MATHS

BOOKS - NAGEEN MATHS (HINGLISH)

VOLUME AND SURFACE AREA OF SOLIDS

Solved Examples

1. A tent of cloth is cylindrical up to 1 m height and conical above it of the same radius of

base . If the diameter of tent is 6 m and the slant height of conical part is 5 m, find the cloth required to make this tent

2. A toy is in the form of a cone surmounted by a hemisphere whose radius is $3.5cm$. If the total height of the toy is $15.5cm$ then find its total surface area and the Volume

A. $214.5cm^2$ and $240cm^3$

B. $240cm^2$ and $214.5cm^3$

C. $214.5cm^2$ and $243.83cm^3$

D. $243.83cm^2$ and $214.5cm^3$

Answer: C

3. The base and top of a right circular cylindrical drum are hemispherical .The diameter of cylindrical part is 14 cm and total

height is 30 cm .Find the total surface area of the drum.

4. There is a hemispherical roof on the cylindrical room .There is 5236 m^3 air in this room .The inner diameter of the floor is equal to the maximum height of the room. Find the height of room . (Given that π=3.1416)

5. Three cubes each with 8 cm edge are joined end to end. Find the total surface area of the resulting cuboid.

6. A rectangular sheet of tin $58 \ cm \times 44cm$ is to be made into an open box by cutting off equal squares from the corners and folding up the flaps.What should be the volume of box if the surface area of box is $2452 \ cm^2$?

7. There is some water in a cylindrical vessel of diameter 11 cm .If an iron cube of edge 5.5 cm is entrirely immersed in the water what is the rise in the height of the water in the vessel?

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8. The radii of two right circular cylinders are in the ratio 2: 3 and their heights are in the

ratio 5:4 calculate the ratio pof their curved surface areas and also the ratio of their

9. The dimentsions of a solid iron cuboid are $4.4m \times 2.6m \times 1.0m$ .It is melted and recast into a hollow cylindrical pipe of 30 cm inner radius and thickness 5cm .Find the length of the pipe.

10. In a rain water harvesting system the rain water form a roof of 22 m $\times$ 20m drains in to a cylindrical tank having diameter of base 2m and height 3.5 m . If the tank is full find the rainfall in cm . Write your views on water conservation .

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11. Volume and surface area of a solid hemisphere are numerically equal what is the diameter of the hemisphere?

12. The curved surface are of a cone of height 8 m is 188.4 m^2 .Find the volume of cone

13. A conical tent is required to accommodate 157 persons each person must have 2 mm^2 of space on the ground and 15 m^3 of air to

breath .Find the height of the tent , also calculate the slant height.

14. The radius and height of a solid right circular cone are in the ratio of 5:12 .If its volume is 314 cm^3 Find its total surface area .

$[Take \pi = 3.14]$

15. A right angle triangle with sides 3 cm and 4 cm is revolved around its hypotenuse . Find the volume of the double cone thus generated.

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16. If h,C,V respecitively are the height the curved surface area and volume of a cone prove that $3\pi V h^3 - C^2 h^2 + 9V^2 = 0$

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17. A cone of equal height and equal base is cut off from a cylinder of height 24 cm and base radius 7 cm .Find the total surface and volume of remaining solid.

18. From a wooden cubical block of edge 7 cm , the largest paossible right conical piece is cut out whose base is on one of the faces of the cube. Calculate .

(i) the volume of the wood left in the block

and

the total surface area of the block left (Taken $\pi = \dfrac{22}{7}$

19. A sphere is inscribed in a cylinder such that spere touches the cylinder . Show that the curved surface of spere is equal to the curved surface of cylinder.

20. The largest possible cube is made from a wooden sphere of radius $6\sqrt{3}cm$. Find the surface area of the cube.

21. The adjoining figure represents a solid consisting of a cylinder surmounted by a cone at one end and a hemisphere at the other end. Given that common radius =3.5 cm the height of the cylinder =6.5 cm and the total height

=12.8 cm , claculate the volume of the solid

correct to the nearest cm.

