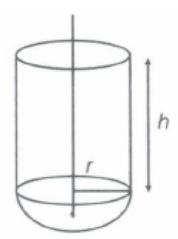
48) Total surface area of given figure = ... (... + ...)



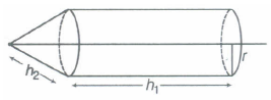
49) Volume of given figure= $\frac{\pi r^2}{3}(\ldots + \ldots)$



50) Volume of given figure= $\pi r^2(\ldots + \ldots)$



51) Volume of given figure= $\pi r^2(\ldots + \ldots)$



True or False 15 x 1 = 15

52) Volume of the frustum of the cone is $\frac{1}{3}\pi\left(R^2 + r^2 + Rr\right) \times h.$

(a) False (b) True

53) Common part of two or more combined solids is excluded, while calculating the volume of the combinations.

(a) False (b) True

54) If we double the radius of a hemisphere, its urface area will also be doubled.

(a) True (b) False

55) A cuboid has eight faces

(a) True (b) False

56) All faces of a cuboid must be rectangular.

(a) True (b) False

57) Two cubes each of edge 10 cm, are joined end to end. The surface area of the resulting cuboid is 900 cm^2.

(a) True (b) False

58) The curved surface area of the frustum of the cone is given by $S = \pi (r_1 + r_2) l$

(a) False (b) True

59) Conical flask is a combination of cylinder and the frustum of a cone.

(a) False (b) True

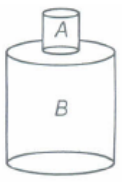
60) Two identical solid cubes of edge 'a' units are joined end to end, the total surface area of the resulting cuboid is $12a^2$ sq. units.

(a) True (b) False

61) A solid cylinder of radius 'r' and height 'h' is placed over other cylinder of same height and radius. The total surface area of the shape so formed is $4\pi rh + 2\pi r^2$

(a) False (b) True

62) Curved surface area of figure = Curved surface area of cylinder A + Total surface area of cylinder B



(a) True (b) False

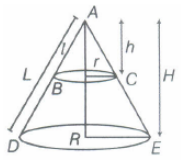
63) When one object is melted and casted into another object, the volume of material of second object is always less than that of first object.

(a) True (b) False

64) Figure shows transparent plastic glass containing some coloured water. This figure shows two frustums.

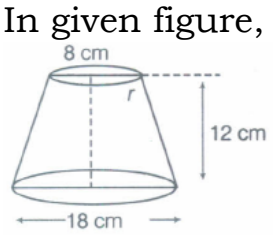
(a) True (b) False

65) In given figure, the plane through Band C (shown shaded) is parallel to the base. Then, $\frac{r}{R} = \frac{l}{L} = \frac{h}{H}$.



(a) True (b) False

66) In given figure, slant height of given frustum is 10cm.



(a) True (b) False

Match the following 9 x 1 = 9

67) Volume of hollow cylinder	(1) $\frac{4}{3}\pi r^3$
68) Total surface area of a hemisphere	(2) 2(lb+bh+hl)
69) Volume of the frustum of a cone	(3) 81 cm
70) Total surface area of the frustum of the cone	(4) $\pi R^2 h - \pi r^2 h$
71) Surface area of a cuboid	(5) $\pi r^2 + \pi R^2 + \pi (R + r) l$
	(6) $64\pi \quad cm^2$

72) The total curved surface area of a hemisphere to be painted inside as well as outside of radius 4 cm is

73) Volume of sphere of radius 'r' is (7) $\frac{1}{3}\pi(R^2 + r^2 + Rr)h$

74) A sphere of radius 9 cm is melted and recast into the shape of right circular cone of radius 6 cm, then height of the cone is (8) 216

75) The number of lead balls of radius 2 cm that can be made from a sphere of radius 12 cm are (9) $3\pi r^2$

Assertion and reason 2 x 1 = 2

76) **Assertion (A)** The surface areaof largest sphere that can be inscribed in a hollow cube of side a cm is π a^2 cm^2.

Reason (R) The surface area of a sphere of radius r is $\frac{4}{3}\pi r^3$

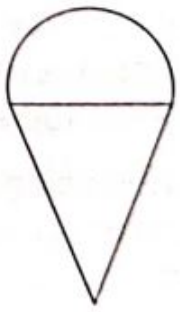
(a) Both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

(b) Both Assertion and Reason are correct but Reason is not the correct explanation of Assertion.

(c) Assertion is correct but Reason is incorrect.

(d) Assertion is incorrect but Reason is correct.

77) **Assertion (A)** Total surface area of the toy is the sum of the curved surface area of the hemisphere and the curved surface area of the cone.



Reason (R) Toy is obtained by fixing the plane surfaces of the hemisphere and cone together.

(a) Both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

(b) Both Assertion and Reason are correct but Reason is not the correct explanation of Assertion.

(c) Assertion is correct but Reason is incorrect.

(d) Assertion is incorrect but Reason is correct.

2 Marks 410 x 2 = 820

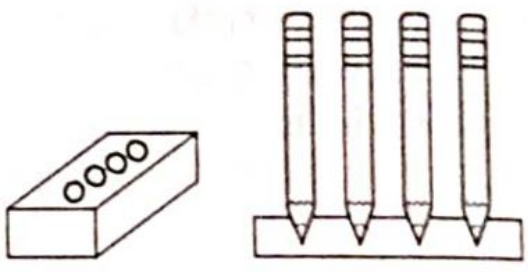
78) 2 cubes each of volume 64 cm^3 are joined end to end. Find the surface area of the resulting cuboid.

79) A vessel is in the form of a hollow hemisphere mounted by a hollow cylinder. The diameter of the hemisphere is 14 cm and the total height of the vessel is 13 cm. Find the inner surface area of the vessel.

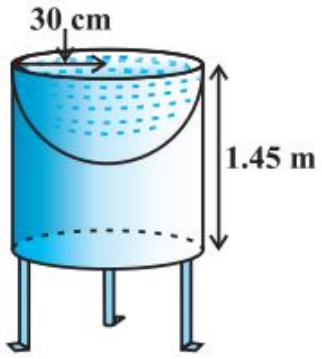
80) A solid is in the shape of a cone standing on a hemisphere with both their radii being equal to 1cm and the height of the cone is equal to its radius.Find the volume of the solid in terms of π

81) Rachel, an engineering student, was asked make a model shaped like a cylinder with two cones attached at its two ends by using a thin aluminium sheet.The diameter of the model is 3cm and its length is 12cm. If each cone has a height of 2 cm, find the volume of air contained in the model that Rachel made. (Assume the outer and inner dimensions of the model to be nearly the same.)

82) A pen stand made of wood is in the shape of a cuboid with four conical depressions to hold pens.The dimensions of the cuboid are 15 cm $\times$ 10 cm $\times$ 3.5 cm. The radius of each of the depressions is 0.5 cm and the depth is 1.4cm. Find the volume of wood in the entire stand (see figure).



83) Mayank made a bird-bath for his garden in the shape of a cylinder with a hemispherical depression at one end (see fig.). The height of the cylinder is 1.45 m and its radius is 30 cm. Find the total surface area of the bird-bath. $[Take \quad \pi = \frac{22}{7}]$



84) A wooden article was made by scooping out a hemisphere from each end of a solid cylinder, as shown in figure.If the height of the cylinder is 10cm, and its base is of radius 3.5cm, find the total surface area of the article.

85) A conical military tent having diameter of the base 24m and slant height of the tent is 13m, find the curved surface area cone. $[\pi = \frac{22}{7}]$

86) Find the radius of a sphere whose surface area is $154cm^2$

87) A joker's cap is in the form of a right circular cone of base radius 7cm and the slant height is 25cm.Find the area of the cap. $[\pi = \frac{22}{7}]$

88) A solid cylinder of radius r and height h is placed over other cylinder of same height and radius.The surface area of the shape so formed is $4\pi rh + 4\pi r^2$

89) Two cube each of side 4cm are joined end to end.Find the surface area of the resulting cuboid.

90) Two cubes each of volume $27cm^3$ are joined end to end to form a solid.Find the surface area of the resulting cuboid.

91) A wallpaper, 312m long and 25cm wide is required to cover the walls of a room.Length of the room is 7m and its breadth is twice its height.Determine the height of the room.

92) If the lateral surface area of a cylinder is $94.2cm^2$ and its height is 5cm, then find radius of its base. $[\pi = 3.14]$

93) How many metres of cloth 1m 10cm wide, will be required to make a conical circus tent whose height is 12m and the radius of whose base is 10m? Also determine the cost of the cloth at Rs.7 per m

94) If a right circular cylinder just encloses a sphere of radius r.Find curved surface area of the cylinder.

95) A solid is in the shape of a cone mounted on a hemisphere of same base radius.If the curved surface areas of the hemispherical part and the conical part are equal, then find the ratio of the radius and the height of the conical part.

96) A solid cube is cut into two cuboids of equal volumes.Find the ratio of the total surface area of the given cube that of one of the cuboids.

97) The base radii of two right circular cylinders of the same height are in the ratio 3 : 5 Find the ratio of their curved surface area.

98) The cost of preparing the walls of a room 12m long at the rate of Rs.1.35 per m^2 is Rs.340.20 and the cost of matting the floor at 85 paise per m^2 is Rs.91.80.Find the height of the room.

99) A cylinder and a cone have equal radii of their bases and equal heights.If their curved surface areas are in the ratio 8: 5, show that the ratio of radius of each to the height of each is 3 : 4.

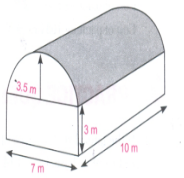
100) The internal and external diameters of a hollow hemispherical vessel are 24cm and 25cm respectively.The cost to paint $1cm^2$ of the surface is Rs.0.05.Find the total cost to painting the vessel all over.

101) The surface areas of a sphere and a cube are equal.Prove that their volumes are in the ratio $1 : \sqrt{\pi/6}$.

102) There are two cones.The curved surface area of one is twice that of the other.The slant height of the latter is twice that of the former.Find ratio their radii.

103) A tent of height 77 dm is in the form of a right circular cylinder of diameter 36m and height 44dm surmounted by a right circular cone.Find the cost of the canvas at Rs.3.50 per m^2

104) A godown building is in form as shown in the figure.The vertical cross section parallel to the width side of the building is a rectangle of dimensions 7m x 3m, mounted by semicircle of radius 3.5m.The inner measurements of the cuboidal portion of the building are 10m x 7m x 3m.Find the interior surface excluding the floor.



105) A hollow cone is cut by a plane parallel to the base and the upper portion is removed.If the curved surface of the remainder is 8/9 of the curved surface of the whole cone, find the ratio of the line segments into which the cone,s altitude is divided by the plane.

106) A toy is in the shape of a right circular cylinder with a hemisphere on one end and a cone on the other.The radius and height of the the cylindrical part are 5cm and 13cm respectively part.The radii of the hemispherical and conical parts are the same as that of the cylinder part.Find the surface area of the toy if the total height of the toy is 30cm.

107) A class room is 7m long, 6.5m wide and 4m high.It has one door 3m x 1.4m and three windows each measuring 2m x 1m.The interior walls are to be colour washed.The contractor charges Rs.5.25per m^2.Find the cost of colour washing.

108) A vessel is in form of an inverted cone.Its height is 8cm and the radius of its top, which is open, is 5cm.It is filled with water up to the brim.When lead shots, each of which is a sphere of radius 0.5cm are dropped into the vessel, one-fourth of the water flows out.Find the number of lead shots dropped in the vessel.

109) A cylinder and a cone are of same base radius and of same height.Find the ratio of the volume of cylinder to that of the cone.

110) Two cylindrical cans have equal bass areas. If one of the can is 15cm high and other is 20cm high, find the ratio of their volumes.

111) A sphere of maximum volume is cut out from a solid hemisphere of radius 7cm.What is the ratio of the volume of the hemisphere to that of the cut out sphere?

112) the base radii of two right circular cones of the same height are in the ratio 3 : 5.Find the ratio of their volumes.

113) The circumference of the base of a 9m high wooden solid cone is 44m.Find the volume of the cone.[Use $\pi = 22/7$]

114) Circumference of the edge of hemispherical bowl is 132cm.Find the capacity of the bowl.[Use π=22/7]

115) The sum of the radius of the base and the height of a solid cylinder is 37cm.If the total surface area of the of the solid cylinder is 1628cm^2, find the volume of the cylinder.[$\pi = 22/7$]

116) The length of a hall 20m and width 16m.The sum of the areas of the floor and the flat roof is equal to the sum of the four walls.Find the height and the volume of the hall.

117) the cost of painting the total outside surface of a closed cylindrical oil tank at 60 paise per sq.dm Rs.237.60.The height of the tank is 6 times the radius of the base of the tank.Find its volume.

118) A conical tent is to accommodate 11 persons.Each person must have 4sq m of space on the ground and 20m^3 of air to breath.Find the height of the cone.

119) A sector of a circle of radius 12cm has the angle 120^0.It is rolled up so that two bounding radii are joined together to form a cone.Find the volume of the cone.

120) A cone of height 24cm and radius of base 6cm is made up of modelling clay, find volume of cone. $[\pi = \frac{22}{7}]$

121) The radii of the bases of a cylinder and a cone are in the ratio 3: 5 and their heights are in the ratio 3 : 4.What is the ratio of their volumes?

122) A cone and a sphere have equal radii and equal volume.What is the radii of the diameter of the sphere to the height of cone?

123) Find the volume of the largest right circular cone that can be cut out of a cube whose edge is 9cm?[Use $\pi = 22/7$]

124) The areas of three adjacent faces of a rectangular block are in the ratio of 2 : 3 : 4 and its volume is 9000cu.cm, find the length of the shortest side.

125) The radii of two cylinders are in the ratio 2 : 3 and their heights are in the ratio 5 : 3.Find the ratio of their volumes.

126) A cone, a hemisphere and a cylinder stand on equal bases and have the same height.Find the ratio of their volumes.

127) A toy is in the form of a hemisphere surmounted by a right circular cone of the same base radius as that of the
hemisphere.If the radius of base of the cone is 21cm and its volume is $\frac{2}{3}$ of the volume of the hemisphere, calculate the height of the cone and the surface area of the toy.[Use $\pi = \frac{22}{7}$]

128) If the radius of the base of a right circular cylinder is halved, keeping the height same, what is the ratio of the volume of the reduced cylinder to that of the original?

129) The volumes of two spheres are in the ratio 64:27.Find their radii if the sum of their radii is 21cm.

130) A cone of height 24cm has a curved surface area of 550cm^2.Find its volume. $[Use\ \pi = \frac{22}{7}]$

131) A heap of wheat is in the form of a cone of diameter 9m and height 3.5m.Find its volume.How much canvas cloth is required to just cover the heap? (Use $\pi = 3.14$)

132) From a solid cylinder whose height is 8cm, a conical cavity of height 8cm and of base radius 6cm, is hollowed out.Find the volume of the remaining solid correct to two places of decimal.Also find the total surface area of the remaining solid.[Take π=3.1416]

133) The difference between the outer and inner curved surface areas of a hollow right circular cylinder, 14cm long, is 88cm^2 .If the volume of metal used in making the cylinder is 176 cm^3, find the outer and inner diameters of the cylinder.[Use $\pi = \frac{22}{7}$]

134) A cylindrical road roller made of iron is 1m long.Its inner diameter is 54cm and the thickness of the iron sheet rolled into the road roller is 9cm.Find the weight of the roller if 1c.c. of iron weight 8g.[Useπ=3.14]

135) The height of a cone is 30cm.A small cone is cut off at the top by a plane parallel to the base.If its volume be 1/27 of the volume of the given cone at what height above the base is the section made?

136) A factory manufactures 1,20,000 pencils daily. The pencils are cylindrical in shape, each of length 25 cm and circumference 1.5 cm. Determine the cost of colouring the curved surfaces of the pencils manufactured in one day at Rs. 0.05 per dm^2 .

137) If the radii of the circular ends of a ends of a conical bucket, which is 45 cm high are 28 cm and 7 cm, find the capacity of the bucket. (Use π = 22/7).

138) Water flows out through a circular pipe whose internal radius is 1 cm, at the rate of 80 cm/second into an empty cylindrical tank, the radius of whose base is 40 cm. By how much will the level of water rise in the tank in half an hour ?

139) A military tent of height 8.25 m is in the form of a right circular cylinder of base diameter 30 m and height 5.5 m surmounted by a right circular cone of same base radius. Find the length of the canvas use in making the tent, if the breadth of the canvas is 1.5 m

140) A solid is hemispherical at the bottom and conical above. If the surface areas of two parts are equal, then find the ratio of the radius and the height of the conical part.

141) A cone is cut into two parts by a horizontal plane passing through the mid point of its axis. Find the ratio of the volumes of the upper part and the cone.

142) Find the volume of the greatest sphere that can be cut from a cylindrical log of wood of base radius 1 cm and height 5 cm.

143) Two tanks are of the same capacity. The dimension of the first tank are 12 cm X 8 cm X 4 cm. The second tank has a square base with depth 6 cm. Find the side of the square.

144) Areas of three adjacent faces of a cuboid are 24 cm^2, 8 cm^2 and 12 cm^2 respectively. Find the volume of the cuboid.

145) A cone of height 10 cm and radius 10 cm is to be divided into two parts by cutting through the mid point of the vertical axis. Find the volume of the upper conical part.

146) The area of the base of a cone is 770 cm^2 and the curved surface area is 814 cm^2 . Find the volume of the cone.

147) The curved surface area of a cylinder is 264m^2 and its volume 92m^3 . Find the ratio of its height to its diameter.

148) If a metallic cube of edge 1 cm is drawn into a wire of diameter 4mm, then find the length of the wire.

149) 2.2 cubic cm of brass is to drawn into a cylindrical wire 0.50 cm in diameter. Find the length of the wire. (Use π =22/7)

150) The radii of the circular bases of a right circular cylinder and a cone are in the ratio of 3:4 and their heights are in the ratio of 2:3. What is the ratio of their volumes?

151) A metallic sphere of radius 4.2cm is melted and recast into the shape of a cylinder of radius 6cm.Find the height of the cylinder.

152) A 20m deep well with diameter 7m is dug and the earth from digging is evenly spread out to form a platform 22m by 14m.Find the height of the platform.

153) A container shaped like a right circular cylinder having diameter 12cm and height 15cm is full of ice cream.The ice cream is to be filled into cones of height 12cm and diameter 6cm having a hemispherical shape on the top.Find the number of such cones which can be filled with ice cream.

154) How many silver coins, 1.75cm in diameter and of thickness 2mm, must be melted to form a cuboid of dimensions 5.5cm x 10cm x 3.5cm?

155) Water in a canal, 6m wide and 1.5m deep, is flowing with a speed of 10km/h.How much area will it irrigate in 30 minutes, if 8cm of standing water is needed?

156) A farmer connects a pipe of internal diameter 20cm from a canal into a cylindrical tank in his field, which is 10m in diameter and 2m deep.If water flows through the pipe at the rate of 3km/h, in how much will the tank be filled?

157) A cone of height 20cm and radius of base 5cm is made up modelling clay.A child reshapes it in the form of a sphere.Find the diameter of the sphere.

158) The dimensions of a metallic cuboid are 100cm x 80cm x 64cm.It is melted and recast into a cube.Find the surface area of the cube.

159) A solid sphere of radius 10.5cm is melted and recast into smaller solid cones, each of radius 3.5cm and height 3cm.Find the number of cones so formed.

160) One iron solid is a cuboid of dimensions 30cm x 30cm x 42.65cm.It is melted and cubes each of side 3cm are moulded from it.Find the number of cubes formed.

161) 50 circular plates, each of radius 7 am and thickness $\frac{1}{2}$ cm, are placed one above another to form a solid right circular cylinder. Find the total surface area and the volume of the cylinder so formed.

162) A granary is in the shape of a cuboid of size 8m x 6m x 3m. If a bag of grain occupies a space of 0.65 m^3. How many bags can be stored in the granary?

163) The diameter of a sphere is 42 cm. It is melted and drawn into a cylindrical wire of 28 cm in diameter. Find the length of the wire.

164) The diameter of internal and external surfaces of a hollow spherical shell are 6 cm and 10 cm respectively. If it is melted and recast into a solid cylinder of height $2\frac{2}{3}$ cm, find the diameter of the cylinder.

165) Marbles of diameter 1.4 cm are dropped into a cylindrical beaker of diameter 7 cm, containing some water. Find the number of marbles that should be dropped into the beaker so that the water level rises by 5.6 cm.

166) a rectangular water reservoir is 10.8 m by 3.75 m at the base. Water flows into it at the rate of 18 m/s through a pipe having the cross section 7.5 cm x 4.5 cm. Find the height to which the water will rise in the reservoir in 30 minutes.

167) What length of a solid cylinder 2 cm in diameter must be taken to recast into a hollow cylinder of length 16 cm, external diameter 20 cm and thickness 2.5 mm?

168) A vessel in the form of a hemispherical bowl is full of water. Its contents are emptied in a right circular cylinder. The internal radii of the bowl and the cylinder are 3.5 cm and 7 am respectively. Find the height to which the water will rise in the cylinder.

169) A cylindrical tub of radius 16 cm contains water to a depth of 30 cm. A spherical iron ball is dropped into the tub and thus level of water is raised by 9 cm. What is the radius of the ball?

170) A conical vessel of radius 6 cm and height 8 cm is completely filled with water. A sphere is lowered into the water and its size is such that when it touches the sides, it is just immersed. What fraction of water overflows?

171) A right circular cone is 4.1 cm high and the radius of its base is 2.1 cm. Another right circular cone is 4.3 cm high and the radius of the base is 2.1 cm. Both the cones are melted and recast into a sphere. Find the diameter of the sphere.

172) A solid cylinder of diameter 12 cm and height 15 cm is melted and recast into 12 toys in the shape of a right circular cone mounted on a hemisphere. Find the radius of the hemisphere and total height of the toy if height of the cone is 3 times the radius.

173) Four right circular cylindrical vessels each having diameter 21 cm and height 38 cm are full of ice cream. The ice cream is to be filled in cones of height 12 cm and diameter 7 am having a hemispherical shape on the top. Find the total number of such cones which can be filled with ice cream.

174) A plot of land in the form of a rectangle has dimensions 240 m x 180 m. A drainlet 10 m wide is dug all around it (on the outside) and the earth dug out is evenly spread over the plot, increasing its surface level by 25 cm. Find the depth of the drainlet.

175) An agricultural field is in the form of a rectangle of length 20 m and width 14 m. A pit 6 m long, 3 m wide and 2.5 m deep is dug in the corner of the field and the earth taken out of the pit is spread uniformly over the remaining area of the field. Find the extent to which the level of the field has been raised.

176) A solid iron rectangular block of dimensions 4.4 m, 2.6 m and 1 m is cast into a hollow cylindrical pipe of internal radius 30 cm and thickness 5 cm. Find the length of the pipe.

177) The barrel of a fountain-pen, cylindrical in shapes is 7 cm long and 5 mm in diameter. A full barrel of ink in the pen is used up on writing 330 words on an average. How many words would use up a bottle of ink containing one fifth of a litre?

178) 500 persons are taking a dip into a cuboidal pond which is 80 m long and 50 m broad. What is the rise of water level in the pond, if the average displacement of the water by a person is 0.04 m^3 ?

179) A rocket is in the form of a right circular cylinder closed at the lower end and surmounted by a cone with the same radius as that of the cylinder. The diameter and height of the cylinder are 6 cm and 12 cm, respectively. If the slant height of the conical portion is 5 cm, find the total surface area and volume of the rocket [Use π = 3.14].

180) A drinking glass is in the shape of a frustum of a cone of height 14 cm. The diameters of its two circular ends are 4 cm and 2 cm. find the capacity of the glass.

181) A fez, the cap used by the Turks, is shaped like the frustum of a cone (see figure). If its radius on the open side is 10 cm, radius at the upper base is 4 cm and its slant height is 15 cm, find the area of material used for making it.

182) A metallic right circular cone 20 cm high and whose vertical angle is 60^o is cut into two parts at the middle of its height by a plane parallel to its base. If the frustum so obtained be drawn into a wire of diameter $\frac{1}{16}$ cm, find the length of the wire.

183) The slant height of the frustum of a cone is 5 cm. If the difference between the radii of its two circular ends is 4 cm, write the height of the frustum.

184) The slant height of a frustum of a cone is 10 cm. If the height of the frustum is 8 cm then find the difference of the radii of its two circular ends.

185) If the areas of circular bases of a frustum of a cone are 4 cm^2 and 9 cm^2 respectively and the height of the frustum is 12 cm, then find the volume of the frustum. [$\pi = \frac{22}{7}$]

186) A container, open at the top, and made of a metal sheet is in the form of a frustum of a cone of height 24 cm with radii of its lower and upper ends as 7 cm and 14 cm respectively. Find the cost of milk which can completely fill the container at the rate of Rs.25 per litre. Also find the area of the metal sheet used to make the container.[Use $\pi = \frac{22}{7}$]

187) A container open at the top, is in the form of a frustum of a cone of height 24 cm with radii of its lower and upper circular ends as 8 cm and 20 cm respectively. Find the cost of milk which can completely fill the container at the rate of Rs.21 per litre. [Use $\pi = \frac{22}{7}$]

188) A metallic bucket, open at the top, of height 24 cm is in the form of the frustum of a cone, the radii of whose lower and upper circular ends are 7 cm and 14 cm respectively. Find:
(i) the volume of water which can completely fill the bucket
(ii) the area of the metal sheet used to make the bucket.[Use $\pi = \frac{22}{7}$]

189) Milk in a container, which is in the form of a frustum of a cone of height 30 cm and the radii of whose lower and upper circular ends are 20 cm and 40 cm respectively, is to be distributed in a camp for flood victims. If this milk is available at the rate of Rs.35 per litre and 880 litres of milk is needed daily for a camp, find how many such containers of milk are needed for a camp and what cost will it put on the donor agency for this? What value is indicated through this by the donor agency?

190) The surface area of a sphere is 616 cm^2 . Find its radius. [Use $\pi = \frac{22}{7}$]

191) In a box whose dimensions are 12cm x 4cm x 3cm, what is the length of the longest stick that can be placed?

192) Two cubes have their volume in the ratio 1 : 64. What is the ratio of their surface areas?

193) Determine the ratio of the volume of a cube to that of a sphere which will exactly fit inside cube.[$\pi = \frac{22}{7}$]

194) Find the radius of right circular cone that can be cut out from a cube of edge 4.2 cm.

195) The radii of the circular ends of a bucket of height 40 cm are 24 cm and 15 cm. Find the slant height of the bucket.

196) Three cubes of iron whose edges are 6 cm, 8 cm and 10 cm respectively are melted and formed into a single cube. Find the edge of the new cube so formed.

197) A rectangular block 6 cm x 12 cm x 15 cm is cut into exact number of equal cubes. Find the least number of such cubes.

198) Given that 1 cu cm of marble weights 25 g. The weight of a marble block 28 cm in width and 5 cm thick is 112 kg. Find the length of the marble block.

199) A cube of side 4 cm is cut into cubes of side 1 cm. Find the total surface area of all the small cubes.

200) A spherical cannon ball, 28 cm in diameter is melted and recast into a right circular conical mould the base of which is 35 cm in diameter. Find the height of the cone, correct to one place of decimal.

201) A hemisphere of lead of radius 8 cm is cast into a right circular cone of base radius 6 cm. Determine the height of the cone, correct to two places of decimals

202) If the total surface area of a solid hemisphere is 462 cm^2, find its volume. [Take $\pi = \frac{22}{7}$]

203) A spherical ball of lead, 3 cm in diameter is melted and recast into three spherical balls. The diameter of two of the balls are 1.5 cm and 2 cm. Find the diameter of third ball.

204) Two metallic right circular cones having their heights 4.1 cm and 4.3 cm and radii of their bases 2.1 cm each, have been melted together and recast into a sphere. Find the diameter of the sphere.

205) A cylindrical container whose diameter is 12 cm and height 15 cm, is filled with ice cream. The whole ice cream is distributed to 10 children in equal cones having hemispherical tops. If the height of the conical portion is twice the diameter of its base, then find the diameter of the ice cream cone.

206) Three cubes each of side 15 cm are joined end to end. Find the total surface area of the resulting cuboid.

207) The radius and slant height of a right circular cone are in the ratio of 7 : 13 and its curved surface area is 286 cm^2 . Find the radius of the cone.[Use $\pi = 22/7$]

208) A solid rectangular piece of iron measures 5 m x 6 m x 2 m. Find the weight of this piece in kg if 1 m^3 of iron weights 50 grams. Also, find the cost of the piece of iron at the rate of Rs. 750/kg.

209) A solid is composed of a cylinder with hemispherical ends. if the whole length of the solid is 108 cm and the diameter of the hemispherical ends is 36 cm, find the cost of polishing its surface at the rate of 70 paise per square cm. $\left[\text{ use } \pi = \frac{22}{7}\right]$

210) Water is flowering at the rate of 5 km/h through a pipe of diameter 14 cm into a rectangular tank, which is 50 m long and 44 m wide. determine the time in which the level of water in the tank will rise by 7 cm.

211) A bucket is in the form of a frustum of a cone whose depth is 15 cm and the diameters of the top and the bottom are 56 cm and 42 cm respectively. How many litres of water can the bucket hold?

212) The height of a cone is 30 m. A small cone is cut off at the top by a plane parallel to the base. If its volume be $\frac{1}{27}$ of the volume of the given cone, at what height above the base is the section made?

213) A solid wooden toy is in thes form of a cone mounted on a hemisphere. If the radii of hemisphere and base of cone are 4.2 cm each and the total height of toy is 10.2 cm, find the volume of wood used in the toy. also, find the total surface area of the toy.

214) A drinking glass is in the shape of a frustum of a cone of height 14 cm. The diameters of its two circular ends are 4 cm and 12 cm. Find the capacity of the glass.

215) Find the edge of the cube having volume 729 cm^3.

216) Total surface area of a cube is 216 cm^2, find its volume.

217) If a marble of a radius 1.4 cm is put into a cylindrical cup full of water of radius 7 cm and height 4 cm, then how much water flows out of the cup ?

218) The radius of the ends of a frustum of a cone 40 cm high are 20 cm and 11 cm. Find its slant height.

219) Find the volume of the largest right circular cone that can be cut from a cube of edge 4.2 cm.

220) If each edge of a cube is increased by 50%, then find the percentage increase in the surface area of the cube.

221) The radius of a wire is decreased to one-third. If volume remains the same, then find the length of the wire.

222) Write the formula for hollow spherical shell having external radius R and internal radius r.

223) How many spherical bullets can be made out of a solid cube of lead whose edge measures 44 cm, each bullet being 4 cm in diameter?

224) A cylinder, a cone and a hemisphere are of the same base and of the same height. Find the ratio of their volumes.

225) Inner dimensions of a closed box are 14 cm, 12 cm and 10 cm. If the thickness of the wood is 1 cm, then find the capacity of the box.

226) A spherical ball of diameter 21 cm is melted and recasted into cubes, each of side 1 cm. Find the number of cubes thus formed.

227) A hollow sphere of external and internal diameters 8 cm and 4 cm respectively, is melted into a cone of base diameter 8 cm. Find the height of the cone.

228) Find the ratio of the volumes of the sphere and cube, if surface areas of the sphere and the cube are equal.

229) Find the ratio of volume of a cone and a cylindeder of equal diameter and equal height.

230) Find the curved surface area of a right circular cone of height 15 cm and base diameter 16 cm.

231) If the radii of circular ends of frustum of a cone are 20 cm and 12 cm and its height is 6 cm, then find the sland height of frustum.

232) If a solid right circular cone of height 24 cm and base radius 6 cm is melted and recast in the shape of a sphere, then find the radius of the sphere.

233) Write the volume of a sphere of radius r.

234) A solid sphere of radius r is melted and recast into the shape of a solid cone of height r, then find the radius of the base of the cone.

235) Find the volume of the largest sphere that can be cut from cylindrical log of wood of base radius 1 m and height 4 m.

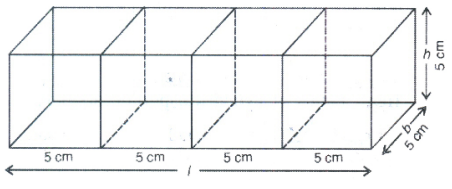
236) Find the total surface area of a solid hemisphere of radius 7 cm.

237) Areas of circular bases of a frustum obtained from a cone are 4 cm^2 and 16 cm^2. If 15 cm is the height of the frustum, then find volume of the frustum.

238) A cone is divided into two parts by drawing a plane through the mid-point of its axis, parallel to its base. Find the ratio of volumes of two parts.

239) If a cone is cut into two parts by a horizontal plane passing through the mid-points of its axis, find the ratio of the volumes of the upper part and the cone.

240) Four cubes of volume 125 cm^3 each are joined end to end, in a row. Find the surface area and volume of the resulting cuboid (see Fig.).

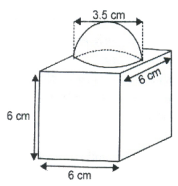


241) Three cubes of metal whose edges are 3 cm, 4 cm and 5 cm are melted and a single cube is formed. Find the edge of the single cube so formed.

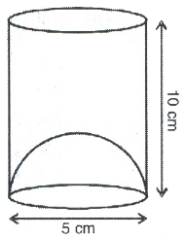
242) A cubical solid block of metal 49 cm X 44 cm X 18 cm is melted and formed into a solid sphere. Calculate the radius of the sphere.

243) Wax cylinder of diameter 21 cm and height 21 cm is chipped off and shaped to form a cone of maximum volume. The chipped off wax is recast into a solid sphere. Find the diameter of the sphere.

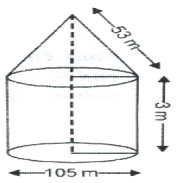
244) The decorative block shown in fig. is made of two solids - a cube and a hemisphere. The base of the block is a cube with edge 6 cm, and the hemisphere fixed on the top has a diameter of 3.5 cm. Find the total surface area of the block. $[Take \quad \pi = \frac{22}{7}]$



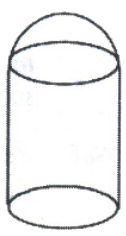
245) A milkman while supplying milk to their customer measures milk with a measuring cane which is cylindrical in shape with hemispherical raised bottom. The diameter of the measuring cylinder is 5 cm and height of the cylinder is 10 cm.
(i) Find the volume of measuring cane.
(ii) Which mathematical concept is used in given problem?



246) A circus tent is cylindrical upto a height of 3 m and conical above it. If the diameter of the base is 105 m and the slant height of the conical part is 53 m, find the total canvas used in making the tent.



247) With reference to the figure given alongside a metal container in the form of a cylinder is surmounted by a hemisphere of the same radius. The internal height of the cylinder is 7 m and internal radius is 3.5 m. Calculate the internal volume of the container in m^3



248) An ice-cream cone consisting of a cone surmounted by a hemisphere. The radius of the hemisphere is 3.5 cm and height of the ice-cream cone is 12. 5 cm. Calculate the volume of the ice-cream in the cone.

249) A solid is in the shape of a right-circular cone surmounted on a hemisphere, the radius of each of them being 3.5 cm and the total height of solid is 9.5 cm. Find the volume of the solid.

250) From a circular cylinder of diameter 10 cm and height 12 cm, a conical cavity of the same base radius and of the same height is hollowed out. Find the volume of the remaining solid. $[Use \quad \pi = 3.14]$

251) A semicircular sheet of paper of diameter 28 cm is bent into an open conical cup. Find the depth and capacity of the cup.

252) A solid cuboidal slab of iron of dimensions 66 cm X 20 cm X 27 cm is used to cast an iron pipe. If the outer diameter of the pipe is 10 cm and thickness is 1 cm, then calculate the length of the pipe.

253) A conical vessel, with base radius 5 cm and height 24 cm, is full of water. This water is emptied into a cylindrical vessel of base radius 10 cm. Find the height to which the water will rise in the cylindrical vessel. $[Use \quad \pi = \frac{22}{7}]$

254) A hemispherical bowl of internal diameter 36 cm contains liquid. This liquid is to be filled into cylindrical shaped bottles of radius 3 cm and height 6 cm. How many bottles are required to empty the bowl?

255) A solid rectangular block of metal 49 cm by 44 cm by 18 cm is melted and formed into a solid sphere. Calculate the radius of the sphere.

256) A solid metallic sphere of diameter 8 m is melted and drawn into a cylindrical wire of uniform width. If the length of the wire is 12 m, find its width.

257) The diameter of a metallic solid sphere is 9 cm. It is melted and drawn into a wire having diameter of cross-section as 0.2 cm. Find the length of the wire.

258) Rainwater, which falls on a flat rectangular surface of length 6 m and breadth 4 m is transferred into a cylindrical vessel internal radius 20 cm. What will be the height of the water in the cylindrical vessel if rainfall of 1 cm has fallen ?

259) How many solid spheres of diameter 6 cm are required to be melted to form a solid metal cylinder of height 45 cm and diameter 4 cm?

260) A sphere of diameter 12 cm, is dropped in a right circular cylindrical vessel, partly filled with water. If the sphere is completely submerged in water, the water level in the cylindrical vessel rises by $3\frac{5}{9}cm$. Find the diameter of the cylindrical vessel.

261) Find the number of spherical bullets of radius 1 mm each that can be made out of a cylindrical solid of radius 4 cm and height 6 cm.

262) A solid iron in the form of a cuboid of dimensions 49 cm x 33 cm x 24 cm is melted to form a solid sphere. Find the radius of sphere.

263) A shuttlecock used for playing badminton combination of two geometric shapes. Name the two geometric shape.

264) Write the volume of the frustum of a cone.

265) A plumbline (sahul) is the combination of two geometric shapes. name the two geometric shapes.

266) Write the geometric shape of a glass (tumbler).

267) A gilli, in the gilli-donda game is a combination of two geometric shapes. Name the two shapes.

268) A cone is cut through a plane parallel to its base and then the cone that is formed on one side of that plane is removed. Name the shape of the new part that is left over on the other side of the plane.

269) A mason constructs a wall of dimensions 270 cm X 300 cm X 350 cm with the bricks each of size 22.5 cm X 11.25 cm X 8.75 cm and it is assumed that $\frac{1}{8}$ space is covered by the mortar. Then find the number of bricks used to construct the wall.

270) Twelve solid spheres of the same size are made by melting a solid metallic cylinder of base diameter 2 cm and height 16 cm. Find the diameter of each sphere.

271) During conversion of a solid from one shape to another, write the volume of new shape.

272) It two solid hemispheres of same base radius r are joined together along their bases, then find the curved surface area of the new solid.

273) A medicine - capsule is in the shape of a cylinder of diameter 0.5 cm with two hemispheres stuck to each of its ends. The length of entire capsule is 2 cm. Find the capacity of the capsule.

274) A right circular cylinder of radius r cm and height h $(h \geq 2r)$ just encloses a sphere. Write the diameter of the sphere.

275) The radii of the top and bottom of a bucket of slant height 45 cm are 28 cm and 7 cm, respectively. Find the curved surface area of the bucket.

276) Three metallic solid cubes whose edges are 3 cm, 4 cm and 5 cm are melted and formed into a single cube. Find the edge of the cube so formed.

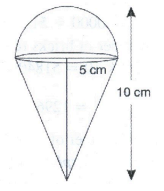
277) A cone of radius 8 cm and height 12 cm is divided into two parts by a plane through the mid-point of its axis parallel to its base. Find the ratio of the volumes of two parts.

278) Find the number of metallic circular disc with 1.5 cm base diameter and of height 0.2 cm to be melted to form a right circular cylinder of height 10 cm and diameter 4.5 cm.

279) A heap of rice is in the form of a cone of diameter 9 m and height 3.5 m. Find the volume of the rice. How much canvas cloth is required to just cover the heap ?

280) Two cones with same base radius 8 cm and height 15 cm are joined together along their bases. Find the surface area of the shape so formed.

281) An ice-cream cone full of ice cream having radius 5 cm and height 10 cm as shown in the figure. Calculate the volume of ice- cream, provided that its $\frac{1}{6}$ part is left unfilled with ice-cream.



282) How many spherical lead shots each of diameter 4.2 cm can be obtained from a solid rectangular lead piece with dimensions 66 cm, 42 cm and 21 cm?

283) A solid metallic hemisphere of radius 8 cm is melted and recasted into a right circular cone of base radius 6 cm. Determine the height of the cone.

284) How many cubic centimetres of iron is required to construct an open box whose external dimensions are 36 cm, 25 cm and 16.5 cm provided the thickness of the iron is 1.5 cm ? If one cubic cm of iron weights 7.5 g, find the weight of the box.

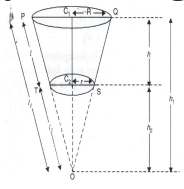
285) Water flows at the rate of 10 m / minute through a cylindrical pipe 5 mm in diameter. How long would it take to fill a conical vessel whose diameter at the base is 40 cm and depth 24 cm ?

286) A hemispherical bowl of internal radius 9 cm is full of liquid. The liquid is to be filled into cylindrical shaped bottles each of radius 1.5 cm and height 4 cm. How many bottles are needed to empty the bowl ?

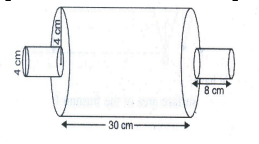
287) A pen stand made of wood is in the shape of a cuboid with four conical depressions and a cubical depression to hold the pens and pins, respectively. The dimensions of the cuboid are 10 cm, 5 cm and 4 cm. The radius of each of the conical depression is 0.5 cm and the depth is 2.1 cm. The edge of the cubical depression is 3 cm. Find the volume of the wood in the entire stand.

288) Derive the formula for the volume of the frustum of a cone, given to you, using the symbols as explained.

289) Derive the formula for the curved surface area and total surface area of the frustum of a cone, given to you, using the symbols as explained.



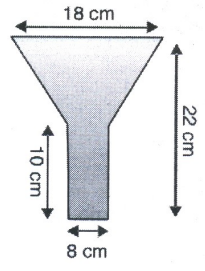
290) A rolling pin is made by joining three cylindrical pieces of wood as shown in the figure. Find the mass of the rolling pin with given measurements, if 1 cm^3 of wood has approximately $\frac{1}{2}$ g mass.
$[Use\ \pi = 3.14]$



291) A right triangle, whose sides are 15 cm and 20 cm, is made to revolve about its hypotenuse. Find the volume and the surface area of the double cone so formed. $[Take \quad \pi = 3.14]$

292) A solid toy is in the form of a hemisphere surmounted by a right circular cone. The height of the cone is 4 cm and diameter of the base is 8 cm. Determine the volume of the toy. If the cube circumscribes the toy, then find the difference of the volumes of the cube and the toy. Also, find the total surface area of the toy.

293) An oil funnel made of tin sheet consists of a 10 cm long cylindrical portion attached to a frustum of a cone. If the total height is 22 cm, diameter of the cylindrical portion is 8 cm and the diameter of the top of the funnel is 18 cm, find the area of the tin sheet required to make the funnel (see fig.)



294) A building is in the form of a cylinder surmounted by a hemispherical dome as shown in the figure. The base diameter of the dome is equal to $\frac{2}{3}$ of the total height of the building. Find the height of the building, if it contains $67\frac{1}{21}m^3$ of air.

295) If the volume of a cube is 216 cm^3 , then find its edge.

296) Volumes of two spheres are in the ratio 125 : 64. Then find the ratio of their surface areas.

297) A rectangular piece of paper is 70 cm long and 20 cm wide. If a cylinder is formed by rolling the paper along its breadth, then find the height of the cylinder so formed.

298) If three metallic spheres of radii 6 cm, 8 cm and 10 cm are melted to form a single sphere, then find the diameter of the sphere.

299) If the surface area of a sphere is same as the curved surface area of a right circular cylinder whose height and diameter are 12 cm each, then find the radius of the sphere.

300) The surface area of a cube is equal to surface area of a sphere, then find the ratio of their volumes.

301) A hemispherical bowl of internal radius 9 cm, is full of liquid. This liquid is to be filled in cylindrical bottles of diameter 3 cm and height 4 cm. Find the number of bottles needed to fill the whole liquid of the bowl.

302) A cubical ice-cream brick of edge 22 cm is to be distributed among some children by filling ice-cream cones of radius 2 cm and height 7 cm upto its brim. How many children will get the ice-cream cones ?

303) Find the maximum volume of a cone that can be carved out a solid hemisphere of radius r.

304) The perimeter of the circular bases of a frustum of a cone are 18 cm and 6 cm. If the slant height of the frustum of the cone is 4 cm, then find its curved surface area.

305) A shuttle cock has the shape of a frustum of a cone mounted on a hemisphere. The external diameter of the frustum are 5 cm and 2 cm, the height of the entire shuttle cock is 7 cm, then find its external surface area.

306) How many spherical balls each of radius 1 cm can be made from a solid sphere of lead of radius 12 cm ?

307) A solid sphere of radius 3x cm is melted and cast into the shape of a solid cylinder of height x cm. Find the radius of the base of cylinder.

308) A medicine capsule is in the shape of a cylinder of diameter 2 cm with two hemispheres struck to each its ends. The length of the entire capsule is 6 cm. Find the capacity of the capsule.

309) Find the number of cubes of side 2 cm which can be cut from a cube of side 6 cm.

310) The radii of the base of a cylinder and a cone of the same height are in the ratio 3 : 4. Find the ratio of their volumes.

311) If the radius of base of a cylinder is doubled and the height remains unchanged, then find the ratio of curved surface areas of new cylinder to old cylinder.

312) The radii of bases of cylinder and a cone are in the ratio 3 : 4 and their heights are in the ratio 2 : 3 , then find ratio between the volume of cylinder to that of cone.

313) Find the slant height of a frustum of a right circular cone of height 16 cm with radii of its circular ends as 8 cm and 20 cm.