6.6 cm

12.8 cm
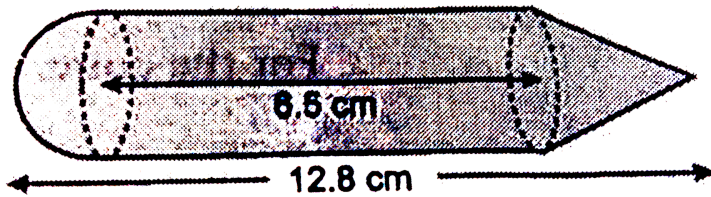
22. From a solid cylinder of height 36 cm and radius 14 cm a conical cavity of radus 7 cm and height 24 cm is drilled out . Find the volume and the total surface area of the remaining solid.

23. A hemisphere is inscribed in a cylinder and a cone is inscribed in the hemisphere .The vertex of cone lies on the centre of the upper circular part of the cylinder .Show that , $\frac{1}{3} \times$ Volume of cylinder $= \frac{1}{2} \times$ Volume of hemishphere= Volume of cone

24. A tank measures 2 m long 1.6 m wide and 1m depth water is there up to 0.4 m height .Bricks measuring $25cm \times 14cm \times 10cm$ are put in to the tank so that water may come up to the top. Each brick absorbs water equal to $\frac{1}{7}$ th of its own volume

Hopw many bricks will be needed?

25. A solid metal sphere is melted and smaller sperees of equal radii are formed. 10% of the volume of the sphere is lost in the process. The smaller spheres have a radius , that is $\dfrac{1}{9}$ th the larger sphere . Iof 10 litres of paint were needed to paint the larger sphere. Find how many letres are needed to paint all the smaller spheres?

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26. A metallic solid sphere of radius 10.5 is melted and recasted in to smaller solid cones each of radius 3.5 cm and height 3 cm .How many cones will be made?

27. The three different face diagonals of a cuboid (rectangular parallelopipd) have lengths 39,40 and 41 units .Find the length of

the main diagonal of the cuboid which joins a pair of opposite corners.

28. Three spheres of radius 'r' are kept inside a cuylinder such that two of the speres are at bottom touching each other and sides of the cylinder while the third sphere is touching the two bottom spheres and the top of the cylinder .Find the volume of the cylinder .

29. Water in a canal 5.4 m wide and 1.8 m deep is following with a speed of $25km/hr$ How much area can it irriagae in 40 munutes if 10 cm of standing watr is required for irrigation?

30. A solid metallic cuboid of dimensions $9m \times 8m \times 2$ is melted and recast in to solid cubes of edge 2 m .find the number of cubes so formed.

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

32. A cube of metal of 2.5 cm edge is melted and cast in to rectangular solid whose base is

1.25 cm by 0.25 cm .Assuming no loss in melting find the height of the solid . Also find the gain in the surface area.

33. A granary is in the shape of a cuboid of size 8m $\times$ 6m $\times$ 3x .If a bag of grain occupies a space of 0.65 m^3 how many bags can be stored in the granary?

34. A cylinderical bucket 28 cm in diameter and 72 cm high is full of water . The water is emptied in to a rectangualr tank 66 cm long and 28 cm wide .Find the height of water level in the tank.

35. A rectangualr container whose base is a square of side 15 cm stands on a horizointal table and holds water up to 3cm from the top .When a cube is placed in the water and is

completely submerged , the water rises to the top and 54 cm^3 of water overflows.

Calculate the volume of the cube and its surface area.

36. A solid spherical ball of iron with radius 6 cm is melted and recase tin to three solid spherical balls . The radii of the two of the balls are 3 cm and 4 cm respectively determine the diameter of the third ball.

37. 50 circular paltes each of radius 7 cm and thickness 0.5 cm are placed one above the other to form a solid right circular cylinder .Find (i) the total surface area and (ii) the volume of the cylinder so formed.

38. A rectangular paper of 22 cm $\times$ 12 cm is folded in two different ways and formed two

cylinders .

(i) Find the ratio of the volumes of two cylinders

(ii) Find the difference of the volumes of two cylinders.

39. A semicircle of radius 17.5 cm is ratiatied about its diameter. Find the curved surface of so generated solid

40. The rain water from a roof af dimensions $22m \times 20m$ drains into a cylindrical vessel having diameter of bases 2 m and height 3.5 m. If the rain water collected form the roof just fill the cylindrica vessl, them find the rainfull (in cm).

41. A sphere of radius 6 cm is melted and reacst in to a cone of height 6 cm .Find the

radius of the cone.

42. The height and radius of base of a metallic cone are 27 cm and 16 cm respectively .It is melted and recast into a sphere .Find the radius and curved surface of the sphere.