314) The radius of the base of a cone is 5 cm and its height is 12 cm. Find its curved surface area.

315) A solid sphere of diameter 6 cm is melted and drawn into a wire of radius 4 mm. Find the length of wire.

316) A solid sphere of radius x cm is melted and cast into a shape of a solid cone of radius x cm. Then find the height of the cone.

317) If the surface area of a sphere is $144\pi\ cm^2$, then find its radius.

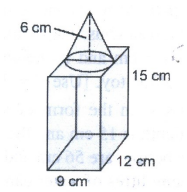
318) A cone, a hemisphere and a cylinder stand on equal bases and have the same height. Find the ratio of their volume.

319) The diameter of a metallic sphere is 6 cm. It is melted and drawn into a wire of diameter 2 cm, then find the length of the wire.

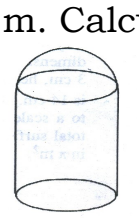
320) The volume of a sphere (in cu. cm) is equal to its surface area (in sq. cm). Find the diameter of the sphere.

321) A child reshapes a cone made up of china clay of height 24 cm and radius of base 6 cm into a sphere. Find the radius of the sphere.

322) Find the total surface area of the object shown in the adjoining figure.



323) With reference to the figure given alongside, a metal container in the form of a cylinder is surmounted by a hemisphere of the same radius. The internal height of the cylinder is 7 m and internal radius is 3.5 m. Calculate the total area of the internal surface, excluding the base.



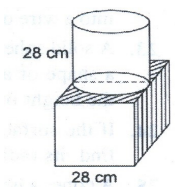
324) The dimensions of a field are 20 m X 14 m. A pit 6 m by 5 m by 2.5 m is dug in a corner of the field and the earth taken out of the pit is spread uniformly over the remaining area of the field. Find out the extent to which the level of the field has been raised.

325) Three cubes of edge 12 cm each are joined end to end. Find the volume and surface area of the resulting cuboid.

326) A tank 72 cm long, 60 cm wide and 36 cm high contains sufficient water to submerge completely a metal block 48 cm X 36 cm X 15 cm. Find, in cm, the amount the water level rises.

327) How many bricks of dimensions 22.5 cm by 10 cm by 7.5 cm each are required to build a wall 10 m long, 45 cm wide and 3 m high ?

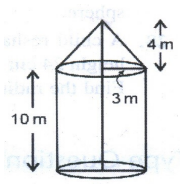
328) The decorative solid trophy is made of two solids of shinning glass as shown in the adjoining figure. Find the cost of the glass for making the trophy, if one cubic centimetre of glass costs Rs. 4.



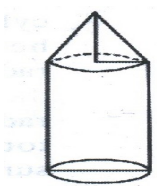
329) A hall is 20 m long and 16 m wide. The area of its four walls is equal to the area of floor and ceiling together. Find the height of the hall.

330) A vessel is a hollow cylinder fitted with a hemispherical bottom of the same base. The depth of the cylinder is $4\frac{2}{3}m$ and the diameter of hemisphere is 3.5 m. Calculate the internal surface area of the vessel.

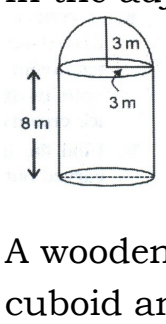
331) In the adjoining figure, model of a rocket, calculate the total surface area in π sq.m.



332) The given figure is a model of rocket consisting of a cylinder surmounted by a cone at one end. The dimensions of the model are : common radius 3 cm, height of cone = 4 cm and the total height is 14 cm. If the model is drawn to a scale of 1 : 500, find the total surface area of the rocket in $\pi\, m^2$

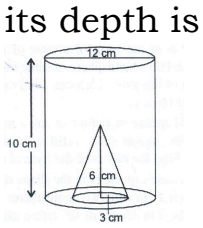


333) In the adjoining figure, model of a solid, calculate the total surface area in π sq.m.



334) A wooden stand is in the shape of a cuboid with six hemispherical cavities. The dimensions of the cuboid are 22.5 cm X 15 cm X 6 cm. The radius of each hemispherical cavity is 2 cm. Find the volume of the wood in the entire stand.

335) A metallic cylinder has diameter 12 cm and height 10 cm. It is made of iron. To reduce its weight, a conical hole is drilled in the cylinder as shown in the given figure. The radius of conical hole is 3 cm and its depth is 6 cm. Calculate the volume of iron in the metallic cylinder. $[Use \quad \pi = 3.14]$



336) A toy is in the form of a cone mounted on a cylinder of same radius 7 cm. If the total height of the toy is 30 cm and heights of cone and cylinder are equal, then find the volume of the toy.

337) A solid wooden toy is in the shape of right circular cone mounted on a hemisphere. If the radius of the hemisphere is 4.2 cm and the total height of the toy is 10.2 cm. Find the volume of the wooden toy.

338) A toy is in the form of cone mounted on a hemisphere with the same radius. The diameter of base of conical portion is 6 cm and its height is 4 cm. Find the volume of the toy. $[Use\ \pi = 3.14]$

339) Nirmal made a bird-bath for his garden in the shape of a cylinder with a hemispherical depression at one end with plaster of paris (POP). If the height of the cylinder is 35 cm and radius of the hemisphere is 21 cm, then find the volume of plaster of Paris required.

340) How many balls each of radius 1 cm can be made from a solid sphere of lead of radius 8 cm ?

341) A cylindrical tank has a capacity of 6160 m^3. Find its depth if the diameter of its base is 28 m.

342) A spherical ball of diameter 21 cm is melted and recast into cubes, each of side 1 cm. Find the number of cubes thus formed.

343) A girl fills a cylindrical bucket 32 cm in height and 18 cm in radius with sand. She empties the bucket on ground and makes a conical heap of the sand. If the height of the conical heap is 24 cm, find : (i) the radius (ii)the slant height of the heap.

344) A solid cylinder of silver 9 cm high and 4 cm in diameter is melted and recasted into a right circular cone of diameter 6 cm. Find the height and the total surface area of cone. $[Take\ \pi = 3.14]$

345) A spherical ball of lead 3 cm in diameter is melted and recast into three spherical balls. The diameters of two these balls are 1 cm and 1.5 cm respectively. Find the diameter of the third ball.

346) A right circular cone is 3.6 cm high and radius of its base is 1.6 cm. It is melted and recast into a right circular cone with radius of its base as 1.2 cm. Find its height.

347) A rectangular solid block of metal 49 cm X 44 cm X 18 cm is melted and formed into a solid sphere. Calculate the radius of the sphere.

348) The diameter of a metallic sphere is 6 cm. It is melted and drawn into a wire having diameter of the cross-section as 0.2 cm. Find the length of the wire.

349) A cone is 8.4 cm high and the radius of its base is 2.1 cm. it is melted and recast into a sphere. Find the radius of the sphere.

350) Eight metallic spheres each of diameter 4 cm are melted and cast into a single sphere. Calculate the diameter of the new single sphere.

351) A solid metal cone, with radius of base 12 cm and height 24 cm, is melted to form spherical solid balls of diameter 6 cm each. Find the number of balls thus formed.

352) A hemispherical bowl of internal radius 9 cm is full of liquid. The liquid is to be filled into cylindrical shaped small bottles each of diameter 3 cm and height 4 cm. How many bottles are needed to empty the bowl ?

353) The base radius and height of a right circular solid cone are 2 cm and 8 cm respectively. It is melted and recast into spheres of diameter 2 cm. Find the number of spheres so formed.

354) A solid metal cylinder of radius 14 cm height 21 cm is melted down and recast into spheres of radius 3.5 cm. Calculate the number of spheres that can be made.

355) A spherical iron ball has been melted and recast into smaller balls of equal sizes. If the radius of each of the smaller balls is 1/4 of the radius of the original ball, how many such balls are made ?

356) A rectangular tank 15 m long and 11 m broad is required to receive entire liquid contents from a full cylindrical tank of internal diameter 21 m and length 5 m. Find the least height of the tank that will serve the purpose.

357) If the radii of the ends of a bucket 45 cm high are 28 cm and 7 cm, determine the whole surface area.

358) Find the lateral surface area of the frustum of a cone, if the radii of the circular ends of height 12 cm are 30 cm and 14 cm. $[Use \quad \pi = 3.14]$

359) Water flows through a cylindrical pipe of internal diameter 7 cm at 36 km/h. Calculate the time in minutes, it would take to fill a cylindrical tank, the radius of whose base is 35 cm and height 1 m.

360) A cylindrical water tank of diameter 1.4 m and height 2.1 m is being fed by a pipe of diameter 3.5 cm through which water flows at the rate of 2 m/s. Calculate in minutes the time taken to fill the tank. $[Take \quad \pi = \frac{22}{7}]$

361) Water in a canal, 30 m wide and 12 m deep is flowing with a velocity of 10 km per hour. How much area will it irrigate in 30 minutes, if 8 cm of standing water is required for irrigation?

362) Water flows along a pipe of radius 0.6 cm at 8 cm/sec. This pipe is draining the water from a tank which holds 1000 litres of water when full. How long would it take to completely empty the tank ?

363) Water is being pumped out through a circular pipe whose external diameter is 7 cm. If the flow of water external diameter is 7 cm. If the flow of water is 72 cm per second, how many litres of water are being pumped out in one hour ?

364) Water flows out through a circular pipe, whose external diameter is 2 cm, at the rate of 0.7 m per second into a cylindrical tank, the rate of 0.7 m per second into a cylindrical tank, the radius of whose base is 40 cm. By how much will the level of water rise in half an hour ?

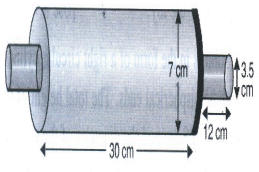
365) An iron pillar has some part in the form of a right circular cylinder and remaining in the form of a right circular cone. The radius of the base of each cone and cylinder is 8 cm. The cylindrical part is 240 cm high and the conical part is 30 cm high. Find the weight of the pillar if one cu cm of iron weighs 7.8 grams.

366) A tent is of the shape of a right circular cylinder upto a height of 3 metres and then becomes a right circular cone with a maximum height of 13.5 metres above the ground. Calculate the cost of painting the inner side of the tent at the rate of Rs.2 per square metre, if the radius of the base is 14 metres.

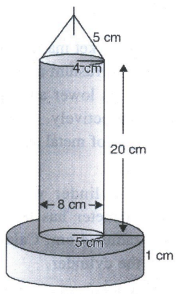
367) A solid is in the form of right circular cylinder with a hemisphere at one end and a cone at the other end. The radius of the common base is 3.5 cm and the heights of the cylindrical and conical portion are 10 cm and 6 cm respectively. Find the total surface area of the solid.

368) A container is made from a length of a metal tube of external radius 10 cm, the pipe is 2 cm thick, by welding on to one end of a disc of same metal 1 cm thick and 10 cm in radius. If the length of the complete container is 6 cm, find the volume of metal in π cu.cm

369) A wooden belan was made from a big cylinder and two small cylinders to flatten the dough as shown in the figure. Find the surface area of belan.



370) Mandeep purchased a packet of 20 candles from the market for Diwali festival. The hape of the candle i shown in the figure. Find out the surface area of each candle.

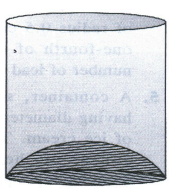


371) Floor of a room is of dimensions 5 m X 4 m and it is covered with circular tiles of diameter 50 cm each. Find the area of the floor that remains uncovered with tiles. $[Use \quad \pi = 3.14]$

372) A cone made of paper has height 3h and vertical angle 2α . It contains two other cone of height 2h and h and vertical angle 4α and 6α respectively. Find the ratio of the two volumes inbetween the cones.

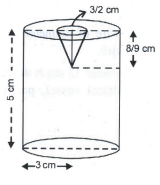
373) A right triangle whoe ides other than hypotenue are 3 cm and 4 cm is revolved around it hypotenue. Find the volume of the double cone thus formed.

374) A juice eller was serving his cutomers using glasses as shown in figure. The inner diameter of the cylindrical glas wa 4 cm, but the bottom of the glass had a hemispherical raised portion which reduced the capacity of the glass. If the height of the glas was 8 cm, find what the apparent capacity of the glas was and what the actual capacity was ?



375) A toy is in the form of a right circular cylinder with a hemisphere on one end and a cone on the other. The height and radius of base of the cylindrical part are 13 cm and 5 cm respectively. The radius of hemisphere and base of the conical part are same as that of the cylinder. Calculate the surface area and volume of the toy, if the height of the cone is 12 cm.

376) A metallic cylinder ha a radius 3 cm and height 5 cm. it is made of metal A. To reduce its weight a conical hole is drilled in the cylinder (a shown in the figure) and it is completely filled with a lighter metal B. The conical hole has a radius of $\frac{3}{2}cm$ and its depth is $\frac{8}{9}cm$. Calculate the ratio of the volume of the metal A to the volume of metal B in the solid.



377) Two pheres of the same metal weigh 1 kg and 7 kg. The radiu of the smaller sphere is 3 cm. The two spheres are melted to form a single big sphere. Find the diameter of the bigger sphere.

378) A spherical copper hell of external diameter 18 cm is melted and recast into a solid cone of base radius 14 cm and height $4\frac{3}{7}cm$. Find the inner diameter of the shell.

379) A container, open at the top and made of metal sheet, is in the form of a frustum of a cone of height 16 cm with radii of its lower and upper end as 8 cm and 20 cm respectively. Find the cost of milk which can completely fill the container, at the rate of Rs. 20 per litre. Also, find the cost of metal sheet used to make container, if it costs Rs. 8 per 100 cm^2. $[Use\ \pi = 3.14]$

380) A metallic right circular cone 20 cm high and whose vertical angle is 60^o i cut into two parts at the middle of its height by a plane parallel to the base. If the frustum so obtained is melted and drawn into a wire of diameter 1 cm, find the length of the wire.

381) A toy is in the form of a cone mounted on a hemisphere with same radius. The diameter of the base of the conical portion is 7 cm and the total height of the toy is 14.5 cm. Find the volume of the toy. $[Use\ \pi = 22/7]$

382) A solid is in the form of a right circular cylinder with hemipherical ends. The total height of the solid is 108 cm and the diameter of the cylinder is 42 cm. Find the volume and surface area of the solid. $[Use\ \pi = 22/7]$

383) A bucket made-up of a metal sheet is in the form of a frustum of a cone of height 16 cm with radii of its lower and upper ends as 8 cm and 20 cm respectively. Find the cost of the bucket if the cost of metal sheet used is Rs. 15 per 100 cm^2. $[Use\ \pi = 22/7]$

384) A cylinder whose height is two third of its diameter has the same volume as a sphere of radius 4 cm.Calculate the radius of the base of the cylinder.

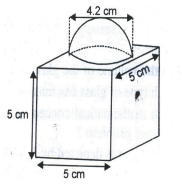
385) Solid sphere of diameter 6 cm are dropped into a cylindrical beaker containing some water and are fully submerged. If the diameter of beaker is 12 cm and water rises by 36 cm. Find the number of solid spheres dropped in the water.

386) Spherical marbles of diameter 1.4 cm each are dropped into a cylindrical beaker of radius 3.5 cm containing ome water. Find the number of marbles that should be dropped in the beaker so that the water level in the beaker rises by 5.6 cm

387) A bucket is in the form of a frustum of a cone whose radii of bottom and top are 7 cm and 28 cm respectively. If the capacity of the bucket is 21560 cm^3, find the whole surface area of the bucket.

388) A bucket made-up of a metal sheet is in the form of a frustum of a cone of height 16 cm with diameter of its lower and upper ends as 16 cm and 40 cm respectively. Find the volume of the bucket. Also, find the cost of the bucket if the cost of metal sheet used is Rs. 20 per 100 cm^2.

389) Given figure shows a decorative block which is made of two solids - a cube and a hemisphere. The base of the block is a cube with edge 5 cm and the hemisphere, fixed on the top, has a diameter of 4.2 cm. Find the total surface area of the block. $[Take \quad \pi = 22/7]$



390) A cylindrical vessel with internal diameter 10 cm and height 10.5 cm is full of water. A solid cone of base diameter 7 cm and height 6 cm is completely immersed in water. Find the volume of :
(i) water displaced out of the cylindrical vessel.
(ii) water left in the cylindrical vessel.
$\left[Take \quad \pi = \frac{22}{7}\right]$

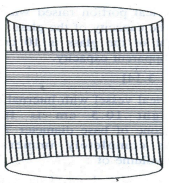
391) The surface area of a solid metallic sphere is 616 cm^2. It is melted and recast into a cone of height 28 cm. Find the diameter of the base of the cone so formed. $\left[Take \quad \pi = \frac{22}{7}\right]$

392) A pillar in the ground wa painted at the rate of Rs. 20 per m^2. The pillar has cylindrical base and conical top. The radius of the bae of the conical part is same as that of the cylindrical part which is 0.7 m. The slant height of the conical part is 2.6 m and height of the cylindrical part is 3 m. Find the amount spent for painting this pillar.

393) A model of tank made by a child is in the shape of a cylinder of base diameter 21 cm and length 18 cm filled with conical ends each of 9 cm height. Find the capacity of this tank.

394) A hollow cone is cut by a plane parallel to the base and upper part is removed to make a Turkish Cap. If the curved surface area of the remainder is 15/16 of the curved surface area of the whole cone, find the ratio of the line segments into which the cone's height is divided by the plane from which cut is made.

395) A 55 cm high cylindrical lamp-shade has small decorative mirrors on its either ends upto a width of 10 cm and 50 mm thick wire wound around all over to cover the middle part. How many revolutions will the wire take to cover it ?



396) Write the volume of frustum of a cone.

397) Find the surface area of a phere whoe diameter is 14 cm.

398) What is the height of a cone whose base area and volume are numerically equal ?

399) What is the total surface area of a hemiphere ?

400) What is the length of the diagonal of a cube that can be inscribed in a sphere of radius 10 cm ?

401) What is the total surface area of a cuboid of dimensions x X x X y ?

402) How will you differentiate between solid figures and plane figures?

403) Find the slant height of a right circular cone whose radius and height are 5 cm and 12 cm respectively.

404) Find the surface area of a cube, whose volume is 125 cm^3.

405) A conical tent with base radius 7 cm and height 24 cm is made from a 5 cm wide canvas. Find the length of the canvas.

406) What is the lateral surface area of a hollow cylinder of outer and inner radii as R, r and height h?

407) What change should be made in the radius of a hemisphere, so that its volume becomes 27 times the original volume ?

408) Find the slant height of a right circular cone whose radius and height are 3 cm and 4 cm.

409) Find the number of spherical balls of each radius 1 cm, made from a solid sphere of lead of radius 4 cm.

410) Two cubes each of volume 64 cm^3 are joined end to end. Find the surface area of the resulting cuboid.

411) A child reshapes a cone of height 24 cm and base radius 6 cm, to the form of a sphere. Find the radius of the sphere.

412) Find the ratio of the volumes of two cones with equal heights and ratio of their radii as 1 : 3.

413) Find the edge of a cube whose volume is 729 cm^3.

414) If a cone is formed from a circle of diameter 12 cm by cutting a sector of angle 60^o. What will be its slant height ?

415) If we roll a rectangle of dimensions 35 cm X 20 cm along its breadth. What will be the circumference of the base of the cylinder so formed ?

416) What will be the approximate volume of the largest right circular cone that can be cut-out from a cube of edge 4.2 cm?

417) A cube is side 6 cm is cut into cubes of 1 cm side, then find the total surface area of all the small cubes.

418) A metallic cube of edge 1cm is melted into a wire of diameter 4 mm, then find the length of the wire.

419) Find the ratio of the volumes of a cube to that of a sphere, which will exactly fit inside the cube.

420) The largest sphere is cut out from a cube of side 7 cm. Find the volume of the sphere.

421) The radius of a sphere is 3 cm. It is melted and drawn into a wire of radius 2 mm. Find the length of the wire.

422) If the radii of circular ends of frustum of a cone are 20 cm and 12 cm and its height is 6 cm, then find the slant height of frustum (in cm).

423) Volumes of two spheres are in the ratio 64:27. What will be the ratio of their surface areas?

424) What is the total surface area of a hemisphere of radius 7 cm?

425) Find the volume of a largest sphere that can be cut from cylindrical log of wood of base radius 1m and height 4 m.

426) Three cubes of volume 64 cm- each are joined end-to-end to form a solid. Find the surface area of the cuboid so formed.

427) 50 circular plates, each of radius 7 cm and thickness 0.5 cm, are placed one above another to form a solid right circular cylinder. Find the total surface area and the volume of the cylinder so formed.

428) How many shots each having diameter 3 cm can be made from a cuboidal lead solid of dimensions 9 cm X 11 cm X 12 cm?

429) The rain water from a roof 22 m x 20 m drain into a conical vessel having diameter of base as 2 m and height 3.5 m. If the vessel is just full, then find the rainfall.

430) A solid of iron in the form of a cuboid of dimensions 49 cm x 24 cm is moulded to form a solid sphere. Find the radius of the sphere.

431) From a solid cube of side 7 cm, a conical cavity of height 7 cm and radius 3 cm is hollowed out. Find the volume of the remaining solid.

432) Water flows through a cylindrical pipe, whose inner radius is 1 cm. at the rate of 80 cm/s in an empty cylindrical tank, the radius of whose base is 40 cm. What is the rise of water level in tank in half an hour?

433) A metallic spherical shell of internal and external diameters 4 cm and 8 cm, respectively is melted and recast into the form a cone of base diameter 8 cm. Find the height of the cone.

434) Volume of cylinder with radius of base 7 cm is 102 cm^3 What will be the volume of a cone having same radius of base and same height?

435) If the volume of a cube is 216 cm^3, then find its edge.

436) The radius of a wire is decreased to one-third. If the volume is same, then find the length of the wire.

437) Volume of two sphere are in the ratio 125:64. Find the ratio of their surface areas.

438) If two solid hemispheres of same base of radius r are joined together along their bases, then find curved surface area of this new solid.

439) A spherical tank is 21 cm in diameter. Find its surface area.

440) A metallic sheet is of the rectangular shape with dimensions 48 cm X 36 cm. From each one of its corners, a square of 8 cm is cut-off. An open box is made of the remaining sheet. Find the volume of the box.

441) The diameter of a garden roller is 1.4 m and it is 2 m long. How much area will it cover in 5 revolutions?

442) How many planks each of which is 2 m long, 2.5 cm broad and 4 cm thick can be cut-off from a wooden block 6 m long, 15 cm and 40 cm thick?

443) The radius and height of a right circular cone are in the ratio of 5:12 and its volume is 2512 cm^3 Find the slant height of the cone.

444) If a marble of radius 2.1 cm is put into a cylindrical cup full of water of radius 5 cm and height 6 cm, then how much water flows out of the cylindrical cup?

445) The diagonal of a cube is $27\sqrt{3}m$. Find its surface area.

446) If the radius of a sphere is doubled. What is the ratio of the volume of the first sphere to that of second?

447) A copper sphere of radius 3 cm is beaten and drawn into a wire of diameter 0.2 cm. Find the length of the wire(in meters).

448) Three cubes of a metal whose edges are in the ratio 3:4:5 are melted and converted into a single cube whose edge is 12 cm. Find the edges of the three cubes.

449) A solid ball is exactly fitted inside the cubical box of side a. What is the volume of remaining space inside the cubical box?

450) A cooper rod of diameter 1 cm and length 8 cm is drawn into a wire of length 18 cm of uniform thickness. Find the thickness of the wire.

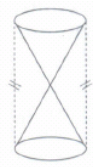
451) If the radii of circular ends of frustum of a cone are 17 cm and 15 cm and its height is 4 cm, then find the slant height of frustum (in cm).

452) A solid of iron in the form of a cuboid of dimension $49cm \times 33cm \times 24cm$ is moulded to form a solid sphere. Find the radius of sphere.

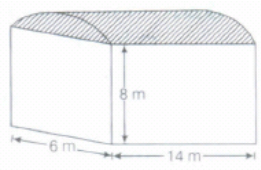
453) Find the volume of the largest right circular cone that can be cut out from a cube of edge 4.2 cm.

454) A solid metallic sphere of radius 10.5 cm is melted and recast into a number of smaller cones, each of radius 3.5 cm and height 3 cm. Find the number of cone so formed.

455) An hour glass is made using identical double glass cones of diameter 10 cm each. If total height is 24 cm, then find the surface area of the glass used in making it.



456) A warehouse is used as a grannary. It is in the shape of a cuboid surmounted by a half - cylinder. The base of the warehouse is 6 m $\times$ 14 m and its height is 8 m. Find the surface area of the non-cuboidal part of the warehouse.



457) A rectangular sheet of paper 40 cm x 22 cm is rolled to form a hollow cylinder of height 40 cm. Find the radius of the cylinder.

458) A cylinder, a cone and a hemisphere have same base and same height. Find the ratio of their volumes.

459) What is the ratio of the total surface area of the solid hemisphere to the square of its radius.

460) Two cubes each of volume 8 cm^3 are joined end to end, then what is the surface area of resulting cuboid.

461) The radius of sphere is r cm. It is divided into two equal parts. Find the whole surface of two parts.

462) What is the volume of a right circular cylinder of base radius 7 cm and height 10 cm? $\left(Use \quad \pi = \frac{22}{7}\right)$

463) If the areas of three adjacent faces of a cuboid are X, Y, and Z respectively, then find the volume of cuboid.

464) Volumes of two spheres are in the ratio 64 : 27, find the ratio of their surface areas.

465) A solid metallic object is shaped like a double cone as shown in figure. Radius of base of both cones is same but their heights are different. If this cone is immersed in water, find the quantity of water it will displace.

466) A cylinder and a cone have base radii 5 cm and 3 cm respectively and their respective heights are 4 cm and 8 cm. Find the ratio of their volumes.

467) A sphere of maximum volume is cut out from a solid hemisphere of radius 6 cm. Find the volume of the cut-out sphere.

468) A glass cylinder with diameter 20 cm has water to a height of 9 cm. A metal cube of 8 cm edge is immersed in it completely. Calculate the height by which water will rise in the cylinder.

469) A cylindrical glass tube with radius 10 cm has water up to a height of 9 cm. A metal cube of 8 cm edge is immersed completely. By how much the water level will rise in the glass tube?

470) Two cubes of 5 em each are kept together joining edge to edge to form a cuboid. Find the surface area of the cuboid so formed.

471) A 5 m wide cloth is used to make a conical tent of base diameter 14 m and height 24 m. Find the cost of cloth used at the rate of Rs.25 per metre.

472) Find the number of plates. 1.5 cm in diameter and 0.2 cm thick, that can be fitted completely inside a right circular cylinder of height 10 cm and diameter 4.5 cm.

473) Find the number of solid spheres of diameter 6 cm can be made by melting a solid metallic cylinder of height 45 cm and diameter 4 cm.

474) Three solid metallic spherical balls of radii 3 cm, 4 cm and 5 cm are melted into a single spherical ball, find its radius.

475) 12 solid spheres of the same size are made by melting a solid metallic cone of base radius 1 cm and height of 48 cm. Find the radius of each sphere.

476) Three cubes of iron whose edges are 3 cm, 4 cm and 5 cm respectively are melted and formed into a single cube, what will be the edge of the new cube formed?

477) If a cone is cut into two parts by a horizontal plane passing through the mid-points of its axis, find the ratio of the volume of the upper part and the cone.

478) A sphere of diameter 6 cm is dropped in a right circular cylindrical vessel partly filled with water. The diameter of the cylindrical vessel is 12 cm. If the sphere is completely submerged in water, by how much will the level of water rise in the
cylindrical vessel?

479) Find the number of coins of 1.5 cm diameter and 0.2 cm thickness to be melted to form a right circular cylinder of height 10 cm and diameter 4.5 cm.

480) A cone of height 24 cm and radius of base 6 cm is made up of clay. If we reshape it into a sphere, find the radius of sphere.

481) A metallic sphere of total volume π is melted and recast into the shape of a right circular cylinder of radius 0·5 cm. What is the height of cylinder?

482) A metallic solid sphere of radius 4.2 cm is melted and recast into the shape of a solid cylinder of radius 6 cm. Find the height of the cylinder.

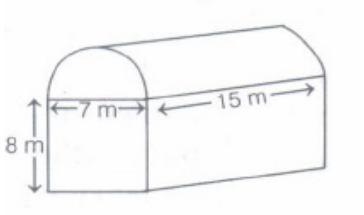
483) What is the frustum of a right circular cone of height 16 cm with radii of its circular ends as 8 cm and 20 cm has slant height equal to?

484) The slant height of a bucket is 26 cm. The diameter of upper and lower circular ends are 36 cm and 16 cm. Find the height of the bucket.

485) Five cubes each of side 6 cm are joined end-to-end. Find the surface area of the resulting cuboid.

486) A spherical glass vessel has a cylindrical neck 7 cm long, 4 cm in diameter, the diameter of the spherical part is 21 cm. Find the quantity of water it can hold

487) Neetu runs an industry in a shed which is in the shape of a cuboid surmounted by a half cylinder.If the base of the shade is of dimension 7m x 15m and height of the cuboidal portion is 8 m. Find the volume of air that the shed can hold. Further suppose the machinery in the shed occupies a total space of 400 m^3 and there are 15 workers, each of whom occupy about 0.08 m^3 space on average. Then how much air in the shed? $\left[\text{Take } \pi = \frac{22}{7}\right]$



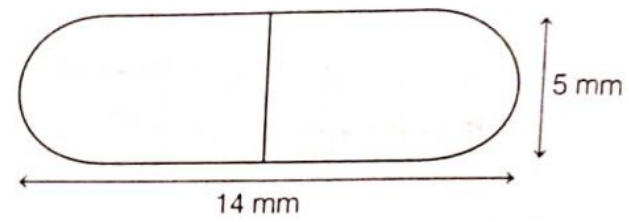
3 Marks 204 x 3 = 612

488) A cubical block of side 7 cm is surmounted by a hemisphere. What is the greatest diameter the hemisphere can have? Find the surface area of the solid.

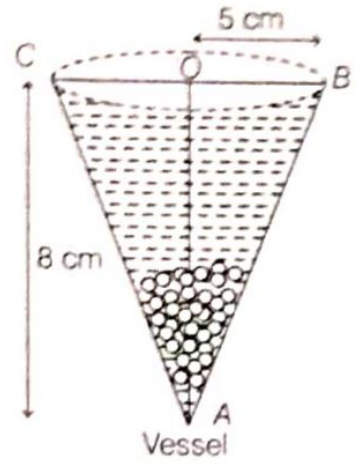
489) A hemispherical depression is cut out from one face of a cubical wooden block such that the diameter l of the hemisphere is equal to the edge of the cube. Determine the surface area of the remaining solid.

490) A tent is in the shape of a cylinder surmounted by a conical top. If the height and diameter of the cylindrical part are 2.1 m and 4 m respectively, and the slant height of the top is 2.8 m, find the area of the canvas used for making the tent. Also, find the cost of the canvas of the tent at the rate of Rs. 500 per m^2 . (Note that the base of the tent will not be covered with canvas.)

491) A medicine capsule is in the shape of a cylinder with two hemispheres stuck to each of its ends (see below figure). The length of the entire capsule is 14 mm and the diameter of the capsule is 5 mm. Find its surface area.

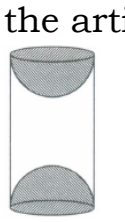


492) A vessel is in the form of an inverted cone. Its height is 8 cm and the radius of its top, which is open, is 5 cm. It is filled with water up to the brim. When lead shots, each of which is a sphere of radius 0.5 cm are dropped into the vessel, one- fourth of the water flows out. Find the number of lead shots dropped in the vessel.



493) From a solid cylinder whose height is 2.4 cm and diameter 1.4 cm, a conical cavity of the same height and same diameter is hollowed out. Find the total surface area of the remaining solid to the nearest cm^2.

494) A wooden article was made by scooping out a hemisphere from each end of a solid cylinder, as shown in Fig. If the height of the cylinder is 10 cm, and its base is of radius 3.5 cm, find the total surface area of the article.



495) The total surface area of a solid cylinder is $231 cm^2$.If the curved surface area of this solid cylinder is $\frac{2}{3}$ of its total area, find is radius and height $[Use\ \pi = \frac{22}{7}]$

496) The diameter of a roller 120cm long is 84cm.If it takes 500 complete revolutions to level a playground, determine the cost of levelling it at the rate of 30 paise per square metre.

497) An iron pipe 20cm long has exterior diameter equal to 25cm.If the thickness of the pipe is 1cm, find the whole surface area of the pipe.

498) The circumference of the base of 10m high conical tent is 44m.Calculate the length of canvas used in making the tent if width of canvas is 2m

499) An inverted cone of vertical height 12cm and the radius of base 9cm contains water to a depth of 4cm.Find the area of the interior surface of the cone not in contact with the water.[Use $\pi = \frac{22}{7}$]

500) A well of diameter 3m is dug 14m deep.The earth taken out of it has been spread evenly all around it in the shape of a circular ring of width 4m to form an embankment.Find the height of the embankment.

501) A cylindrical bucket, 32cm high and width radius of base 18cm, is filled with sand This bucket is emptied on the ground and a conical heap of sand is formed.If the height of the conical heap is 24cm, find the radius and slant height of the heap.

502) A hemisphere bowl of internal radius 9cm is full of water.Its contents are emptied in a cylindrical vessel of internal radius 6cm.Find the height of water in the cylindrical vessel.

503) A hemispherical bowl of internal diameter 30 cm contains some liquid. This liquid is to be filled into cylindrical shaped bottles each of diameter 5 cm and height 6 cm. Find the number of bottles necessary to empty the bowl.

504) Solid spheres of diameter 6 cm are dropped into a cylindrical beaker contains some water and are fully submerged. If the diameter of the beaker is 18 cm and the water rises by 40 cm, find the number of solid spheres dropped in the water.

505) A rectangle water tank of base 11 m x 6 m contains water up to a height of 5 m. If the water in the tank is transferred to a cylindrical tank of radius 3.5 m, find how high will the water level be in the this tank? (Use π = 22/7)

506) A teak wood log is cut first in the form of a cuboid of length 2.3 m, width 0.75 m and of a certain thickness. Its volume is 1.104 m^3. How many rectangular planks of size 2.3 m x 0.75 m x 0.04 m can be cut from the cuboid?

507) A rectangular reservoir is 120 m long and 75 m wide. At what speed per hour must water flow into it through a square pipe of 20 cm wide so that the water rises by 2.4 m in 18 hours?

508) A rectangular container, whose base is a square of side 5 cm stands on a horizontal table and holds water up to 1 cm from the top. When a cube is placed in the water it is completely submerged. The water rises to the top and 2 cubic cm of water overflows. Calculate the volume of the cube and also the length of its edge.

509) To construct a wall 24 m long, 0.4 m thick and 6 m high, bricks of dimensions 25 cm x 16 cm x 10 cm each are used. If the mortar occupies 1/10th of the volume of the wall, find the number of bricks used.

510) The radii of the circular ends of a bucket of height 15 cm are 14 cm and r cm (r < 14 cm). If the volume of bucket is 5390 cm^3, then find the value of r Use $\pi = \frac{22}{7}$

511) An open metal bucket is in the shape of a frustum of a cone of height 21 cm with radii of its lower and upper ends as 10 cm and 20 cm respectively. Find the cost of milk which can completely fill the bucket at Rs.30 per litre. [$\pi = \frac{22}{7}$]

512) A bucket is in the form of a frustum of a cone and holds 28.490 litres of water. The radii of the top and bottom are 28 am and 21 cm, respectively. Find the height of the bucket.

513) The rain-water collected on the roof of a building of dimensions 22 m x 20 m, is drained into a cylindrical vessel having base diameter 2 m and height 3.5 m. if the vessel is full up to the brim, find the height of rain-water on the roof.[Use $\pi = \frac{22}{7}$]

514) A solid cone of base radius 10 cm is cut into two parts through the mid-point of its height, by a plane parallel to its base. Find the ratio in the volumes of the two parts of the cone.

515) If h, c and V respectively are the height, the curved surface area and volume of a cone, prove that $3\pi Vh^3 - c^2h^2 + 9V^2 = 0$.

516) Water flows in a tank 150 m x 100 m at the base through a pipe whose cross-section is 2 dm by 1.5 dm at the speed of 15 km/h. In what time will the water be 3 m deep?

517) The size of the base of a cane full of kerosene is 20 cm x 20 cm and its height is 45 cm. The kerosene of this cane is poured into another cane having base of size 25 cm x 15 cm and height 50 cm. Determine the height of the kerosene in the second cane.

518) Three cubes of metal whose edges are in the ratio 3 : 4 : 5 are melted down into a single cube whose diagonal is $12\sqrt{3}$ cm. Find the edges of the three cubes.

519) The dimensions of a rectangular box are in the ratio 2 : 3 : 4 and the difference between the cost of covering it with sheet of paper at the rate of Rs.4 and Rs.4.50 per m^2 is Rs.416. Find the dimensions of the box.

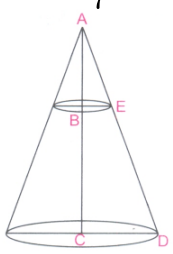
520) A solid metallic right circular cone 20 cm high and whose vertical angle is 60^o, is cut into two parts at the middle of its height by a plane parallel to its base. If the frustum so obtained be drawn into a wire of diameter $\frac{1}{12}$ cm, find the length of the wire.

521) Water in a canal, 6 m wide and 1.5 m deep, is flowing at a speed of 4 km/h. How much area will it irrigate in 10 minutes, if 8 cm of standing water is needed for irrigation?

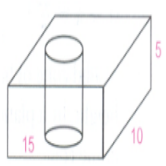
522) A solid wooden toy is in the form of a hemisphere surmounted by a cone of same radius. The radius of hemisphere is 3.5 cm and the total wood used in the making of toy is $166\frac{5}{6}$ cm^3. Find the height of the toy. also, find the cost of painting the hemispherical part of the toy at the rate of Rs.10 per cm^2.[Use $\pi = \frac{22}{7}$]

523) Due to sudden floods, some welfare associations jointly requested the government to get 100 tents fixed immediately and offered to contribute 50% of the cost. If the lower part of each tent is of the form of a cylinder of diameter 4.2 m and height 4 m with the conical upper part of same diameter but of height 2.8 m, and the canvas to be used costs Rs.100 per sq m, find the amount, the associations will have to pay. what values are shown by these associations?[Use $\pi = \frac{22}{7}$]

524) In the give figure from the top of a solid cone of a height 12 cm and base radius 6 cm, a cone of height 4 cm is removed by a plane parallel to the base. Find the total surface area of the remaining solid.(Use $\pi = \frac{22}{7}$ and $\sqrt{5}$ = 2.236)



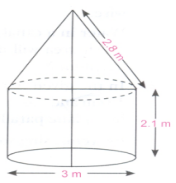
525) In figure, from a cuboidal solid metallic block of dimensions 15 cm x 10 cm x 5 cm, a cylindrical hole of diameter 7 cm is drilled out. Find the surface area of the remaining block. [Use $\pi = \frac{22}{7}$]



526) Two spheres of same metal weigh 1 kg and 7 kg. The radius of the smaller sphere is 3 cm. The two spheres are melted to form a single big sphere. Find the diameter of the new sphere.

527) A metallic cylinder has radius 3 cm and height 5 cm. To reduce its weight, a conical hole is drilled in the cylinder. The conical hole has a radius of $\frac{3}{2}$ cm and its depth is $\frac{8}{9}$ cm . Calculate the ratio of the volume of metal left in the cylinder to the volume of metal taken out in conical shape.

528) In figure, a tent is the shape of a cylinder surmounted by a conical top of same diameter. If the height and diameter of cylinder part are 2.1 m and 3 m respectively and the slant height of conical part is 2.8 m, find the cost of canvas needed to make that if the canvas is available at the rate of Rs.500 per sq. metre. (use $\pi = \frac{22}{7}$)

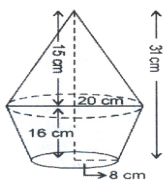


529) A right circular cone of radius 3 cm, has a curved surface area of 47.1 cm^2 . Find the volume of the cone. $[Use \quad \pi = 3.14]$

530) A toy is in the form of a cone mounted on a hemisphere. The diameter of the base of the cone and that of hemisphere is 18 cm and the height of cone is 12 cm. Calculate the surface area of the toy. $[Take \quad \pi = 3.14]$

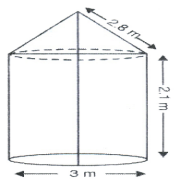
531) A metal container is in the form of a cylinder surmounted by a hemisphere of the same radius. The internal height of the cylinder is 7 m and the internal radius of the cylinder is 3.5 m. Calculate the total surface area of the container.

532) The lower portion of a haystack is an inverted cone frustum and upper part is a cone. Find the lateral surface area of the haystack. $[Use \quad \pi = 3.14]$



533) From a solid cylinder of height 7 cm and base diameter 12 cm, a conical cavity of same height and same base diameter is hollowed out. Find the total surface area of the remaining solid. $\left[Use\, \pi = \frac{22}{7}\right]$

534) In fig., a tent is in the shape of a cylinder surmounted by a conical top of same diameter. If the height and diameter of cylindrical part are 2.1 m and 3 m respectively and the slant height of conical part is 2.8 m, find the cost of canvas needed to make the tent if the canvas is available at the rate of Rs. 500 per sq. metre. $\left[Use \quad \pi = \frac{22}{7}\right]$



535) A circus tent is in the form of right circular cylinder and right circular cone above it. The diameter and height of cylindrical part of tent at 126 m and 5 m respectively. The total height of tent is 21 m. Find the total cost of tent if the canvas used costs Rs. 12 per m^2 .

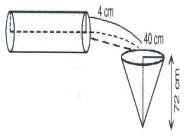
536) An iron pillar has some part in the form of a right circular cylinder and the remaining in the form of a right circular cone. The radius of the base of each of the cone and the cylinder is 8 cm. The cylindrical part is 240 cm high and conical part is 36 cm high. Find the weight of the pillar if 1 cu. cm of iron weights 7.5 grams.

537) A storage oil tanker consists of a cylindrical portion 7 m in diameter with two hemispherical ends of the same diameter. The oil tanker lying horizontally. If the total length of the tanker is 20 m, then find the capacity of the container.

538) A cracker rocket is in the shape of right circular cone standing on a right circular cylinder. If height of the conical portion is half the height of the cylinder, radius of the cylinder is 3.5 cm, whereas the radius of the conical portion is two times of the cone. Total height of the solid is 21 cm, find the volume of the toy.

539) Water running in a cylindrical pipe of inner diameter 7 cm, is collected in a container at the rate of 192.5 litres per minute. Find the rate of flow of water in the pipe in km/h. $\left[Use \quad \pi = \frac{22}{7}\right]$

540) A cylindrical pipe has inner diameter of 4 cm and water flows through it at the rate of 20 m per minute. How long would it take to fill a conical tank, with diameter of base as 80 cm and depth 72 cm ?



541) A bucket open at the top is in the form of a frustum of a cone with a capacity of 12308.8 cm^3 . The radii of the top and bottom circular ends are 20 cm and 12 cm respectively. Find the height of the bucket and the area of metal sheet used in making the bucket. $[Use\ \pi = 3.14]$

542) Find the volume of the largest cone that can be cut out of a cube whose edge is 7 cm. $\left[\pi = \frac{22}{7}\right]$

543) The radius of the base and the height of a right circular cylinder are in the ratio of 2:3 and its volume is 1617 cu.cm. Find the curved surface area of the cylinder. $\left[Take \quad \pi = \frac{22}{7}\right]$

544) The volume of a hemisphere is $2425\frac{1}{2} cm^3$. Find its curved surface area. $\left[Use \quad \pi = \frac{22}{7}\right]$

545) A solid sphere of radius 3 cm is melted and then cast into small spherical balls each of diameter 0.6 cm. Find the number of small balls thus obtained.

546) The radii of circular ends of a solid frustum of a cone are 33 cm and 27 cm and its slant height is 10 cm. Find its total surface area.

547) A container open at the top and made up of metal sheet is in the form of a frustum of a cone height 16 cm with diameters of its lower and upper ends as 16 cm and 40 cm respectively. Find the cost of metal sheet used to make the container, if it costs Rs. 10 per 100 cm^2 . $[Take \quad \pi = 3.14]$

548) A bucket made-up of a metal sheet is in the form of a frustum of a cone of height 16 cm with radii of its lower and upper ends as 8 cm and 20 cm respectively. Find the cost of the bucket if the cost of metal sheet used is Rs. 15 per 100 cm^2 .$[Use\ \pi = 3.14]$

549) A bucket is in form of a frustum of cone of height is 30 cm radii of its lower and upper ends as 10 cm and 20 cm respectively. Find the capacity of the bucket. Also, find the cost of milk which can completely fill the container, at the rate of Rs. 25 per litre. $[Take\ \pi = 3.14]$

550) The radii of the ends of a bucket of height 45 cm are 28 cm and 7 cm. Find its volume and the curved surface area. $\left[Use\ \pi = \frac{22}{7}\right]$

551) A bucket is 18 cm in diameter at the top and 6 cm in diameter at the bottom. If it is 8 cm high, find its capacity. Also, find the area of sheet used in making the bucket.

552) A hemispherical bowl of internal radius 9 cm is full of water. Its contents are emptied in a cylindrical vessel of internal radius 6 cm. Find the height of water in the cylindrical vessel.

553) A drinking glass open at the top is in the shape of a frustum of a cone of height 24 cm. The diameters of its top and bottom circular ends are 18 cm and 4 cm respectively. Find the capacity and total surface area of the glass.