43. There is some water in a cylindrical vessel of diameter 12 cm. A solid metallic spere of redius 4 cm is dropped in to it . Find the increase in height of the water surface if sphere is fully immersed in to the water.

44. The radius of a metallic sphere is 60 mm .It is melted and recast in to wire of diameter 0.8 mm .Find the length of the wire.

45. A wire of diameter 3mm is wounded around a cylinder whose height is 12 cm and radius 5 cm so as to cover the curved surface of the cylinder completely: find

(i) length of the wire.

(ii) mass of the wire assuming the density of copper to be 8.88 g per cm^3

46. A metallic cylinder of diameter 16 cm and height 9 cm is melted and recast in to sphere of diameter 6cm .How many such spheres can be formed?

47. A solid metallic right circular cone of height 6.75 cm and radius of the base 12 cm is melted and two solid sphees formed form it. If the volume of one of the sphere is 8 times

that of the other find the radius of the smaller sphere.

48. The radius of a sphericla ball of iron is 1.5 cm .It is melted and recast into three sperical balls .If the radii of two such balls are 0.75 cm and 1 cm , then find the radius of 3rd bal .

49. The diameter of a hollow cylindrical vessel is 14 cm .There is some water in it. When a cubical iron piece is fully immeresed in it , the water surface rises by $8\frac{9}{14}$ cm .Find the edge of the cube.

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50. How many metallic balls of radius 1 cm can be recast by melting a metallic sphere of radius 8 cm?

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

52. Volume of a sphere is 288 πcm^3 .27 small spheres can be formed with this sphee .find

the radus of small sphere.

53. A lead pencil consists of a cylinder of wood with a solid cylinder of graphite filled in the interiro .The diameter of the pencil is 7 mm and the diameter of the graphite is 1 mm . If length of the pencil is 10 cm, find the voluem of the wood and that of the graphite.

54. Find(i) the lateral or curved surface area of a closed cylindrical petrol storage tank that is4.2 m in diameter and 4.5 m high.(ii) how much steel was actually used, if $\dfrac{1}{12}$ of the steel actually used was wasted in making the tank

55. 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 the sides, it just

immersed. what fraction of water overflows.

56. A golf ball has diameter equal to 4.1 cm. Its

surface has 150 dimples each of radius 2 mm.

Calculate totals area which is exposed to the

surrounding assuming that the dimples are

hemispherical.

57. In one fortnight of a given month, there was a rainfall of 10cm in a river valley. If the area of the valley is $7280km^2$. 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.

58. A cone is divided in to two parts by drawing a plane through the mid point of its

adis parallel to its base. Compare the volume of two parts.

59. The height of a right circular cone is trisected by two planes drawn parallel to the base. Show that the volumes of the three portions starting from the top are in the ratio 1:7:19.

60. The radii of the faces of a frustum of a cone are 3 cm and 4 cm and its height is 5 cm find its volumen.

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

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62. The radii of the ends of a bucket 30 cm high are 21 cm and 7 cm. Find its capacity in litres and the amount of sheet required to make this bucket.

63. A bucket is 32 cm in diameter at the top and 20 cm in diameter at the bottom. Find the capacity of bucket in litres if it is 21 cm deep.

Also find the cost of tin sheet used in making the bucket at the rate of Rs 1.50 per sq dm.

64. Find the volume and whole surface of frustum of a square pyramid , thje sides of whose base and top are 24 cm and 16 cm respectively and each of the edges of the frustum is 20cm.

1. 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

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2. Shubham pal an engineering student was asket to make a model shaped like cylinder wih

two cones attached at its two ends by using a thin aluminium sheet. The diameter of the model is 3 cm and its length is 12 cm .If each cone has a height of 32 cm , find the volufme of air contained i the model that shubham pal made. (Assume the outer and inner dimensions of the model to be nearly the same).

3. 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 5 cm and diameter 2.8 cm

4. 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 $1\,cm^3$ of iron has approximately 8g mass.

5. A spherical glass vessel has a cylindrical neck 8 cm long, 2 cm in diameter; the diameter of the spherical part is 8.5 cm. By measuring the amount of water it holds, a child finds its

volume to be $345\ cm^3$. Check whether she is

correct, takin

6. A well of diameter 3 m is dug 14 m deep. The

earth taken out of it has been spread evenly

all around it in the shape of a circular ring of

width 4 m to form an embankment. Find the

height of the embankment.