554) A container is in the form of the frustum of a cone. If the height is 16 cm and the radii of its lower and upper ends are 8 cm and 20 cm respectively. Find the slant height of the container and also the cost of milk that the container can hold, if the cost of milk is Rs. 30 / litre. $[\pi = 3.14]$

555) A conical military tent is 5 metres high and the diameter of the base is 24 metres. Find the cost of canvas used in making this tent at the rate of Rs. 14 per square matre.

556) A storage oil tanker consists of a cylindrical portion 7 m in diameter with two hemispherical ends of the same diameter. The total of the tanker is 20 m and it is lying horizontally. If it contains oil to a depth of 3.5 m, find the amount of oil in it.

557) How many metres of cloth 1.1 m wide will be required to make a conical tent, whose vertical height is 12 m and base radius is 16 m ? Find also the cost of the cloth used at the rate of Rs. 14 per metre.

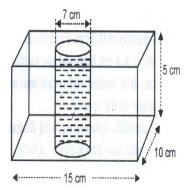
558) A conical military tent is 5 metres high and the diameter of the base is 24 metres. Find the cost of canvas used in making this tent at the rate of Rs. 14 per square matre.

559) A storage oil tanker consists of a cylindrical portion 7 m in diameter with two hemispherical ends of the same diameter. The total of the tanker is 20 m and it is lying horizontally. If it contains oil to a depth of 3.5 m, find the amount of oil in it.

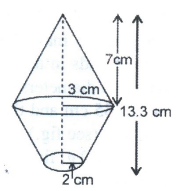
560) How many metres of cloth 1.1 m wide will be required to make a conical tent, whose vertical height is 12 m and base radius is 16 m ? Find also the cost of the cloth used at the rate of Rs. 14 per metre.

561) The interior of a building is in the form of cylinder of diameter 4.3 m and height 3.8 m surmounted by a cone whose vertical angle is a right angle. Find the area of the surface of the building.
$[Use \quad \pi = 3.14]$

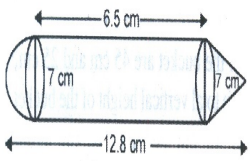
562) A rectangular metal block has length 15 cm, breadth 10 cm and height 5 cm. From this block a circular hole of diameter 7 cm is drilled out. Find the surface area of the remaining solid.



563) The lower portion of a haystack is an inverted cone frustum and upper part is a cone. Find the total volume of the haystack.

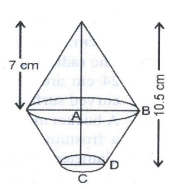


564) The given figure represents a solid consisting of a cylinder surmounted by a cone at one end and a hemisphere at the other. Find the volume of the solid.



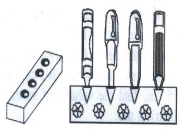
565) A solid is in the form of a cylinder with hemispherical ends. The total height of the solid is 19 cm and the diameter of the cylinder is 7 cm. Find the volume of the solid.

566) The lower portion of a haystack is an inverted cone frustum and upper part is a cone as shown in the figure. Find the total volume of the haystack, if AB = 3 cm and CD = 2 cm.



567) Amarjit runs an industry of nuts and bolts in a shed in the shape of a cuboid surmounted by hemicylinder. If the floor of the shed is 20 m by 14 m and 6 m, find the volume of the air that the shed can hold.

568) A pen stand made of wood is in the shape of a cuboid with four conical depressions to hold pens. The dimensions of the cuboid are 15 cm by 10 cm by 3.5 cm. The diameter of each of the depressions is 1 cm and the depth is 1.4 cm. Find the volume of wood in the entire stand.



569) A solid is in the shape of a capsule consists of a cylindrical portion with hemisphere at the two ends. If the total length of the capsule is 21 cm and diameter of the cylindrical part is 10.5 cm, then find its volume.

570) A fancy paperweight of glass consists of a right circular cylinder mounted on another right circular cylinder. The total height of the paperweight is 6 cm. The diameter of the lower cylinder is 7 cm and diameter of upper cylinder is 3.5 cm. Find the volume of the paperweight.

571) A small container is made from a length of a metal tube of external radius 10 cm, the pipe is 2 cm thick, by welding on to one end a disc of the same metal 1 cm thick and 10 cm in radius. If the length of the complete container is 6 cm, find the volume of metal in it.

572) earth taken out on digging a circular tank of diameter 17.5 m is spread all around the tank uniformly to a width of 4 m, to form an embankment of height 2 m. Calculate the depth of the circular tank.

573) A closed rectangular box 40 cm long, 30 cm wide and 25 cm deep has the same volume as that of a cylindrical tin of radius 17.5 cm. Calculate the height of the cylindrical tin. $[Take\ \pi = 3.142]$

574) A spherical shell of lead, whose external diameter is 18 cm, is melted and recast into a right circular cylinder, whose height is 8 cm and diameter 12 cm. Determine the internal diameter of the shell.

575) A spherical shell of lead, whose external diameter is 18 cm, is melted and recast into a right circular cylinder, whose height is 20 cm and diameter 24 cm. determine the internal diameter of the shell.

576) The radii of the internal and external surfaces of a metallic shell are 3 cm and 5 cm respectively. It is melted and recast into a solid right circular cylinder of height $10\frac{2}{3}cm$. Find the diameter of the base of the cylinder.

577) An agricultural field is in the form of a rectangle of length 20 m and width 14 m. A 10 m deep well of diameter 7 m is dug in a corner of a field and the earth is taken out of the well is spread evenly over the remaining part of the field. Find the rise in its level.

578) A solid right circular cone of diameter 14 cm and height 8 cm is melted to form a hollow sphere. If the external diameter of the sphere is 10 cm, find the internal diameter of the sphere.

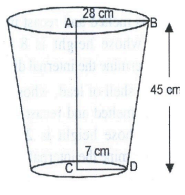
579) The internal and external diameters of a hollow hemispherical shell are 6 cm and 10 cm respectively. It is melted and recast into a solid cone of base diameter 14 cm. Find the height of the cone so formed.

580) A well of diameter 7 m is dug 22.5 m deep. The earth taken out it is spread evenly all around it to a width of 10.5 m to form an embankment. Find the height of the embankment.

581) A well with 10 m inside diameter is dug 14 m deep. Earth taken out of it is spread all around to a width of 5 m to form an embankment. Find the height of the embankment.

582) The slant height of the frustum of a cone is 8 cm. if the perimeters of its circular bases be 36 cm and 12 cm, find the curved surface of the frustum and also find the cost of painting its total surface at the rate of rs. 25 per 100 m^2 .

583) If the radii of the ends of a bucket 45 cm high, are 28 cm and 7 cm. Find the capacity of bucket.



584) If the radii of the ends of a bucket 15 cm high are 28 cm and 21 cm respectively, find the capacity of the bucket.

585) A bucket is in the form of a frustum of cone. its depth is 30 cm and the diameters of the top and bottom are 42 cm and 14 cm respectively. Find how many litres of water can the bucket hold ?

586) A bucket is in the form of a frustum of cone. Its depth is 15 cm and the diameters of the top and the bottom are 56 cm and 42 cm respectively. Find how many litres of water can the bucket hold ?

587) A bucket is in the form of frustum of cone. Its depth is 24 cm and the diameters of the top and the bottom ends are 30 cm and 10 cm respectively. Find the capacity of bucket.

588) Hanumappa and his wife Gangamma are busy making jaggery out of sugarcane juice. They have processed the sugarcane juice to make the molasses, which is poured into moulds in the shape of a frustum of a cone having the diameters of its two circular faces as 30 cm and 35 cm and the vertical height of the mould is 14 cm (see fig.). If each cm^3 of molasses has mass about 1.2 g, find the mass of the molasses that can be poured into each mould.

589) The radii of circular ends of a solid frustum of a cone are 66 cm and 54 cm and its slant height is 15 cm. Find its total surface area.

590) The radii of circular ends of a bucket of height 24 cm are 15 cm and 5 cm. Find the area of its curved surface.

591) A bucket made up of a metal sheet is in the form of a frustum of a cone. Its depth is 24 cm and the diameters of the top and bottom are 30 cm and 10 cm respectively. Find the cost of milk which can completely fill the bucket at the rate of Rs. 20 per litre and the cost of the metal sheet used, if it costs Rs. 10 per 100 cm^2 . $[Use \quad \pi = 3.14]$

592) A bucket made up of a metal sheet is in the form of a frustum of a cone of height 20 cm with radii of its lower and upper ends as 10 cm and 25 cm respectively. Find the cost of the bucket if the cost of metal sheet used is Rs.70 per 100 cm^2 . $[Use \quad \pi = 3.14]$

593) A solid is in the form of a right circular cone mounted on a hemisphere. The radius of the hemisphere is 3.5 cm and the height of the cone is 4 cm. The solid is place in a cylindrical tub, full of after, in such a way that the whole solid is submerged in water. If the radius of the cylinder is 5 cm and its height is 10.5 cm, find the volume of water left in the cylindrical tub.

594) The diagram alongside shows, a hemisphere of radius 6 cm surmounted by a right circular cone of base radius 6 cm. The height of the cone is 8 cm. Calculate :
(i) the total surface area of the solid.
(ii) the volume of the solid. $[Take \quad \pi = 3.14]$

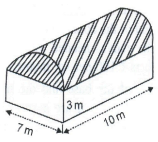
595) An open cylindrical vessel of internal diameter 7 cm and height 8 cm stands on a horizontal table. Inside this is placed a solid metallic right circular cone, the diameter of whose base is $\frac{7}{2} cm$ and height 8 cm. Find the volume of water required to fill the vessel. If the cone is replaced by another cone, whose height is $1\frac{3}{4} cm$ and the radius of whose base is 2 cm, find the drop in the water level.

596) A sphere of radius 7 cm is dropped into a cylinder of base radius 21 cm containing water. Calculate the rise in the level of water in the cylinder, if sphere is completely submerged and no water flows out. Leave your answer as a fraction.

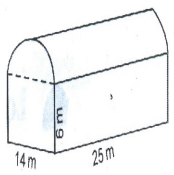
597) A solid consisting of a right circular cone, standing on a hemisphere, is placed upright, in a right circular cylinder, full of water, and touches the bottom. Find the volume of water left in the cylinder, having given that the radius of the cylinder is 3 cm and its height is 6 cm, the radius of the hemisphere is 2 cm and the height of the cone is 4 cm.

598) A solid is in the form of a cylinder with hemispherical ends. The total height of the solid is 19 cm and the diameter of the cylinder is 7 cm. Find the volume and total surface area of the solid.

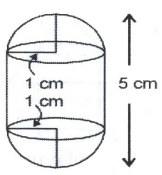
599) A godown building is in the form as shown in figure. The vertical cross-section parallel to the width side of the building is a rectangle of size 7 m x 3 m mounted by a semicircle of radius 3.5 m. The inner measurements of the cuboid are 10 m x 7 m x 3 m. Find the total internal surface area excluding the floor.



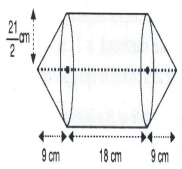
600) The cross-section of a railway tunnel is a rectangle 14 m broad and 6 m high, surmounted by a semicircle. Length of the tunnel is 25 m. Find the internal surface area of the tunnel excluding the floor, as shown in figure.



601) In the given figure, a model of gas cylinder consists of cylindrical part and two hemispheres, calculate the surface area of the model.



602) A petrol tank is a cylinder of diameter 21 cm and length 18 cm fitted with conical ends each of axis-length 9 cm. Determine the surface area of the petrol tank.



603) A solid is in the form of right circular cylinder with hemispherical ends. The total height of the solid is 58 cm and the diameter of the cylinder is 28 cm. Find the total surface area of the solid.

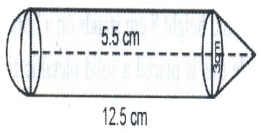
604) A toy is in the form of a cone mounted on a hemisphere of common base radius 7 cm. The total height of the toy is 31 cm. Find the surface area of the toy.

605) A circus tent is cylindrical to a height of 4 m and conical above it. If its base radius is 52.5 m and slant height of the conical portion is 53 m. Find the cost of the canvas needed to make the tent if the canvas costs rs. 100 per sq. metre.

606) A tent is in the form of a cylinder of diameter 4.2 m and height 4 m surmounted by a cone or equal base and height 2.8 m. Find the capacity or the tent and the cost of canvas for making the tent at Rs. 100 per sq. m.

607) A tent is in the shape of a right circular cylinder up to a height of 3 m and conical above it. The total height of the tent is 13.5 m and radius of the base is 14 m. Find the cost of cloth required to make the tent at the rate of Rs. 80 per sq. metre.

608) From the given figure, find the total surface area.



609) If the radius of a sphere is r cm. It is divided into two equal parts. What will be the total surface area of two parts?

610) The ratio of the volumes of two spheres is 8 : 27. If r and R are radii of two spheres respectively, then find (R - r) : r.

611) A pen stand made of wood is in the shape of a cuboid with four conical depressions and a cubical depression to hold the pens and pins, respectively. The dimensions of cuboid are 10 cm, 5 cm, and 4 cm. The radius of each of the conical depressions is 0.5 cm and the depth is 2.1 m. The edge of the cubical depression is 3 cm. Find the volume of the wood in the entire stand.

612) Water is flowing at the rate of 5 km/h through a pipe of diameter 14 cm into a rectangular tank which is 50 m long and 44 m wide. Determine the time in which the level of the water in the tank will rise by 7 cm.

613) A hemispherical tank full of water is emptied by a pipe at the rate of $3\frac{4}{7}L/s$. How much time will it take to empty half the tank, if it is 3 m in diameter? $\left[Take \quad \pi\frac{22}{7}\right]$

614) A metallic sphere of radius 10.5 cm is melted and then recast into smaller cones, each of radius 3.5 cm and height 3 cm. How many cones are obtained?

615) Eight solid spheres of the same size are made by melting a solid metallic cylinder of base diameter 6 cm and height 32 cm. Then, find the diameter of each sphere.

616) Water flows through a circular pipe whose internal diameter is 2 cm at the rate of 0.7 m per sec into a cylindrical tank, the radius of whose base is 40cm. By how much will the level of water rise in the tank in half an hour?

617) Selvi's house has an overhead tank in the shape of cylinder. This is filled by pumping water from a sump(an underground tank) which is in the shape of a cuboid. The sump has dimensions 1.57 m x 1.44 m x 95 cm. The overhead tank has its radius 60 cm and height 95 cm.
Find the height of the water left in the sump after the overhead tank has been completely filled with water from sump which had been full. Compare the capacity of the tank with that of the sump.[Take $\pi = 3.14$]

618) A well whose diameter is 7m, has been dug 22.5m deep and the Earth dugout is used to form an embankment around it. If the height of the embankment is 1.5 m, find the width of the embankment.

619) A bucket of height 16 cm and made up of metal sheet is in the form of frustum of a right circular cone with radii of its lower and upper ends as 3 cm and 15 cm, respectively. Calculate
(i) the height of the cone of which the bucket is a part.
(ii) the volume of water which can be filled in the bucket.
(iii) the slant height of the bucket.
(iv) the area of the metal sheet required to make the bucket.

620) The slant height of a frustum of a cone is 4 cm and the perimeters (circumference) of its circular ends are 18 cm and 6 cm. Find the curved surface area of the frustum.

621) A cistern, internally measuring 150 cm x 120 cm x 110 cm, has 129600 cm^3 of water in it. Porous bricks are placed in the water until the cistern is full to the brim. Each brick absorbs one-seventeenth of its own volume of water. How many bricks can be put in without overflowing the water, each brick being 22.5cm x 7.5 cm x 6.5 cm?

622) In one fortnight of a given month, there was a rainfall of 10 cm in a river valley. If the area of the valley is 97280 km^2, then show that the total rainfall was approximately equivalent to the addition to the normal water of three rivers each 1072 km long, 75 m wide and 3 m deep.

623) The height of a cone is 60 cm. A small cone is cut-off at the top by a plane parallel to the base and its volume $\frac{1}{64}$ th the volume of original cone. Find the height from the base at which the section is made.

624) A right circular cone is divided by a plane parallel to its base into small cone of volume V1at the top and a frustum of volume V2 as second part at the bottom. If $V_1:V_2=1:3$, then find the ratio of the height of the altitude of small cone and that of frustum.

625) An open container made up of a metal sheet in the form of frustum of a cone of height 8 cm with radii of its lower and upper ends as 4 cm and 10 cm, respectively. Find the cost of oil which can completely filled the container at the rate of Rs.50 per L. Also, find the cost of metal used, if it costs Rs.50 per 100 cm^2.

626) In the given figure, an open metal bucket is in the shape of a frustum of a cone, mounted on a hollow cylindrical base made of the same metallic sheet. The diameters of the two circular ends of the bucket are 45 cm and 25 cm, the total vertical height of the buckets 40 cm and that of the cylindrical base is 6 cm. Find the area of the metallic sheet used to make the bucket, where we do not take into account the handle of the bucket. Also, find the volume of water the bucket can hold.

627) A solid metallic cylinder of radius 3.5 cm and height 14 cm is melted and recast into a number of small solid metallic balls, each of radius $\frac{7}{12}cm$ Find the number of balls so formed.

628) In the given figure, the lower portion of a haystack is an inverted frustum of cone and upper part is a cone. Find the lateral surface area of the haystack.
[Take π=3.14]

629) The cost of painting of the total outside surface of a closed cylindrical oil tank at 60 paise per sq m is Rs.237.60 and the height of the tank is 6 times the radius of the base of the tank. Find the radius and of the tank. $\left[Take \quad \pi = \frac{22}{7}\right]$

630) A conical hole is drilled in a circular cylinder of height 15 cm and radius 8 cm, which has the same height and same base radius. Find the total surface area after drilling the cone.

631) Marbles of diameter 1.4 cm are dropped into a cylindrical beaker of diameter 7 cm containing some water.
Find the number of marbles that should be dropped into the beaker so that the water level rises by 5.6 cm.

632) A toy is in the shape of a right circular cylinder with a hemisphere on one end and a cone on the other. The height and radius of the cylindrical part are 13 cm and 5 cm, respectively. The radii of the hemispherical and conical parts are the same as that of the cylindrical part. Calculate the surface area of the toy, if height of the conical part is 12 cm.

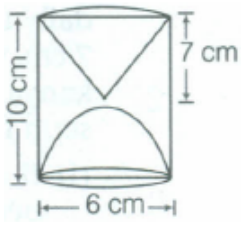
633) A golf ball has diameter equal to 4.1 cm. Its surface has 150 dimples each of radius 2mm. calculate total surface area which is exposed to the surroundings assuming that the dimples are hemispherical.

634) The diameter of the roller 120 cm long is 84 cm. If it takes 500 complete revolutions to level a playground, then find the cost of levelling at the rate of 30 paise per m^2

635) If a, b and c are respectively length, breadth and height of a cuboid such that a+b+c=10 cm and $a^2+b^2+c^2=40$ cm^2. Find the surface area of the cuboid.

636) A circus tent is in the shape of a cylinder surmounted by a conical roof. If the common diameter is 56m, the height of the cylindrical portion is 6 m and the height of the roof from the ground is 30 m, then find the area of the canvas used for the tent.

637) A wooden article as shown in the figure was made from a cylinder by scooping out a hemisphere from one end and a cone from the other end. Find the total surface area of the article.



638) A spherical copper ball of diameter 21 cm is melted and recast into cubes, each of side 1.5 cm. Find the number of cubes so formed and the copper left.

639) A canal is 300 cm wide and 120 m deep. The water in the canal is flowing with a speed of 20 km/h. How much area will it irrigate in 20 min, if 8 cm of standing water is desired?

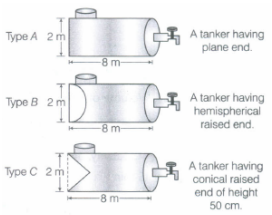
640) A milk container of height 16 cm is made of metal sheet in the form of a frustum o cone with radii of its lower and upper ends as 8 cm and 20 cm, respectively. Find the cost of milk at the rate of Rs.22 per L, which the container can hold.

641) Water is flowing at the rate of 3 km/h through a circular pipe of 20 cm internal diameter into a circular cistern of diameter 10 m and depth 2m. In how much time, will the cistern be filled?

642) Two types of water tankers are available in a shop. One is in a. cubic form of dimensions 1 m x 1 m x 1 m and another is in the form of cylindrical form of diameter 1m and height is also 1 m.
(i) Calculate the volume of both the tankers.
(ii) The shopkeeper advise to purchase cuboid tank. Which value is depicted by the shopkeeper?

643) A farmer wants to dig a well either in the form of cuboid of dimension (1m x l m x 7 m) or in the form of cylinder of diameter 1m and height 7 m. The rate to dig the well is Rs.50 per m^3.
(i) Find the cost to dig both wells.
(ii) The farmer decides to dig the cylindrical well, by his decision which value is depicted here?

644) Ashwani is in the business of supplying water. He has three types of tankers of inner diameter 2 m to supply water to the customers. The length of the tankers is 8 m.$[Take\ \pi = 3.14]$
He decided to serve his customers with type 'A' tankers.



(i) Find the volume of tanker of type A.
(ii) Which tanker has the minimum capacity?
(iii) By choosing a tanker of type A which value is depicted by Ashwani?

645) A hollow cube of internal edge 22 cm is filled with spherical marbles of diameter 05 cm and it is assumed that $\frac{1}{8}$ space of the cube remains unfilled. Then, find the number of marbles that the cube can accommodate.

646) Two solid right circular cones have the same height. The radii of their bases are r_1 and r_2. They are melted and recast into a cylinder of same height. Show that the radius of the base of the cylinder is $\sqrt{\frac{r_1^2+r_2^2}{3}}$.

647) Three cubes each of side 5 cm are joined end to end. Find the surface area of the resulting solid.

648) An iron pole consists of a cylinder of height 240 cm and base diameter 26 cm, which is surmounted by another cylinder of height 66 cm and radius 10 cm. Find the mass of the pole given that $1cm^3$ of iron has approximately 8 g mass.[take, π = 3.14]

649) A solid is composed of a cylinder with hemispherical ends. If the whole length of the solid is 104 cm and the radius of each hemispherical end is 7 cm, then find the cost of polishing its surface at the rate of Rs 2 per dm^2 . $\left[take, \pi = \frac{22}{7}\right]$

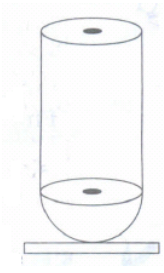
650) A well of diameter 10 m is dug 14 m deep. The Earth taken out of it is spread evenly all around to a width of 5 m to form an embankment. Find the height of embankment.

651) If the radii of the circular ends of a frustum of height 6 cm are 15 cm and 7 cm respectively, then find the volume and lateral surface area (curved surface area) of the frustum. [take, π = 3.14]

652) A circus tent is made up using two different coloured cloth material. Red coloured material is used to make cylindrical part upto a height of 3 m and green coloured material to make conical part above it. If the diameter of the base is 105 m and slant height of the conical part is 53 m, find the red coloured material and green coloured material required. [Assuming no stitching margins]

653) A conical vessel with base radius 5 cm and height 24 cm, is full of water. This water is emptied into a cylindrical vessel of base radius 10 cm. Find the height to which the water will rise in the cylindrical vessel. $\left[take, \pi = \frac{22}{7}\right]$

654) A trophy awarded to the best student in the class is in the form of a solid cylinder mounted on a solid emisphere with the same radius and is made from some metal. This trophy is mounted on a wooden cuboid as shown in the figure. The diameter of the hemisphere is 21cm and the total height of the trophy is 24.5 cm. Find the weight of the metal used in making the trophy, if the weight of 1 cm^3 of the metal is 1.2 g. $\left[take, \pi = \frac{22}{7}\right]$



655) A cubical block of side 10 cm is surmounted by a hemisphere. What is the largest diameter that the hemisphere can have? Find the cost of painting the total surface area of the solid so formed, at the rate of Rs. 5 per 100 sq. cm. [Use π = 3.14]

656) A hemispherical bowl of internal diameter 36 cm contains liquid. This liquid is filled into 72 cylindrical bottles of diameter 6 cm, Find. the height of the each bottle, if 10% liquid is wasted in this transfer.

657) A solid right-circular cone of height 60 cm and radius 30 em is dropped in a right-circular cylinder full of water of height 180 cm and radius 60 cm. Find the volume of water left in the cylinder in cubic metre. $\left(Use\ \pi = \frac{22}{7}\right)$

658) A hollow cylindrical pipe is made up of copper. It is 21 dm long. The outer and inner diameters of the pipe are 10 cm and 6 cm respectively. Find the volume of copper used in making the pipe.

659) A glass is in the shape of a cylinder of radius 7 cm and height 10 cm. Find the volume of juice in litre required to fill 6 such glasses. $\left(Use\ \pi = \frac{22}{7}\right)$

660) The largest possible sphere is carved out of a wooden solid cube of side 7 cm. Find the volume of the wood left. $\left(Use\ \pi = \frac{22}{7}\right)$

661) A wooden toy was made by scooping out a hemisphere of same radius from each end of a solid cylinder. If the height of the cylinder is 10 cm, and its base is of radius 3.5 cm, find the volume of wood in the toy. $\left(Use\ \pi = \frac{22}{7}\right)$

662) The radii of two right circular cylinders are in the ratio of 2 : 3 and their heights are in the ratio of 5 : 4. Calculate the ratio of their curved surface areas and ratio of their volumes.

663) A toy is in the form of a cone mounted on a hemisphere of common base of diameter 7 cm. If the height of the toy is 15.5 cm, find the total surface area of the toy. $\left[Use \quad \pi = \frac{22}{7}\right]$

664) Water is flowing at 7 m/s through a circular pipe of internal diameter of 4 cm into a cylindrical tank, the radius of whose base is 40 cm. Find the increase in water level in 30 minutes.

665) Water is flowing at the rate of 0.7 m/sec through a circular pipe whose internal diameter is 2 cm into a cylindrical tank, the radius of whose base is 40 cm. Determine the increase in the level of water in half hour.

666) A well of diameter 4 m dug 21 m deep. The earth taken out of it has been spread evenly all around it in the shape of a circular ring of width 3 m to form an embankment. Find the height of the embankment.

667) A cylindrical tub, whose diameter is 12 cm and height 15 cm is full of ice-cream. The whole ice cream is to be divided into 10 children in equal ice-cream cones, with conical base surmounted by hemispherical top. It the height of conical portion is twice the diameter of base, find the diameter of conical part of ice-cream cones.

668) A hemispherical tank, of diameter 3 m, is full of water. It is being emptied by a pipe at the rate of $3\frac{4}{7}$ litre per second. How much time will it take to make the tank half empty? $\left[Use \quad \pi = \frac{22}{7}\right]$

669) 504 cones, each of diameter 3.5 cm and height 3 cm, are melted and recast into a metallic sphere. Find the diameter of the sphere and hence find its surface area. $\left[Use \quad \pi = \frac{22}{7}\right]$

670) Water in a canal, 6 m wide and 1.5 m deep, is flowing at a speed of 4 km/h. How much area will it irrigate in 10 minutes, if 8 cm of standing water is needed for irrigation?

671) A solid metallic cone of radius 2 cm and height 8 cm is melted into a sphere. Find the radius of sphere.

672) A solid metallic sphere of diameter 16 cm is melted and recast into a number of smaller cones each of radius 4 ern and height 8 cm, Find the number of cones so formed.

673) The perimeters of the ends of the frustum of a cone are 207.24 cm and 169.56 cm. If the height of the frustum be 8 cm, find the whole surface area of the frustum. (Use π = 3.14).

674) A metal container, open from the top, is in the shape of a frustum of a cone of height 21cm with radii of its lower and upper circular ends as 8 cm and 20 cm respectively. Find the cost of milk. which can completely fill the container at the rate of Rs.35 per litre. $\left[Use \quad \pi = \frac{22}{7} \quad \right]$

675) A cone is cut by a plane parallel to the base and upper part is removed. If the curved surface area of upper cone is $\frac{1}{9}$ times the curved surface of original cone. Find the ratio of line segment to which the cone's height is divided by the plane.

676) In fig., from a cuboidal solid metallic block of dimensions 15 cm x 10 cm x 5 cm, a cylindrical hole of diameter 7 cm is drilled out. Find the surfaceb area of the remaining block. $\left[Use\ \pi = \frac{22}{7}\right]$

677) A heap of wheat is in the form of cone of diameter 6 m and height 3.5 m. Find its volume. How much canvas cloth is required to just cover the heap? $\left[Use\ \pi = \frac{22}{7}\right]$

678) The given figure shows a right circular cone of height 30 cm. A small cone is cut off from the top by a plane parallel to the base. If the volume of the small cone is $\frac{1}{27}$ of the volume of given cone, find at what height above the base is the section made.

679) A vessle full of water is in the form of an inverted cone of height 8 cm and the radius of its top, which is open, is 5 cm. 100 spherical lead balls are dropped into vessel. One-fourth of the water flows out of the vessel. Find the radius of a spherical ball.

680) A cone is cut by a plane parallel to the base and upper part is removed. If the C.S.A.of the remainder is $\frac{15}{16}$ of the C.S.A. of whole cone, find the ratio of the line segments to which the cone's height is divided by the plane.

681) Water is flowing at the rate of 2.52 km/h through a cylindrical pipe into a cylindrical tank, the radius of whose base is 40 cm, if the Increase in the level of water in the tank, in half an hour is 3.15 m, find the internal diameter of the pipe.

682) A solid is consisting of a right circular cone of height 120 cm and radius 60 cm standing on a hemisphere of radius 60 cm. It is placed upright in a right circular cylinder full of water such that it touches the bottom. Find the volume of water left in the cylinder, if the radius of the cylinder is 60 cm and its height is 180 cm.

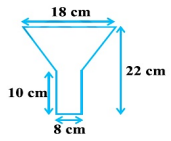
683) A copper wire, 3 mm in diameter, is wound about a cylinder whose length is 12 cm, and diameter 10 cm, so as to cover the curved surface of the cylinder. Find the length and mass of the wire, assuming the density of copper to be 8.88 g per cm^3.

684) A right triangle, whose sides are 3 cm and 4 cm (other than hypotenuse) is made to revolve about its hypotenuse. Find the volume and surface area of the double cone so formed. (Choose value of π as found appropriate.)

685) A cistern, internally measuring 150 cm × 120 cm × 110 cm, has 129600 cm^3 of water in it. Porous bricks are placed in the water until the cistern is full to the brim. Each brick absorbs one-seventeenth of its own volume of water. How many bricks can be put in without overflowing the water, each brick being 22.5 cm × 7.5 cm × 6.5 cm?

686) In one fortnight of a given month, there was a rainfall of 10 cm in a river valley. If the area of the valley is 7280 km^2, show that the total rainfall was approximately equivalent to the addition to the normal water of three rivers each 1072 km long, 75 m wide and 3 m deep.

687) An oil funnel made of tin sheet consists of a 10 cm long cylindrical portion attached to a frustum of a cone. If the total height is 22 cm, diameter of the cylindrical portion is 8 cm and the diameter of the top of the funnel is 18 cm, find the area of the tin sheet required to make the funnel.



688) Derive the formula for the curved surface area and total surface area of the frustum of a cone, given to you in Section 13.5, using the symbols as explained.

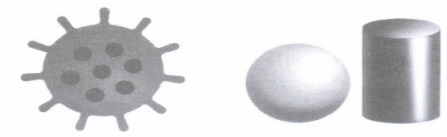
689) Derive the formula for the volume of the frustum of a cone, given to you in Section 13.5, using the symbols as explained

690) A solid toy is in the form of a hemisphere surmounted by a right circular cone. The height of the cone is 2 cm and the diameter of the base is 4 cm. Determine the volume of the toy.

691) A tent is in the shape of a right circular cylinder upto a height of 3 m and conical above it. The total height of the tent is 13.5 m above the ground. Calculate the cost of painting the inner side of the tent at the rate of Rs 2 per m^2, if the radius of the base is 14 m.

Case Study Questions 26 x 4 = 104

692) Arun a 10^{th} standard student makes a project on corona virus in science for an exhibition in his school. In this project, he picks a sphere which has volume 38808 cm^3 and 11 cylindrical shapes, each of volume 1540 cm^3 with length 10 cm.



Based on the above information, answer the following questions.

(i) Diameter of the base of the cylinder is

(a) 7 cm (b) 14 cm (c) 12 cm (d) 16 cm

(ii) Diameter of the sphere is

(a) 40 cm (b) 42 cm (c) 21 cm (d) 20 cm

(iii) Total volume of the shape formed is

(a) 85541 cm^3 (b) 45738 cm^3 (c) 24625 cm^3 (d) 55748 cm^3

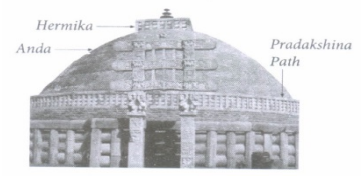
(iv) Curved surface area of the one cylindrical shape is

(a) 850 cm^2 (b) 221 cm^2 (c) 440 cm^2 (d) 540 cm^2

(v) Total area covered by cylindrical shapes on the surface of sphere is

(a) 1694 cm^2 (b) 1580 cm^2 (c) 1896 cm^2 (d) 1470 cm^2

693) Ajay is a Class X student. His class teacher Mrs Kiran arranged a historical trip to great Stupa of Sanchi. She explained that Stupa of Sanchi is great example of architecture in India. Its base part is cylindrical in shape. The dome of this stupa is hemispherical in shape, known as Anda. It also contains a cubical shape part called Hermika at the top. Path around Anda is known as Pradakshina Path.



Based on the above information, answer the following questions.

(i) Find the lateral surface area of the Hermika, if the side of cubical part is 8 m.

(a) 128 m^2 (b) 256 m^2 (c) 512 m^2 (d) 1024 m^2

(ii) The diameter and height of the cylindrical base part are respectively 42 m and 12 m. If the volume of each brick used is 0.01 m^3, then find the number of bricks used to make the cylindrical base.

(a) 1663200 (b) 1580500 (c) 1765000 (d) 1865000

(iii) If the diameter of the Anda is 42 m, then the volume of the Anda is

(a) 17475 m^3 (b) 18605 m^3 (c) 19404 m^3 (d) 18650 m^3

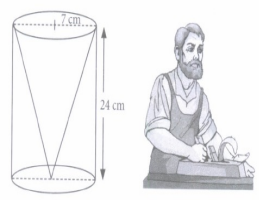
(iv) The radius of the Pradakshina path is 25 m. If Buddhist priest walks 14 rounds on this path, then find the distance covered by the priest.

(a) 1860 m (b) 3600 m (c) 2400 m (d) 2200 m

(v) The curved surface area of the Anda is

(a) 2856 m^2 (b) 2772 m^2 (c) 2473 m^2 (d) 2652 m^2

694) One day Rinku was going home from school, saw a carpenter working on wood. He found that he is carving out a cone of same height and same diameter from a cylinder. The height of the cylinder is 24 ern and base radius is 7 cm. While watching this, some questions came into Rinkus mind. Help Rinku to find the answer of the following questions.



(i) After carving out cone from the cylinder,

(a) Volume of the cylindrical wood will decrease.

(b) Height of the cylindrical wood will increase.

(c) Volume of cylindrical wood will increase.

(d) Radius of the cylindrical wood will decrease.

(ii) Find the slant height of the conical cavity so formed.

(a) 28 cm (b) 38 cm (c) 35 cm (d) 25 cm

(iii) The curved surface area of the conical cavity so formed is

(a) 250 cm^2 (b) 550 cm^2 (c) 350 cm^2 (d) 450 cm^2

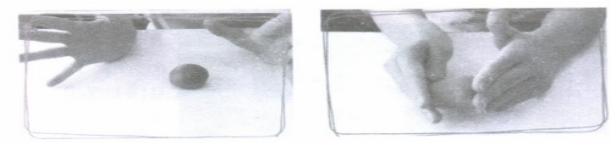
(iv) External curved surface area of the cylinder is

(a) 876 cm^2 (b) 1250 cm^2 (c) 1056 cm^2 (d) 1025 cm^2

(v) Volume of conical cavity is

(a) 1232 cm^3 (b) 1248 cm^3 (c) 1380 cm^3 (d) 999 cm^3

695) To make the learning process more interesting, creative and innovative, Amayras class teacher brings clay in the classroom, to teach the topic - Surface Areas and Volumes. With clay, she forms a cylinder of radius 6 ern and height 8 cm. Then she moulds the cylinder into a sphere and asks some questions to students.



(i) The radius of the sphere so formed is

(a) 4 cm (b) 6 cm (c) 7 cm (d) 8 cm

(ii) The volume of the sphere so formed is

(a) 905.14 cm^3 (b) 903.27 cm^3 (c) 1296.5 cm^3 (d) 1156.63 cm^3

(iii) Find the ratio of the volume of sphere to the volume of cylinder.

(a) 2:1 (b) 1:2 (c) 1:1 (d) 3: 1

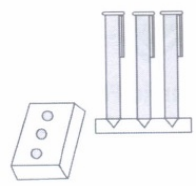
(iv) Total surface area of the cylinder is

(a) 528 cm^2 (b) 756 cm^2 (c) 625 cm^2 (d) 636 cm^2

(v) During the conversion of a solid from one shape to another the volume of new shape will

(a) be increase (b) be decrease (c) remain unaltered (d) be double

696) A carpenter used to make and sell different kinds of wooden pen stands like rectangular, cuboidal, cylindrical, conical. Aarav went to his shop and asked him to make a pen stand as explained below. Pen stand must be of the cuboidal shape with three conical depressions, which can hold 3 pens. The dimensions of the cuboidal part must be 20 cm x 15 cm x 5 cm and the ffrlog radius and depth of each conical depression must be 0.6 cm and 2.1 cm respectively.



Based on the above information, answer the following questions.

(i) The volume of the cuboidal part is

(a) 1250 cm^3 (b) 1500 cm^3 (c) 1625 cm^3 (d) 1500 cm^3

(ii) Total volume of conical depressions is

(a) 2.508 cm^3 (b) 1.5 cm^3 (c) 2.376 cm^3 (d) 3.6 cm^3

(iii) Volume of the wood used in the entire stand is

(a) 631.31 cm^3 (b) 3564 cm^3 (c) 1502.376 cm^3 (d) 1497.624 cm^3

(iv) Total surface area of cone of radius r is given by

$(a)\pi rl + \pi r^2$ $(b)2\pi rl + \pi r^2$ $(c)\pi r^2 l + \pi r^2$ $(d)\pi rl + 2\pi r^3$

(v) If the cost of wood used is Rs 5 per cm^3, then the total cost of making the pen stand is

(a) Rs 8450.50 (b) Rs 7480 (c) Rs 9962.14 (d) Rs 7488.12

697) Meera and Dhara have 12 and 8 coins respectively each of radius 3.5 cm and thickness 0.5 cm. They place their coins one above the other to form solid cylinders .

Based on the above information, answer the following questions.

(i) Curved surface area of the cylinder made by Meera is

(a) 144 cm^2 (b) 132 cm^2 (c) 154 cm^2 (d) 142 cm^2

(ii) The ratio of curved surface area of the cylinders made by Meera and Dhara is

(a) 2: 5 (b) 3: 2 (c) 1: 2 (d) 2: 7

(iii) The volume of the cylinder made by Dhara is

(a) 154 cm^3 (b) 144 cm^3 (c) 132 cm^3 (d) 142 cm^3

(iv) The ratio of the volume of the cylinders made by Meera and Dhara is

(a) 1:2 (b) 2: 5 (c) 3: 2 (d) 4: 3

(v) When two coins are shifted from Meeras cylinder to Dhara's cylinder, then

(a) Volume of two cylinder become equal

(b) Volume of Meera's cylinder > Volume of Dharas cylinder

(c) Volume of Dhara's cylinder > Volume of Meeras cylinder

(d) None of these

698) Ankit wants a beautiful ceramic cuboidal flower vase for the decoration of his room. So, he visit to ceramicists and explained him about, what kind of flower vase he wants. According to his requirement, the ceramicists carved out a sphere of maximum size from a cuboidal ceramic block of dimensions 24 cm by 24 cm by 27 cm.

Based on the above information, answer the following questions.

(i) What is the maximum radius of the sphere that can be carved out from the block of ceramic?

(a) 23 cm (b) 17 cm (c) 9 cm (d) 12 cm

(ii) What is the volume of the complete block of ceramic?

(a) 15552 cm^3 (b) 12646 cm^3 (c) 15292 cm^3 (d) 12898 cm^3

(iii) What is the volume of the ceramic carved out?

(a) 1940.4 cm^3 (b) 7241.14 cm^3 (c) 14553.5 cm^3 (d) None of these

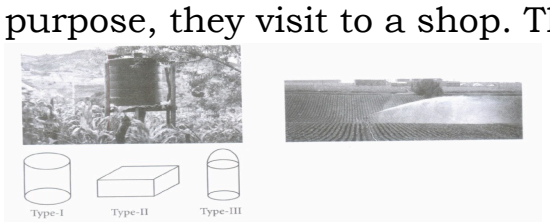
(iv) What is the volume of the cuboidal vase thus formed?

(a) 8853.73 cm^3 (b) 1153.37 cm^3 (c) 8310.86 cm^3 (d) None of these

(v) What is the surface area of the sphere carved out?

(a) 15540 cm^2 (b) 1810.28 cm^2 (c) 2702 cm^2 (d) 1838 cm^2

699) Pankaj's father has to purchase a new water tank to store water for irrigation of their fields. For this purpose, they visit to a shop. The shopkeeper has three types of water tanks as shown below.



Based on the above information, answer the following questions.

(i) If the radius of type- I tank is 1.5 m and its height is 3.5 m, then find the capacity of tank type- I. (Take π : = 3.14)

(a) 24727.5 litres (b) 10000 litres (c) 13200 litres (d) 90400 litres

(ii) Find the capacity of type- II tank having dimensions 5 m x 4 m x 3.5 m

(a) 72000 litres (b) 70000 litres (c) 250000 litres (d) 404000 litres

(iii) How much more water type- III tank contains than tank of type- I, if its base radius is 2.5 m and total height is 5.5 m? [Take π = 3.14]

(a) 12394.5 litres (b) 32200.5 litres (c) 29000.5 litres (d) 66852.5 litres

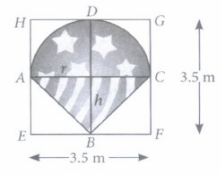
(iv) If Pankaj's father bought type- II tank and wants to cover it with a cloth costs Rs 45 per m^2, then find the total cost of cloth used (if cloth is covered on all its faces).

(a) Rs 4495 (b) Rs 1500 (c) Rs 4635 (d) Rs 1750

(v) Find the ratio of the total surface area of type- I and type-Il tanks.

(a) 728: 275 (b) 275: 729 (c) 51: 325 (d) 471: 1030

700) Emily purchased a spinner from a shop, which is of the shape as shown in the figure, in which right circular cone and hemisphere lie on opposite sides of a common base of length 3.5 m. Cylindrical box circumscribing them in this position. Now, answer the following questions.



(i) What will be the volume of the cone?

(a) 6.5 m^3 **(b) 2.9 m^3** **(c) 40 m^3** **(d) 5.614 m^3**

(ii) Volume of hemispherical part is

(a) 11.23 m^3 **(b) 6.03 m^3** **(c) 8 m^3** **(d) 9.5 m^3**

(iii) Volume of cyiinder that circumscribe the cone and hemisphere, is

(a) 31 m^3 **(b) 17.19 m^3** **(c) 17.5 m^3** **(d) 33.69 m^3**

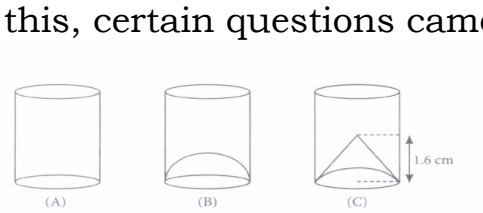
(iv) Find the additional space enclosed by the cylinder.

(a) 3.14 m^3 **(b) 0.13 m^3** **(c) 2.14 cm^3** **(d) 16.846 m^3**

(v) Find the ratio of the curved surface areas of cone and hemisphere.

$(a) 1 : \sqrt{2}$ $(b) 1 : 5$ $(c) 1 : \sqrt{5}$ $(d) 1 : 3$

701) Pinki's class teacher explained the students about the benefits of drinking fruit juice in the morning. So, Pinki went to a juice stall with her friend Bipin. On the stall, they observed that shopkeeper has three types of glasses of inner diameter 4.6 cm to serve customers. The height of each glass is 11 cm. Seeing this, certain questions came into their mind. Help Pinki and Bipin to solve these questions.



(i) Volume of the type (A) glass is

(a) 275 cm^3 **(b) 250 cm^3** **(c) 182.88 cm^3** **(d) 208 cm^3**

(ii) Volume of type (B) glass is

(a) 208.6cm^3 **(b) 150.5 cm^3** **(c) 152.4 cm^3** **(d) 157.39 cm^3**

(iii) How much more juice can be filled in type (A) glass than glass of type (C)?

(a) 10.48 mL **(b) 9.10 mL** **(c) 98.12 mL** **(d) 8.6 mL**

(iv) Which glass has minimum capacity?

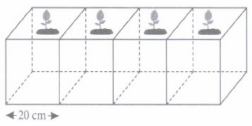
(a) Type (A) **(b) Type (B)**

(c) Type (C) **(d) All glasses have same capacity**

(v) Which mathematical concept has been used in above problem?

(a) Curved surface area **(b) Total surface area** **(c) Volume** **(d) None of these**

702) Anjali join four cubical open boxes of edge 20 cm each to make a pot for planting saplings of pudina in her kitchen garden, The saplings are cylindrical in shape with diameter 14.2 cm and height 11 cm.



On the basis of above information, answer the following questions.

(i) If Anjali wants to paint the outer surface of the pot, then how much area she needs to paint?

(a) 6400 cm^2 **(b) 5600 cm^2** **(c) 4200 cm^2** **(d) 2025 cm^2**

(ii) What is the volume of the pot formed?