7. 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 he tin sheet required to make

the funnel.

18 cm

22 cm

10 cm

8 cm
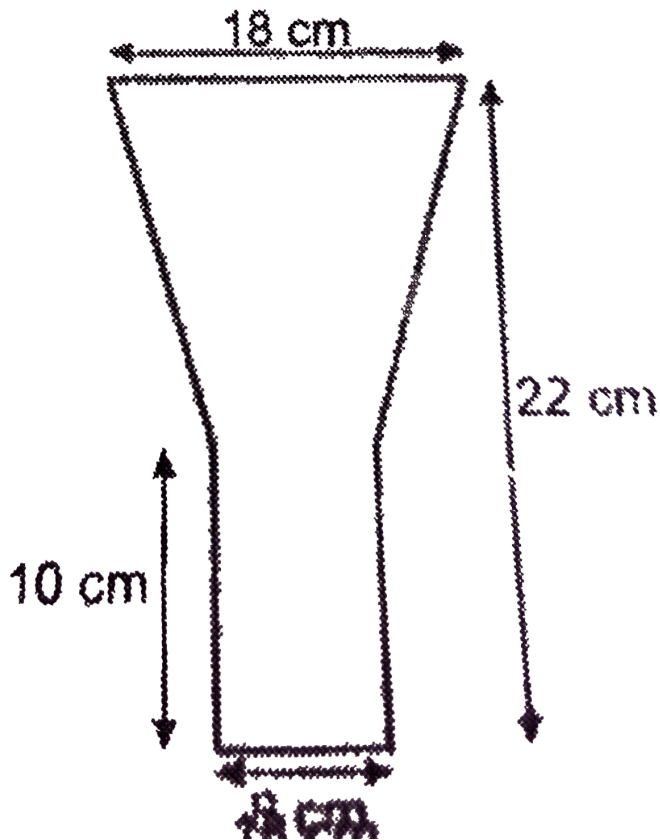
8. Shanti Sweets Stall was placing an order for making cardboard boxes for packing their sweets. Two sizes of boxes were required. The bigger of dimensions $25\ cm\ \times\ 20\ cm\ \times\ 5cm$ and the smaller of dimensions `15"\ "c m"\ "xx"\ "

9. In one fortnight of a given month, there was a rainfall of 10cm 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.

10. The slant height of the frustum of a cone is 4 cm and the perimeters of its circular ends are 18 cm and 6 cm. Find the curved surface of the frustum.

1. A solid is in the form of a cone standing on a hemisphere with both their radii being equal to 8 cm and the height of cone is equal to its radius . Find the volume of solid.
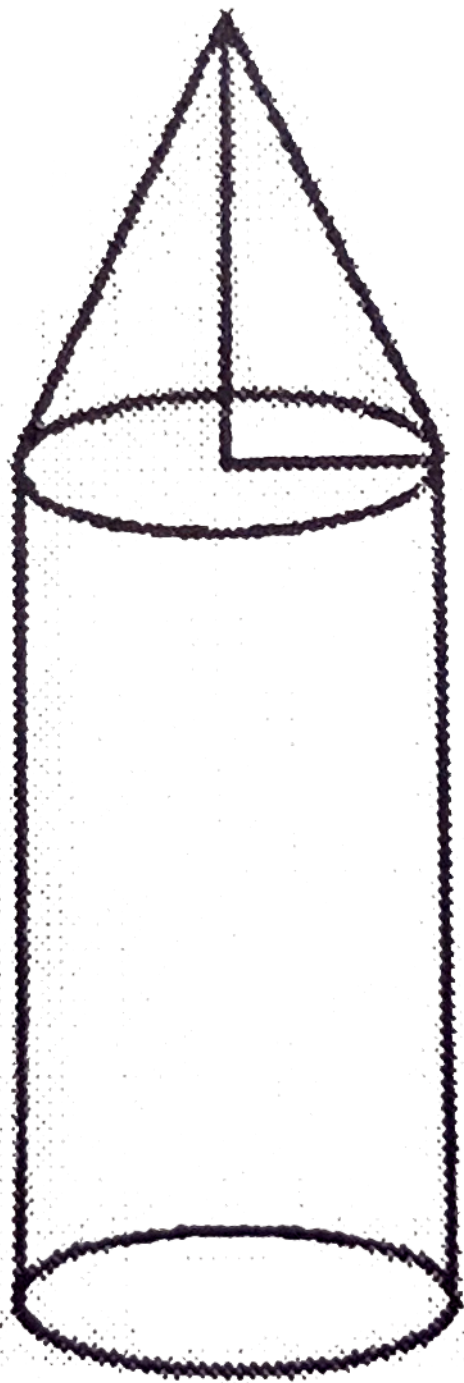
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2. The following figure shows a model of rocket consisting of a cylinder surmounted by