(a) 32000 cm^3 **(b) 20250 cm^3** **(c) 40000 cm^3** **(d) 10125 cm^3**

(iii) If Anjali decorates the four walls of the pot with coloured square paper of side 10 cm each, then how many pieces of papers would be required?

(a) 120 **(b) 54** **(c) 160** **(d) 40**

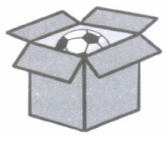
(iv) Find the volume of 1 sapling.

(a) 1742.75 cm^3 **(b) 4548.16 cm^3** **(c) 1764.08 cm^3** **(d) None of these**

(v) If Anjali planted 4 saplings in the pot with some soil and compost up to the brim of the pot, then how much soil and compost are there in the pot?

(a) 12612 cm^3 **(b) 25029 cm^3** **(c) 21975 cm^3** **(d) None of these**

703) Ritu packed a football as a gift for her brother's birthday in a cuboidal box whose diameter is same as that of length of base of the box having length, breadth and height respectively 23 cm, 23 cm and 28 cm.



(i) The volume of the football is

(a) 3581 cu.cm **(b) 6373.19 cu.cm** **(c) 6451 cu.cm** **(d) 9807 cu.crn**

(ii) Ritu covers the box with a wrapping sheet. The area of the wrapping sheet that covers the box exactly is

(a) 3634 sq.cm **(b) 2533 sq.cm** **(c) 2584 sq.cm** **(d) 3813 sq.cm**

(iii) The volume of the box is

(a) 25733 cu.crn **(b) 18573 cu.cm** **(c) 14812 cu.cm** **(d) 77536 cu.crn**

(iv) Half of the remaining volume of the box is filled with thermocol balls. Find the volume of thermocol balls used.

(a) 36150.9 cu.cm **(b) 4219.405 cu.crn** **(c) 2764 cu.cm** **(d) 4048.05 cu.cm**

(v) The surface area of the football is

(a) 691.03 sq.cm **(b) 12772 sq.cm** **(c) 15544 sq.cm** **(d) 1662.57 sq.cm**

704) Alok and his family went for a vacation to Iaipur, There they had a stay in tent for a night. Alok found that the tent in which they stayed is in the form of a cone surmounted on a cylinder. The total height of the tent is 42 m, diameter of the base is 42 m and height of the cylinder is 22 m.

Based on the above information, answer the following questions.

(i) How much canvas is needed to make the tent?

(a) 3280 m^2 (b) 4464 m^2 (c) 4818 m^2 (d) None of these

(ii) If each person needs 126 m^2 of floor, then how many persons can be accommodated in the tent?

(a) 17 (b) 11 (c) 19 (d) 15

(iii) Find the cost of the canvas used to make the tent, if the cost of 100 m^2 of canvas is Rs 425.

(a) Rs 12944 (b) Rs 18244 (c) Rs 24724 (d) Rs 20476.50

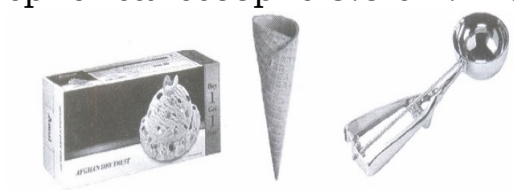
(iv) Find the volume of the tent.

(a) 27248 m^3 (b) 32496 m^3 (c) 39732 m^3 (d) 15874 m^3

(v) Find the number of persons that can be accommodated in tent, if each person needs 1892 m^3 of space.

(a) 21 (b) 31 (c) 18 (d) 42

705) Isha's father brought an ice-cream brick, empty cones and scoop to pour the ice-cream into cones for all the family members. Dimensions of the ice-cream brick are (30 x 25 x 10) cm^3 and radius of hem i-spherical scoop is 3.5 cm. Also, the radius and height of cone are 3.5 cm and 15 cm respectively.



Based on the above information, answer the following questions.

(i) The quantity of ice-cream in the brick (in litres) is

(a) 3 (b) 7.5 (c) 2.5 (d) 4.5

(ii) Volume of hemispherical scoop is

(a) 40.6 cm^3 (b) 2509 cm^3 (c) 89.83 cm^3 (d) 20 cm^3

(iii) Volume of a cone is

(a) 148 cm^3 (b) 250.05 cm^3 (c) 145.83 cm^3 (d) 192.5 cm^3

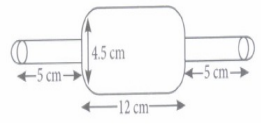
(iv) The minimum number of scoops required to fill one cone upto brim is

(a) 2 (b) 3 (c) 4 (d) 5

(v) The number of cones that can be filled upto brim using the whole brick is

(a) 15 (b) 39 (c) 40 (d) 42

706) Arpana is studying in X standard. While helping her mother in kitchen, she saw rolling pin made of steel and empty from inner side, with two small hemispherical ends as shown in the figure.



(i) Find the curved surface area of two identical cylindrical parts, if the diameter is 2.5 cm and length of each part is 5 cm.

(a) 475 cm^2 **(b) 78.57 cm^2** **(c) 877 cm^2** **(d) 259.19 cm^2**

(ii) Find the volume of big cylindrical part.

(a) 190.93 cm^3 **(b) 75 cm^3** **(c) 77 cm^3** **(d) 83.5 cm^3**

(iii) Volume of two hemispherical ends having diameter 2.5 cm, is

(a) 4.75 cm^3 **(b) 8.18 cm^3** **(c) 2.76 cm^3** **(d) 75 cm^3**

(iv) Curved surface area of two hemispherical ends, is

(a) 17.5cm^2 **(b) 7.9cm^2** **(c) 19.64 cm^2** **(d) 15.5 cm^2**

(v) Find the difference of volumes of bigger cylindrical part and total volume of the two small hemispherical ends.

(a) 175.50 cm^3 **(b) 182.75 cm^3** **(c) 76.85 cm^3** **(d) 96 cm^3**

707) Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2 domes at the corners which are hemispherical.7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes.

(i) How much cloth material will be required to cover 2 big domes each of readius 2.5 metres? (take π = 22/7)

(a) 75 m^2 **(b) 78.57 m^2** **(c) 87.47m^2** **(d) 25.8m^2**

(ii) Write the formula to find the volume of a cylindrical pillar:

(a) $\pi r^2 h$ **(b) πrl** **(c) $\pi r(l + r)$** **(d) $2\pi r$**

(iii) Find the lateral surface of two pillars if height of the pillar is 7 cm and the radius of the base is 1.4m.

(a) 112.3 cm^2 **(b) 123. $2m^2$** **(c) 90 m^2** **(d) 345.2m^2**

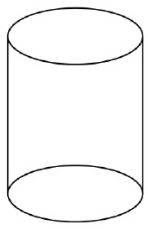
(iv) How much is the volume of hemisphere if the radius of the base is 3.5m?

(a) 85.9 m^3 **(b) 80 m^3** **(c) 98 m^3** **(d) 89.83 m^3**

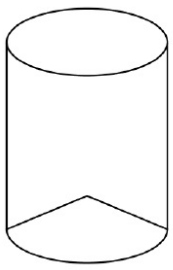
(v) What is the ratio of sum of volumes of two hemisphere of radius of 1 cm each of the volume of a sphere of radius 2 cm?

(a) 1:1 **(b) 1:8** **(c) 8:1** **(d) 1:16**

708) Isha is 10 years old girl. On the result day, Isha and her father Suresh were very happy as she got first position in the class. While coming back to their home, Isha asked for a treat from her father as a reward for her success. They went to a juice shop and asked for two glasses of juice.
Aisha, a juice seller, was serving juice to her customers in two types of glasses. Both the glasses had inner radius 3cm. The height of both the glasses was 10 cm.
First type: A Glass with hemispherical raised bottom.



Second type: A glass with conical raised bottom of height 1.5 cm



Give answer the following questions based on above conditions :

(i) What is the capacity of first glass?

(a) 72 π cm^2 **(b) 72 π cm^3** **(c) 85 π cm^2** **(d) 85 π cm^3**

(ii) What is the capacity of second glass?

(a) 85.5 π cm^3 **(b) 85 π cm^3** **(c) 85 π cm^2** **(d) 85 π cm^3**

(iii) Find the ratio of the capacity of both types of glass.

(a) 16 : 19 **(b) 17 : 19** **(c) 15 : 19** **(d) 18 : 19**

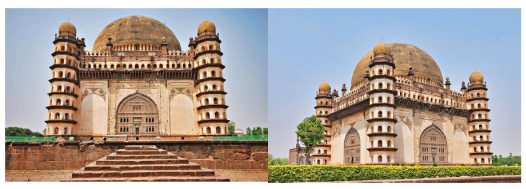
(iv) Isha insisted to have the juice is first type of glass and her father decided to have the juice in second type of glass. Out of the two, Isha or her father Suresh, who got more quantities of juice to drink and by how much?

(a) Isha; 72 π cm^3 **(b) Suresh; 85.5π cm^3** **(c) Suresh; 72 π cm^3** **(d) Suresh; 13.5π cm^3**

(v) How much quantity of juice is purchased by Suresh from a juice seller?

(a) 157.5 π cm^3 **(b) 1575 π cm^3** **(c) 157.5 π cm^3** **(d) none of these**

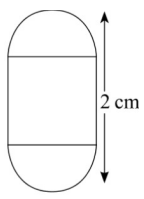
709) Mathematics teacher of a school took her 10th standard students to show Gol Gumbaz. It was a part of their Educational trip. The teacher had interest in history as well. She narrated the facts of Gul Gumbaz to students. Gol Gumbaz is the tomb of king Muhammad Adil Shah, Adil Shah Dynasty. Construction of the tomb, located in Vijayapura , Karnataka, India, was started in 1626 and completed in 1656. Then the teacher said in this monument one can find combination of solid figures. She pointed that there are cubical bases and hemisherical dome is at the top.



(i) What is the diagonal o the cubic portion of Gol Gumbaz, if one side of cubial portion is 23m?

(a) 23 m **(b) $23\sqrt{2}$ m** **(c) $23\sqrt{3}$ m** **(d) 24 m**

(ii) A block of Gol Gumbaz is in the shape of the cylinder of diameter 0.5 cm with two hemispheres stuck to each other of its ends. The length of the shape is 2 cm. The volume of the block is : (Use = π 3.14)



(a) 0.26 cm^3 **(b) 0.36 cm^3** **(c) 0.34 cm^3** **(d) 0.33 cm^3**

(iii) If two solid hemispheres of same base radii r, are joined together along their bases, then curved surface area of this new solid is

(a) $4\pi r^2$ (b) $6\pi r^2$ (c) $3\pi r^2$ (d) $8\pi r^2$

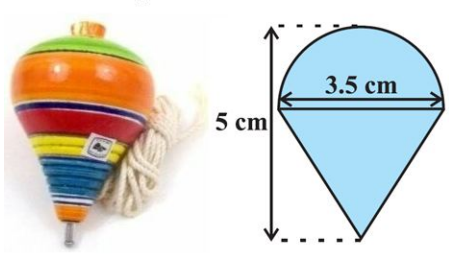
(iv) A solid piece of iron taken out from the back of Gol Gumbaz in the form of a cuboid of dimensions 49 cm x 33 cm x 24 cm, is moulded to form a solid sphere. The radius of the sphere is :

(a) 19 cm (b) 23 cm (c) 25 cm (d) 21 cm

(v) The total surface area of a hemisphercial dome having radius 7 cm is :

(a) 462 cm^2 **(b) 294 cm^2** **(c) 588 cm^2** **(d) 154 cm^2**

710) Rasheed is very happy for his birthday celebration. He got lot of birthday gifts in his party. Out of all birthday gifts, he liked a playing top (lattu) most, which surprisingly had no colour on it. He wanted to colour it with his crayons. The top is shaped like a cone surmounted by a hemisphere (see the below figure). The entire top is 5 cm in height and the diameter of the top is 3.5 cm.



(a) What is height of the cone?

(i) 5 cm (ii) 3 cm (iii) 3.25 cm (iv) 4 cm

(b) What is slant height of the cone?

(i) 5 cm (ii) 3.7 cm (iii) 3.25 cm (iv) 4cm

(c) What is the Curved Surface Area of the cone?

(i) 19.5 cm^2 **(ii) 20.35 cm^2** **(iii) 20.5 cm^2** **(iv) 19.25 cm^2**

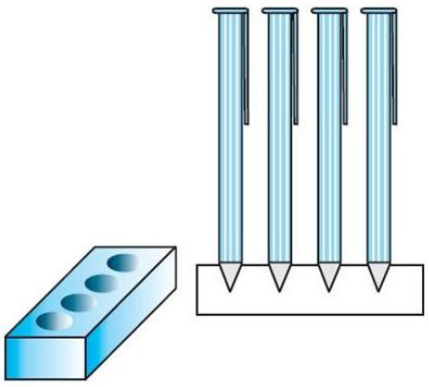
(d) What is the Curved Surface Area of the hemisphere?

(i) 19.5 cm^2 **(ii) 20.35 cm^2** **(iii) 20.5 cm^2** **(iv) 19.25 cm^2**

(e) What is the Total Surface Area of the toy?

(i) 39.6 cm^2 **(ii) 39.35 cm^2** **(iii) 39.5 cm^2** **(iv) 39.85 cm^2**

711) A student made a wooden pen stand which is in the shape of a cuboid with four conical depressions to hold pens. The dimensions of the cuboid are 15 cm by 10 cm by 3.5 cm. The radius of each of the depressions is 0.5 cm and the depth is 1.4 cm. Find the volume of wood in the entire stand (see the below figure).



(a) What is the volume of cuboid?

(i) 525 cm^3 (ii) 225 cm^3 (iii) 552 cm^3 (iv) 225 cm^3

(b) What is the volume of cone?

(i) $\frac{11}{3}$ cm^3 **(ii)** $\frac{11}{30}$ cm^3 **(iii)** $\frac{3}{11}$ cm^3 **(iv)** $\frac{30}{11}$ cm^3

(c) What is the total volume of conical depressions?

(i) 1.74 cm^3 (ii) 1.44cm^3 (iii) 1.47cm^3 (iv) 1.77cm^3

(d) What is the volume of wood in the entire stand?

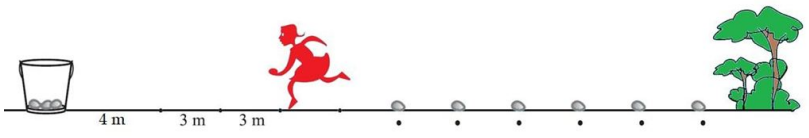
(i) 522.35 cm^3 (ii) 532.53 cm^3 (iii) 523.35 cm^3 (iv) 523.53cm^3

(e) The given problem is based on which mathematical concept?

(i) Triangle (ii) surface Areas & Volumes (iii) Height & Distances (iv) None of these

712) In a potato race, a bucket is placed at the starting point, which is 4 m from the first potato, and the other potatoes are placed 3 m apart in a straight line. There are ten potatoes in the line (see below figure).

A competitor starts from the bucket, picks up the nearest potato, runs back with it, drops it in the bucket, runs back to pick up the next potato, runs to the bucket to drop it in, and she continues in the same way until all the potatoes are in the bucket



(a) What is the distance covered by the competitor in first potato?

(a) 10m (b) 8m (c) 12m (d) 14m

(ii) What is the distance covered by the competitor in second potato?

(a) 14 m (b) 12 m (c) 10 m (d) 8m

(iii) What is the distance covered by the competitor in fourth potato?

(a) 22 m (b) 24 m (c) 26 m (d) 28 m

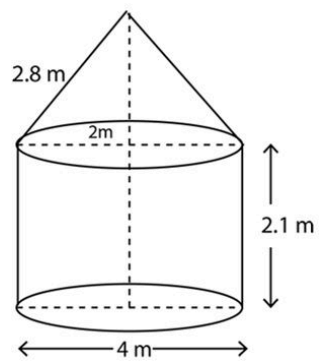
(iv) What is the total distance covered by the competitor in first and second potato?

(a) 22 m (b) 24 m (c) 26 m (d) 30 m

(v) If the A.P. 8, 14, 20, ..., then find the common difference

(a) 4 (b) 8 (c) 12 (d) 6

713) The group of Class X students went on a trip. The incharge of the trip is planned to stay in tents. They took canvas for the arrangement of two tents which is in the shape of a cylinder surmounted by a conical top. The height and diameter of the cylindrical part are 2.1 m and 4 m respectively, and the slant height of the top is 2.8 m.



(i) Write the formula of Total Surface Area of cylinder

(a) $2\pi r(r+h)$ **(b)** $2\pi rh$ **(c)** $\frac{1}{3}\pi r^2 h$ **(d) none of these**

(ii) Find the formula for finding the Area of canvas used in one tent.

(a) $2\pi rh + \Pi rl$ **(b)** $2\Pi rh + \Pi rl + 2\Pi r^2$ **(c)** $2\Pi rh + \Pi rl + \Pi r^2$ **(d)** $\Pi rh + \Pi rl$

(iii) What will be the volume of tent if the conical part of tent has height H and radius R and the height of cylinder is h and base radius is same as of cone?

(a) $\frac{1}{3}\pi R^2 H + \pi R^2 h$ **(b)** $\frac{1}{3}\pi R^2 H$ **(c)** $\pi R^2 h$ **(d) none of these**

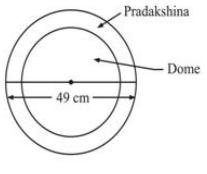
(iv) What is the ratio of volumes of two cylinders of radius cm, height 5 cm and radius 3 cm, height 5 cm respectively?

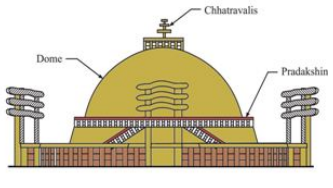
(a) 1 : 9 **(b) 2 : 9** **(c) 3 : 9** **(d) 4:9**

(v) Find the area of the canvas used for making one tent used in the trip.

(a) 4.4m^2 (b) 44m^2 (c) 440 m² (d) none of these

714) Sanchi Stupa is a Buddhist complex in Raisen District of the state of Madhya Pradesh. A renowned architect prepared a small scale model which is an exact replica of the Stupa. The diameter of the hemispherical dome is 42 cm. The dome is filled with clay. Three chhatravalis are fixed on the top of the dome. These chhatravalis have radii 2.1 cm, 1.4 cm and 0.7 cm respectively. One Oopri Pradakshina Path is attached all around the dome. The outer diameter of this path is 49 cm





(a) he volume of clay used to prepare the dome is

(i) 16816 cm³ **(ii) 17151 cm³** **(iii) 19404 cm^3** **(iv) 21105 cm^3**

(b) The architect was asked to cover all the chhatravalis by a conical chhatra (umbrella) having radius same as that of the chhatravali and height 2.4 cm. Find the area of the silk cloth required to prepare the chhatra.

(i) 4.2 cm² (ii) 5.5 cm² (iii) 6.25 cm² (iv) 7.5 cm^2

(c).The chhatravalis are to be gold plated. Taking the thickness of each chhatravali to be negligible, find the area of the largest chhatravali to be gold plated.

(i) 18.56 cm² **(ii) 21.14 cm** **(iii) 27.72 cm²** **(iv) 33.36cm^2**

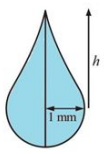
(d) Find the cost of fixing crystals on the surface of the dome at a rate of Rs. 5 per cm2.

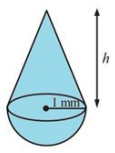
(i) Rs. 13860 **(ii)) Rs. 14445** **(iii) Rs. 17475** **(iv) 18360**

(e) Find the area of the Oopri Pradakshina Path

(i) 201.1 cm² **(ii) 363.5 cm^2** **(iii) 500.5 cm^2** **(iv) 801.1cm^2**

715) In the month of December 2020, it rained heavily throughout the day over the city of Hyderabad. Anil observed the raindrops as they reached him. Each raindrop was in the shape of a hemisphere surmounted by a cone of the same radius of 1 mm. Volume of one of such drops is 3.14 mm³. Anil collected the rain water in a pot having a capacity of 1099 cm³.[Use $[\text{Use}\sqrt{2} = 1.4]$]



Based on the above situation, answers the following questions.

(a) Find the total height of the drop.

(i) 1 mm (ii) 2mm (iii) 3 mm (iv) 4mm

(b) The curved surface area of the drop is

(i) 8.74 mm^3 (b) 9.12 mm^3 (c) 10.68 mm^3 (iv) 12.54 mm^3

(c) As the drop fell into the pot, it changed into a sphere. What was the radius of this sphere?

(i) $(3/4)^{1/3}$ **(ii)** $(4/3)^{1/3}$ **(c)** $3^{1/3}$ **(d)** $4^{1/3}$

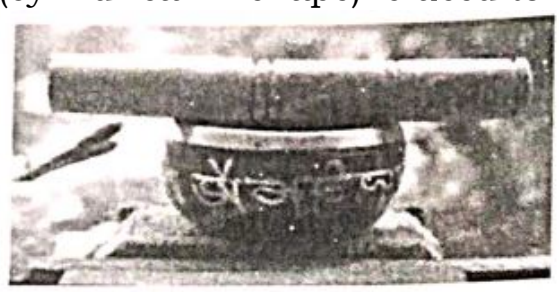
(d) How many drops will fill the pot completely.

(i) 260000 (ii) 280000 (iii) 320000 (iv) 350000

(e) The total surface area of a hemisphere of radius r is

(i) $2/3\pi r^3$ **(ii)** $4/3\text{Tr}^3$ **(iii)** $2\pi r^2$ **(iv)** $3\pi r^2$

716) Singing bowls (hemispherical in shape) are commonly used in sounds healing practices. Mallet (cylindrical in shape) is used to strike the bowl in a sequence to produce sound and vibration.



One such bowl is shown here whose dimensions are

Hemispherical bowl has outer radius 6 cm and inner radius 5 cm.

Mallet has height of 10 cm and radius 2 cm.

Based on the above, answer the following questions

(i) What is the volume of the material used in making the mallet?

(ii) The bowl is to be polished fron inside. Find the inner surface area of the bowl.

(iii) Find the volume of metal used to make the bowl.

Or

Find total surface area of the mallet (Use $\pi = 3.14$)

717) A golf ball is spherical with ab 300-500 dimples that help increase velocity while in play. Golf balls traditionally white but available in colo also. In the given figure, a golf ball diameter 4.2 cm and the surface has dimples (hemi-spherical) of radius 2 mm


Based on the above, answer the following questions

(i) Find the surface area of one such dimple.

(ii) Find the volume of the material dug out to make one dimple.

(iii) Find the total surface area exposed to the surroundings.