a cone at one end . The dimensions of the model are radius = 3 cm and height of the cone =4 cm and total height =14 cm. Find the (i) total surface area of the model in πm^2 (ii)

the total volume of model in πm^3.

3. Two cubes with each side 10 cm are joined are joined end to end . Find the total surface area of the resulting cuboid.

4. Three equal cubes are placed adjacently in a row. Find the ratio of the total surface area of

the resulting cuboid to that of the sum of the total surface areas of the three cubes.

5. Four identical cubes are joined end to end to form a cuboid .If the total surface area of the resulting cuboid is 648 cm^2 .Find the length of edge of each cube.

6. The given figure showns a solid formed of a solid cube of side 40 cm and a solid cylinder of radius 20 cm and height 50 cm attached to the cube as shown .Find the volume and the total surface area of the whole solid (Take π

=3.14)`
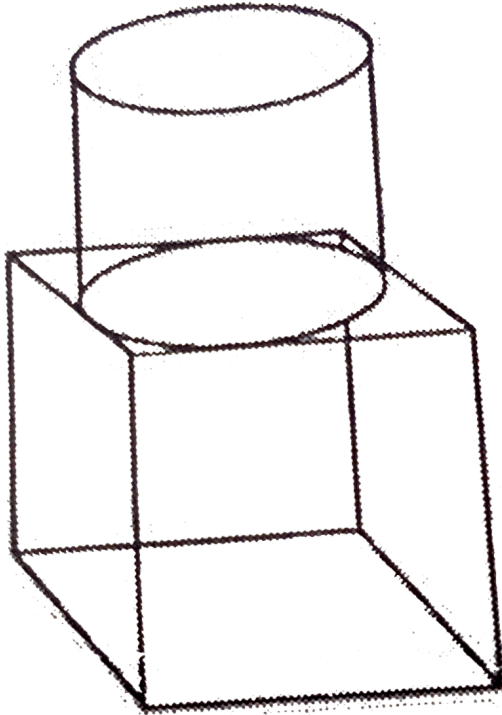
7. A circus tent is in the form of a right circular cylinder and right circular cone above it . The

diameter and the height of the cylindrical part of the tent are 126 m and 5 m respectively.The totla height of the tent is 21 m. Find the total cost of the tent if the canvas used costsRs 12 per square metre.

8. An exhibition tent is in the form of a cylinder surmounted by a ocne .The height of the tent above the gournd is 85 cm and the height of the cylindrical part is 50 m. If the

diameter of the base is 168 m , find the quantity of canvas required to make the tent . Allow 20% extra for folds and stitching .Give your answer to the nearest m^2.

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9. 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 $15cm \times 10cm \times 3.5cm$.The radius of each of the depression is 0.5 cm and the depht is 1.4

cm .Find the volume of the wood in the entire stand correct to 2 decimal places.

10. 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 the 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 2cm and

height of the cone is 4 cm. Give your answer to the nearest cubic centimetre.

11. 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 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 weighs 7.8 grams.

12. A solid is in the form of a cylinder with hemispherical ends. 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.

13. A right cylinder , a right cone and a hemishpere have the same height and the

same base area .Find the ratio of their (i)

volumes

14. 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 in

hollowed out. Find the volume and the whole

surfce of the remianing solid .Leave the

answer in π.

15. The height of a solid cylindr is 15 cm and diameter is 7 cm .Two equal conical holes of radius 3 cm and height 4 cm are cut off . Find the volume and surface area of the solid.

16. Find the volume of the largest curcular cone that can be cut out from a cube whose edge is 9 cm.

17. From a rectangular solid of metal $42cm \times x30cm \times 20cm$ a conical cavity of diameter 14 cm and depth 24 cm is drilled out. Find:

(i) the surface area of remaining solid

(ii) the volume of remaining solid

(iii) the weight of the material drilled out if it weighs $7gm / cm^3$

18. A wooden toy is in the shape of a cone mounted on a cylinder as shown alongside If the height of the cone is 24 cm the total height of the toy is 60 cm and the radius of the base of the cone= twice the radius of the base of the cylinder = 10 cm .Find the total

surface area of the you.
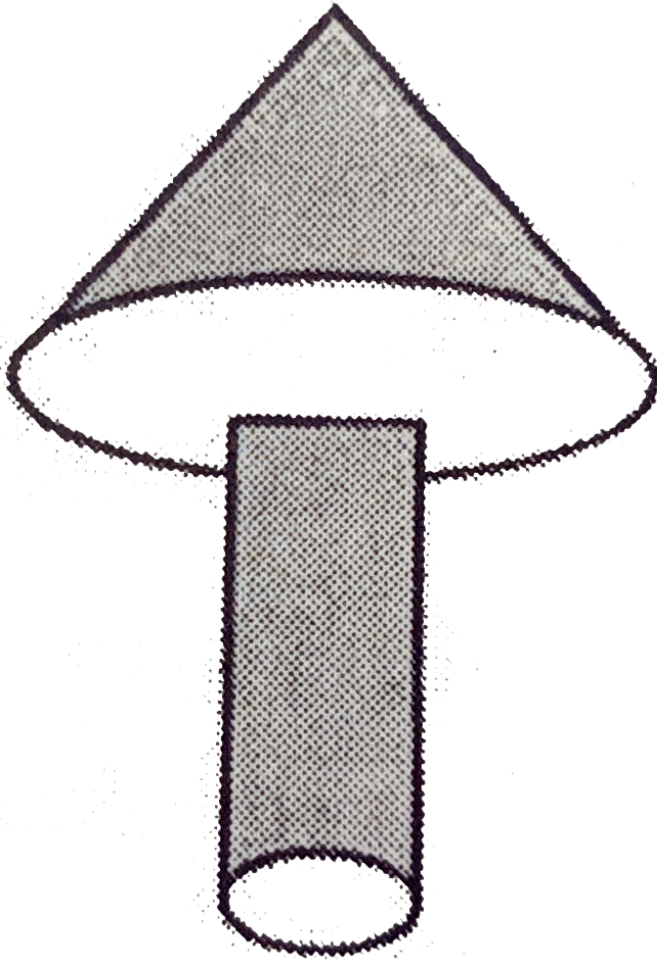
19. A sphere just fits in a cylindrical vessel and the height of the cylindrical vessel is the same as the height of the spere . Show that the curved surface area of the cylinder is the same as the curved surface area of the sphere .

20. A room in the form of a cylinder surmounted by a hemisphere valuted dome contains 17.7 m^3 .After recycling, this water is

used to irriegate a park of hospital whose length is 25 m and breadth is 20 m. If tank is filled completely then what will be the height of standing water used for irrigting the park write you views on recycling of water.

21. In a hospital used water is collected in a cylindrical tank of diameter 2 m and hight 5 m.After recycling this water is used to irrigate a park of hospital whose length is 25 m and

breadth is 20 m. If tank is filled completely then what will be the height of standing water used for irigating the park write your views on recycling of water.

22. Three metal cubes with edges 6cm , 8cm and 10cm respectively are melted together and formed in to a single cube. Find the diagonal of this cube.

23. Six cubes each of side 12 cm are joined end to end .Find the surface area of the cuboid so formed .

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

25. 40 circular plates each of radius 7 cm and thickness 1.5 cm are placed one above the other to form a solid right circular cylindr. Find the total surface area and volume of cylinder so formed.

26. A right circular cone is 8 cm high and radius of its base is 2 cm .The cone is metted

and recaset in to a sphere. Determine the diameter of the sphere.

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

28. The volume of a sphere is $\dfrac{4\pi}{3}\,cm^3$.Find the volume of that cube whose edge is equal to the diameter of the sphere.

29. A cone of height 4 cm is melted and recast into a sphere of diameter 8 cm .Find the radius of the base of the cone.

30. A metallic sphere of radius 7 cm is melted and recast in to right circular cone of same radius. Find the height of the cone.

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31. The height and base radius of a metallic cone are 216 cm and 16 cm respectively.It melted and recast into a sphere .Find the surface area of the spere.

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32. The base diameter and height of a metallic cone are 24cm and 6cm respectively .It is melted and recast in to a sphere.Find the surface area of the sphere.