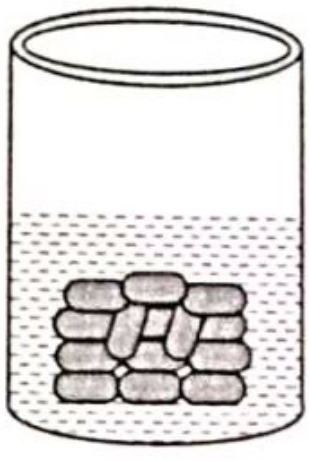
Or

Find the volume of the golf ball

5 Marks 100 x 5 = 500

718) A toy is in the form of a cone of radius 3.5 cm mounted on a hemisphere of same radius. The total height of the toy is 15.5 cm. Find the total surface area of the toy.

719) A gulab jamun, contains sugar syrup up to about 30% of its volume.Find approximately how much syrup would be found in 45 gulab jamuns, each shaped like a cylinder with two hemispherical ends with length 5cm and diameter 2.8cm . (see figure).

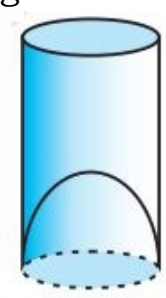


720) A solid iron pole consists of a cylinder of height 220 cm and base diameter 24 cm, which is surmounted by another cylinder of height 60 cm and radius 8 cm.Find the mass of the pole, given that $1cm^3$ of iron has approximately 8g mass.(use π=3.14)

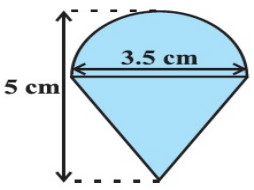
721) A solid consisting of a right circular cone of height 120cm and radius 60cm standing on a hemisphere of radius 60cm is placed upright in a right circular cylinder full of water such that it touches the bottom.Find the volume of water left in the cylinder, if the radius of the cylinder is 60cm and its height is 180cm.

722) A spherical glass vessel has a cylindrical neck 8cm long, 2cm in diameter, the diameter of the spherical part is 8.5cm.By measuring the amount of water it holds, a child finds its volume to be $345cm^3$.Check whether she is correct, taking the above as the inside measurements, and $\pi = 3.14$

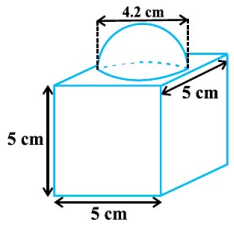
723) A juice seller was serving his customers using glasses as shown in Figure. The inner diameter of the cylindrical glass was 5 cm, but the bottom of the glass had a hemispherical raised portion which reduced the capacity of the glass. If the height of a glass was 10 cm, find the apparent capacity of the glass and its actual capacity. $[Use \quad \pi = 3.14]$



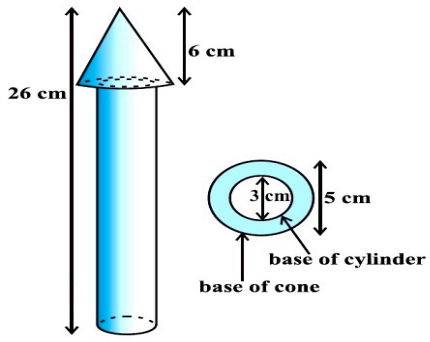
724) Rasheed got a playing top (lattu) as his birthday present, which surprisingly had no colour on it. He wanted to colour it with his crayons. The top is shaped like a cone surmounted by a hemisphere. The entire top is 5 cm in height and the diameter of the top is 3.5 cm. Find the area he has to colour $(\text{Take } \pi = \frac{22}{7})$



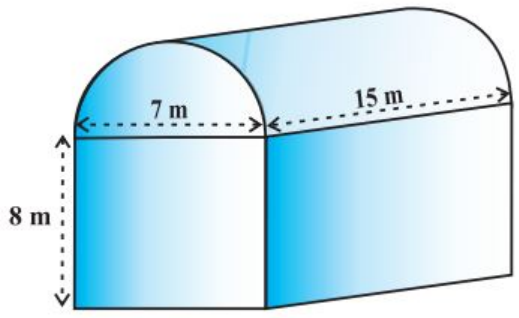
725) The decorative block shown in figure is made of two solids — a cube and a hemisphere. The base of the block is a cube with edge 5 cm, and the hemisphere fixed on the top has a diameter of 4.2 cm. Find the total surface area of the block. $(\text{Take } \pi = \frac{22}{7})$



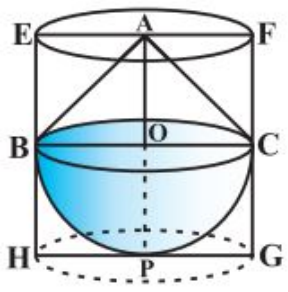
726) A wooden toy rocket is in the shape of a cone mounted on a cylinder, as shown in figure. The height of the entire rocket is 26 cm, while the height of the conical part is 6 cm. The base of the conical portion has a diameter of 5 cm, while the base diameter of the cylindrical portion is 3 cm. If the conical portion is to be painted orange and the cylindrical portion yellow, find the area of the rocket painted with each of these colours. (Take $\pi = 3.14$)



727) Shanta runs an industry in a shed which is in the shape of a cuboid surmounted by a half cylinder (see figure). If the base of the shed is of dimension 7 m × 15 m, and the height of the cuboidal portion is 8 m, find the volume of air that the shed can hold. Further,suppose the machinery in the shed occupies a total space of 300 m^3, and there are 20 workers, each of whom occupy about 0.08 m^3 space on an average. Then, how much air is in the shed? (Take $\pi = \frac{22}{7}$)



728) A solid toy is in the form of a hemisphere surmounted by a right circular cone. The height of the cone is 2 cm and the diameter of the base is 4 cm. Determine the volume of the toy. If a right circular cylinder circumscribes the toy, find the difference of the volumes of the cylinder and the toy. (Take $\pi = 3.14$)



729) From a solid cylindrical whose height is 2.4cm and diameter 1.4cm, a conical cavity of the same height and same diameter is hollowed out.Find the total surface area of the remaining solid to the nearest cm^2 .

730) A wooden article was made by scooping out a hemisphere from each end of a solid cylinder.If the height of the cylinder is 20cm and radius of the base is 3.5cm, find the total surface area of the article.

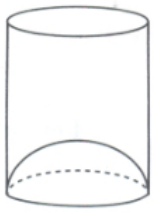
731) From a solid cylinder whose height is 15 cm and the diameter is 16 cm, a conical cavity of the same height and same diameter is hollowed out. Find the total surface area of the remaining solid. [give your answer in terms of π]

732) The dimensions of a room are 8m x 6m xh.It has two doors each of size 2m x 1m and one almirah of size 3m x 2m.The cost of covering the walls by wallpaper which is 40cm wide at Rs.1.25 per m is Rs.362.50.Find height.

733) A tent is in the shape of a right circular cylinder up to a height of 3m and then becomes a right circular cone with a maximum height of 13.5m above the ground.Calculate the cost of painting the inner side of the tent at the rate of Rs.2 per m^2 , if the radius of the base is 14m.

734) A tent is in the shape of a cylinder surmounted by a conical top.If the height and diameter of the cylindrical part are 2.1m and 4m respectively, and the slant height of the top is 2.8m, find the area of the canvas used for making the tent.Find the cost of the canvas of the tent at the rate of Rs.500 per m^2.Also find the volume air enclosed in the tent.

735) A juice seller serves his customers using a glass as shown in figure.The inner diameter of the cylindrical glass is 5cm, but the bottom of the glass has a hemispherical portion raised which reduces the capacity of the glass.If the height of the glass is 10cm, find the apparent capacity of the glass and its actual capacity.[π =3.14]



736) The interior of a building is in the form of a cylinder of diameter 4.3m and height 3.8m, surmounted by a cone whose vertical angle is a right angle.Find the area of the surface and volume of the building.

737) A rectangular sheet of paper 30cm x 18cm can be transformed into the curved surface of a right circular cylinder in two ways either by rolling the paper along its length or by rolling it along its breath.Find the ratio of the volumes of the two cylinders thus formed.

738) A solid is in the form of a cylinder with hemispherical ends.The total height of the solid is 19cm and the diameter of the cylinder is 7cm.Find the volume and surface area of the solid.

739) Metallic spheres of radii 6cm, 8cm and 10cm, respectively, are melted to form a single solid sphere.Find the radius of the resulting sphere.

740) A sphere, of diameter 12 cm, is dropped in a right circular cylindrical vessel, partly filled with water. If the sphere is completely submerged in water, the water level in the cylindrical vessel rises by $3\frac{5}{9}$ cm. Find the diameter of the cylindrical vessel.

741) A solid right circular cone of diameter 14 cm and height 8 cm is melted to form a hollow sphere. If the external diameter of the sphere is 10 cm, find the internal diameter of the sphere.

742) Water flows out through a circular pipe whose internal radius is 1 cm, at the rate of 80 cm/second into an empty cylindrical tank, the radius of whose base is 40 cm. By how much will the level of water rise in the tank in half an hour?

743) A cylindrical vessel with internal diameter 10 cm and height 10.5 cm is full of water. A solid cone of base diameter 7 cm and height 6 cm is completely immersed in water. Find the volume of
(i) water displaced out of the cylindrical vessel.
(ii) water left in the cylindrical vessel. [Take $\pi = \frac{22}{7}$]

744) Water is flowing at the rate of 15 km/hour through a pipe of diameter 14 cm into a cuboidal pond which is 50 m long and 44 m wide. In what time will the level of water in the pond rise by 21 cm?

745) A solid is in the form of a right circular cone mounted on a hemisphere. The radius of the hemisphere is 2.1 cm and the height of the cone is 4 cm. The solid is placed in a cylindrical tub, full of water, in such a way that the whole solid is submerged in water. If the radius of the cylinder is 5 cm and its height is 9.8 cm, find the volume of the water left in the cylindrical tub. [Use $\pi = 22/7$]

746) Find the cost of sinking a tubewell 280 m deep having diameter 3 m at the rate of Rs.3.60 per m^3. Find the cost of cementing its inner curved surface at Rs.2.50 per m^2.

747) An iron spherical ball has been melted and recast into smaller balls of equal size. If the radius of each of the smaller balls is 1/4 of the radius of the original ball, how many such balls are made? Compare the surface area of all the smaller balls combined together with that of the original ball.

748) Metal spheres, each of radius 2 cm are packed into a rectangular box of internal dimensions 16 cm x 8 cm x 8 cm. When 16 spheres are packed the box is filled with preservative liquid. Find the volume of the liquid. [Use π = 3.14]

749) A container, opened from the top and made up of a metal sheet is in form of a frustum of a cone of height 16 cm with radii of its lower and upper ends as 8cm and 20 cm, respectively. Find the cost of the milk which can completely fill the container, at the rate of rs.20 per litre. Also find the cost of metal sheet used to make the container, if it costs Rs.8 per 100 cm^2. (Take π = 3.14)

750) A tent consists of a frustum of cone, surmounted by a cone. If the diameter of the upper and lower circular ends of the frustum are 14 m and 26 m respectively, the height of the frustum is 8 m and the slant height of the surmounted conical portion is 12 m, find the area of canvas required to make the tent. (Assume that the radii of the upper circular end of the frustum and the base of surmounted conical portion are equal.)

751) A bucket of height 16 cm is made up of metal sheet in the form of frustum of a right circular cone with radii of its lower and upper ends as 8 cm and 20 cm respectively. Find the volume of milk which can be filled in the bucket. Also find the cost of making the bucket when the metal sheet costs Rs. 15 per 100 cm^2 .

752) A milk container is made of metal sheet in the shape of frustum of a cone whose volume is $10459\frac{3}{7}$ cm^3. The radii of its lower and upper circular ends are 8 cm and 20 cm respectively. Find the cost of metal sheet used in making the container at the rate of Rs.1.40 per square centimetre. [Use $\pi = \frac{22}{7}$]

753) A bucket open at the top is of the form of a frustum of a cone. The diameters of its upper and lower circular ends are 40 cm and 20 cm respectively. If total 17600 cm^3 of water can be filled in the bucket, find its total surface area. [Use $\pi = \frac{22}{7}$]

754) A bucket has top and bottom diameter of 40 cm and 20 cm respectively. Find the volume of the bucket if its depth is 12 cm. Also find the cost of tin sheet for making the bucket at the rate of Rs.1.20 per dm^2.

755) A lead pencil consists of a cylinder of wood with solid cylinder of graphite filled into it. The diameter of the pencil is 7 mm; the diameter of the graphite is 1 mm and the length of the pencil is 10 cm. Calculate the weight of the whole pencil if the specific gravity of the wood is 0.7 g/cm^3 and that of the graphite is 2.1 g/cm^3 .

756) A rocket is in form of a cylinder closed at the lower end with a cone of the same radius attached to the top. The cylinder is of the radius 2.5 m and height 21 m and the cone has the slant height 8 m. Calculate the total surface area of the rocket.

757) An iron pillar has some part in the form of a right circular cylinder and remaining in the form of a right circular cone. the radius of base of each of cone and cylinder is 8 cm. The cylindrical part is 240 cm high and the conical part is 36 cm high. Find the weight of the pillar, if one cubic cm of iron weights 10 g. [Use $\pi = 22/7$]

758) Length of a room is one and half times of its breadth. The cost of carpeting the room at Rs.3.25 per m^2 is Rs.175.50 and the cost of papering the walls at Rs.1.40 per m^2 is Rs.240.80. If 1 door and 2 windows occupy 8 m^2, find the dimensions of the room.

759) The external length, breadth and height of a closed rectangular wooden box are 18 cm, 10 cm and 6 cm respectively and thickness of wood is 1/2 cm. When the box is empty it weighs 15 kg and when filled with sand it weighs 100 kg. Find the weight of the cubic cm of wood and cubic am of sand.

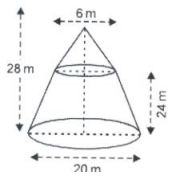
760) The rain water from a roof of dimensions 22 m x 20 m drains into a cylindrical vessel having diameter of base 2 m and height 3.5 m. If the rain water collected from the roof just fill the cylindrical vessel, then find the rainfall in cm.

761) Water is flowering at the rate of 2.52 km/h through a cylindrical pipe into a cylindrical tank, the radius of whose base is 40 cm, If the increase in the level of water in the tank, in half an hour is 3.15 m, find the internal diameter of the pipe.

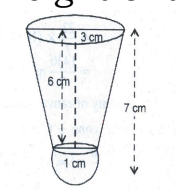
762) From each end of a solid metal cylinder, metal was scooped out in hemispherical form of same diameter. The height of the cylinder is 10 cm and its base is of radius 4.2 cm. The rest of the cylinder is melted and converted into a cylindrical wire of 1.4 cm thickness. Find the length of the wire.[Use $\pi = 22/7$]

763) Due to heavy floods in a state, thousands were rendered homeless. 50 schools collectively offered to the state government to provide place and the canvas for 1500 tents to be fixed by the government and decided to share the whole expenditure equally. The lower part of each tent is cylindrical of base radius 2.8 m and height 3.5 m, with conical upper part of same base radius but of height 2.1 m. If the canvas used to make the costs Rs.120 per sq.m, find the amount shared by each school to set up the tents. What value is generated by the above problem[Use $\pi = 22/7$]

764) The given figure shows a tent which is made in the form of a frustum of a cone surmounted by another cone. The diameters of the base and the top of the frustum are 20 m and 6 m respectively and the height is 24 m. If the height of the tent is 28 m and the radius of the conical part is equal to the radius of the top of the frustum, find the quantity of canvas required.



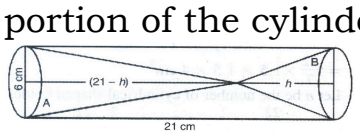
765) A shuttlecock used for playing badminton has the shape of a frustum of a cone mounted on a hemisphere as shown in the figure. The external diameters of the frustum are 6 cm and 2 cm and the height of the entire shuttle cock is 7 cm. Find the external surface area.



766) An iron sphere of radius a units is immersed completely in water contained in a right circular cone of semi-vertical angle 30^o , water is drained off from the cone till its surface touches the sphere. Find the volume of water remaining in the cone.

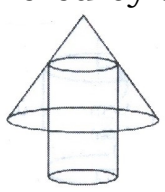
767) A solid toy is in the form of a hemisphere surmounted by a right circular cone. Height of the cone is 2 cm and diameter of the base is 4 cm. If a right circular cylinder circumscribes the solid, find how much much more space it will cover?

768) Two solid cones A and B are placed in a cylindrical tube as shown in the figure. The ratio of their capacities are 2 :1 . Find the heights and capacities of cones. Also, find the volume of the remaining portion of the cylinder.

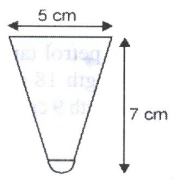


769) A building is in the form of a cylinder surmounted by a hemispherical dome and contains $41\frac{19}{21}m^3$ of air. If the internal diameter of dome is equal to its total height above the floor, find the height of the building ?

770) An empty cylindrical container of radius 7 m and height 10 m is covered by a conical cap of radius 10.5 m and height 9 m. Calculate the volume of the air trapped inside.



771) A shuttlecock used for playing badminton has the shape of a frustum of a cone mounted on a hemisphere, as shown alongside. The external diameters of the frustum are 5 cm and 2 cm, the height of the entire shuttlecock is 7 cm. Find its external surface area correct to one place of decimal.



772) A bucket made up of a metal sheet is in the form of a frustum of a cone of height 16 cm with radii of its lower and upper ends as 8 cm and 20 cm respectively. Find the cost of the bucket if the cost of metal sheet used is Rs. 15 per 100 cm^2 and find the cost of the milk which can completely fill the bucket at the rate of Rs. 16 per litre. $[Use \quad \pi = 3.14]$

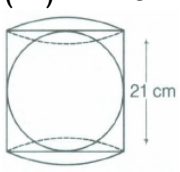
773) A metallic right circular cone 45 cm high and whose vertical angle 60^o is cut into two parts in the ratio 1:2 from the vertex of the cone by a plane parallel to its base. If the frustum so obtained be drawn into a wire of diameter 1 cm, find the length of the wire.

774) A bucket of height 8 cm is made up of copper sheet, is in the form of a frustum of a right circular cone with radii of its lower and upper ends as 3 cm and 9 cm respectively. Calculate :
(i) the height of the cone of which the bucket is a part.
(ii) the volume of water which can be filled in the bucket.
(iii) the area of copper sheet required to make the bucket. $[Use \quad \pi = 3.14]$

775) A child rocket toy has a hemispherical base, a cylindrical body and a conical nose tip. The rocket is 20 cm long. The hemisphere, the cylinder and the cone have a base diameter 3 cm each and the body of the cylindrical box is 8 cm long. Find the volume of the toy rocket. $[Use\ \pi = 3.14]$

776) In a flood hitted area, the volunteers of NSS erected a conical tent made of tarpaulin. The vertical height of the conical tent is 4 m and the base diameter is 6m. if the width of tarpaulin is 1.5 m, then
(i) find the length of the tarpaulin used, assuming that 10% extra material is required for stitching margins and wastage in cutting.[Take $\pi = 3.14$]
(ii) which values are depicted by the volunteers?

777) Ashwani, a factory owner wants to thank all his workers by gifting a decorated spherical ball. The diameter of the sphere is (2a+5) cm. Each ball is to be packed in a right circular cylindrical box which just encloses a sphere as shown in the figure.
If the height of the cylinder is 21 cm, then
(i) what is the value of a?
(ii) what is the curved surface area of a sphere?
(iii) which value are shown by Ashwani?



778) The patients in a hospital are given soup daily in a cylindrical bowl of diameter 7 cm. On a particular day, the girls of kanya Mahavidyalaya decided to cook the soup for the patients.
(i) If they fill the bowl with soup to a height of 5 cm, then how much soup is to be cooked for 300 patients?
(ii) Which value is depicted by the girls?

779) A tank is 225 m long, 162 m broad. With what velocity per sec must water flow into it through an aperture 60 cm by 45 cm that the level may be raised by 20 cm in 5 h?

780) 50 students of class X planned a visit to an old age home and to spend the whole day with its inmates. Each one prepared a cylindrical flower vase using cardboard to gift the inmates. The radius of cylindrical is 4.2 cm and the height is 11.2 cm.
(i) What is the amount spent for purchasing the cardboard at the rate of Rs.20 per 100 m^2?
(ii) Which values are depicted by the students?

781) The difference between the inner and outer surfaces of a cylinder 14 cm long is $88cm^2$ If the volume of the cylinder is 176 cm^3, then find its inner and outer radii.

782) The radius of the internal and external surfaces of a hollow spherical shell are 3 cm and 5 cm, respectively. If it is melted and recast into a solid cylindrical of height $2\frac{2}{3}cm$. Then, find the diameter of the cylinder.

783) Half of a large cylindrical tank open at the top is filled with water and identical heavy spherical balls are to be dropped into the tank without spilling water out. If the radius and the height of the tank are equal and each is four times the radius of a ball, what is the maximum number of balls that can be dropped?

784) The length, breadth and height of a rectangular parallelopiped are in the ratio 6:3:1. If the surface area of a cube is equal to the surface area of this parallelopiped, then what is the ratio of the volume of the cube to the volume of the parallelopiped?

785) A vessel is in the form of a hemisphere bowl mounted by a hollow cylinder. The diameter of the hemisphere is 16 cm and the total of height of the vessel is 15 cm. Find the capacity of the vessel. $\left[take,\quad \pi = \frac{22}{7}\right]$

786) A wooden article was made by scooping out a hemisphere from one face a cubical wooden block. If each edge of cubes is 10 cm and diameter of base of hemisphere is 7 cm, then find the volume of wooden article

787) A spherical glass vessel has a cylindrical neck 7 cm long, 4 cm in diameter of the spherical parts is 21 cm. Find the quantity of water it can hold. $\left(use,\ \pi = \frac{22}{7}\right)$

788) A building in the form of a cylinder surmounted by a hemispherical valuated dome and contains $41\frac{19}{21}$ m^3 of air. If the internal diameter of dome is equal to its total height above the floor. Find the height of the building.

789) Three metallic solid cubes whose edges are 12cm, 16 cm and 20 cm respectively, are melted and formed into a single cube. Find the edge of the cube so formed.

790) If the radii of the circular ends of a frustum are 6 cm and 14 cm. If its slant height is 10 cm, then find its vertical height.

791) A frustum of a cone height 7 cm. The radius of its two circular ends are 6 cm and 3 cm. Find the volume of frustum.

792) A solid cone of base radius 10 cm is cut into two parts through the mid-point of its height by a plane parallel to its base. Find the ratio of the volumes of the two parts of the coe.

793) The inner diameter of a cylindrical container is 7 cm and its top is of the shape of a hemisphere. If the height of the container is 16 cm, then find the actual capacity of the container. $\left[take, \quad \pi = \frac{22}{7}\right]$

794) An agriculture field is the form of a rectangle of length 20 m, width 14 m. A 10 m deep well of diameter 7 m is dug in a corner of the field and the soil taken out of the well is spread evenly over the remaining part of the field. Find the rise in its level.

795) A well of diameter 4 m is dug 14 m deep. The earth taken out is spread evenly all around the well to form a 40 cm high embankment. Find the width of the embankment.

796) If a cone, a hemisphere and a cylinder are on equal bases and their height is also equal. Find the ratio