33. (a) Three metallic spherical balls of radii 3 cm , 4cm and 5 cm are melted and reacast in to a big spherical ball find the radius of this big ball.

(b) Three metallic spheres are melted and recast in to a big solid sphere.Find the radius of big solid sphere if the diameter of three metalic sphres are 16 cm . 12 cm and 2 cm.

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34. (a) How many balls of radius 1 cm can be drawn by melting metallic sphere of radius 3 cm?

(b) The small spherical balls of diameter 0.6 cm are drawn by melting solid metallic sphere of

3cm radius .Find the number of small balls constructed.

35. (a) How many spherical balls of diameter 12 cm can be construct ed by melting a metalic cylinder of diameter 8cm and height 90 cm?

(b) How many spherical balls of diameter 12 cm can be constructed by melting a metallic cylinder of radius 4 cm and height 72 cm.

36. A metallic sphere of radus 4 cm and a metallic cone of base readius 3 cm and height 6 cm are melted and recast a cylinder of 5 cm radus. Find the height of the cylinder.

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37. How many solid speherical balls of radus 3.5 cm can be recast by melting a metallic cone of height 35 cm and base radius 7 cm?

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38. There is some water in a cylindrical vessel of radus 6 cm a sphere of radus 2 cm is dropped in to the vessel .Find the increase in the height of water surface.

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39. A solid metallic ball is dropped in a cylindrical vessel which has some waater .when this ball is fully immersed in water the water

surface rises by 2 cm find the volume of ball if the radius of base of cylindrical vessel is 7cm.

40. (i) The radius of a metallic sphere is 3 cm .It melted and recast in to wire of diameter 0.4 cm Find the length of wire.

(ii) An iron ball oif radius 4 cm is melted .How many small spheres of radus 2 cm can be formed from the material?

41. How many metallic cones of radius 3 cm and height 13.5 cm are required to construct a metallic sphere of radius 4.5 cm?

42. The inner radius of a hemispherical cup is 9 cm and it is completely full of water .This water is filled in cylindrical bottles of diameter 3cm and height 4 cm Find the number of bottles required.

43. Two metallic cones of equal radii 2.1 cm and heights 4.1 cm and 4.3 cm are metled together and recast a sphere. Find the number of sphere so formed.

44. Threee metallic cones of radius 2cm and height 9cm are melted and recast in to a solid

sphere. Fuind the radius of the sphere.

45. Threee metallic cones of radius 2cm and height 9 cm are melted and recast in to a solid sphere. Find the radius of the sphere.

46. A metallic cone is melted and recast in to a cylinder of same radius and height 9 cm . Find

the height of the cone.

47. A cone of height 15 cm is melted and reacast in to cylinder of same base .Find the height of the cylinder.

48. A cone of same height and same base radius is cut from a cylinder of height 8 cm

and base radius 6 cm .Find the total surface area and volume of the remaining solid.

49. The heights of two cones are same and equal to 6cm .Their radii are 4cm and 3cm .They are melted and recast in to a cylinder of base radius 5cm.Find the height of this cylinder. Volume and surface area of solids

50. Find the volume of a cube whose diagonal is 17.32 metre.

51. The radius of a spherical ball of iron is 1.5 cm. It is melted and recast into three spherical balls. If the radii of two such balls are 0.75 cm and 1 cm, then find the radius of 3rd ball.

52. Water is being pumped out through a circular pipe whose internal 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?

53. A hemispherical tank of radius 1.75 m is full of water. It is connected with a pipe which empties it at the rate of 7 litres per second.

How much time will it take to empty the tank completely?

54. The curved surface of a cylinder is 100 sq cm .A wire of diameter 5mm is wound round it so as to cover it completely .Find the length of the wire.

55. How many square metres of canvas will be required to make a conical tent 3 metre high so that a man 2 metre high may stand anywhre with in a radius opf 70 cm from the centre without stoping? Give hyour answwer to the nearest whole number.

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56. A rectangular sheet of tin 58 $cm \times 44cm$ is to be made into an open box by cutting off

equal squares from the corners and folding up the flaps.What should be the volume of box if the surface area of box is 2452 cm^2?

57. A solid metallic right circular cone of height 30cm and radius of the base 12 cm is melted and two solid spheres formed from it. If the volume of one of the sphere is 8 times that of the other find the radius of the smaller sphere.

58. One cubic metre of a certain metal weighing 900 Kg is melted and then rolled in to a bar whose cross section is a squre and whose length is 9 meter .An exact cube is cut off from it . Find the weight oif this cube.

59. A cone made of paper has height 3h and vertical angle 2α It contains two other cones

of height 2h and h and vertical angles 4α and 6α respectively. Find the ratio of the two volumes in between the cones.

60. A solid metal sphere is melted and smaller spheres of equal radii are formed. 10% of volume of the sphere is lost in the process. The smaller spheres have a radius that is $\left(\dfrac{1}{9}\right)th$ the larger sphere .If 10 liter of paint were needed to paint the larger sphere .Find

how many litres are needed to pausing all the

smaller spheres.

61. The radius of the ends of a bucket of height

24 cm are 15 cm and 5 cm. Find its capacity

.Also find the surface area of the buket .

62. The radii of the ends of a frustum of a cone 45 cm high are 28 cm and 7 cm. Find its volume, the curved surface area and the total surface area.

63. A buket is made of chart paper in the form of cone open at both ends. The radii of its ends are 16 cm and 24 cm and its height is 6

cm .Find the cost of the paper used if one square metre of paper costsRs 0.70.

64. A wooden right circular cone has a bse of radius 3 cm and height 4 cm .The upper part of the cone is cut in such a way that the conical piece will have height 1 cm and base radius 0.75 cm .Find the volume of the remaining porition.

65. The lower portion of a haystaack is and inverted cone frustum and upper part is a cone as shown in figure .Find the total volume of haystack if AB =3 m and CD=2 m height of cone = 7 m and height of haystack =10.5 m
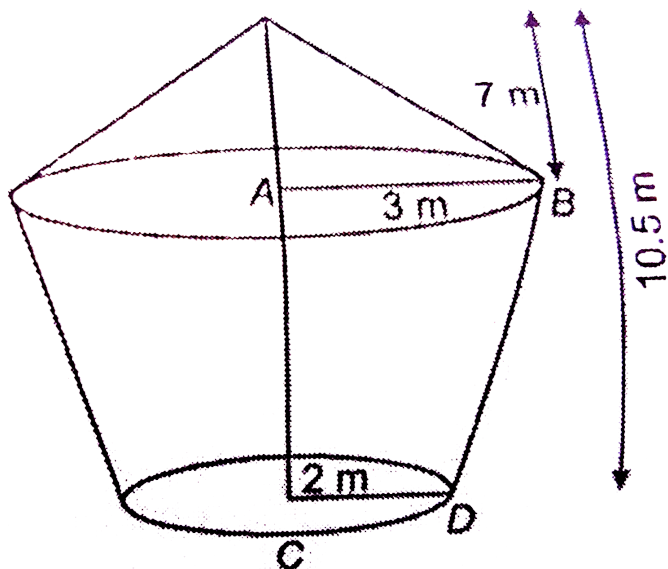
66. A Hollow cone is cut by a plane parallel to the base and upper portion is removed. If the curved surface of the remainder is 8/9 of the curved surface of the whole cone; find the ration of the line-segment into which the cone's altitude is divided by the plane.

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

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68. The radius of the base of a right circular cone is r. It is cut by a plane parallel to the

base at aheight h from the base. The slant height of the frustum is $\sqrt{h^2 + \dfrac{4}{9}r^2}$. Show that the volume of13the frustum is $\dfrac{13}{27}\pi r^2 h$.

Revisions Exercise Very Short Answer Questions

1. A metallic solid sphere of radius 9 cm is melted to form a solid cylinder of radius 9 cm. Find the height of the cylinder.

2. The surface area of two spheres are in the ratio $16:9$ .Find the ratio of their volumes.

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3. If the radius of a sphere becomes 3 times then how many times will its volume be?

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4. If the radus of two circular ends of a busket are $5/2$ cm and 1 cm respectively and its height is 6 cm then find the slant height of frustum.

5. 20 circular plates each of radius 5 cm and thickenss 10 mm are placed one above another. What is the shape of solid made and find its height?

6. Two cubes each of volume 125 cm^3 are joined end to end .Find the volume of resulting cuboid.

7. A vessel is in the form of hemispherical bowl mounted by a hollow cylinder. If the height of cylinder is 6cm and radius is 7 cm .Find the total height of the vessel.

8. A bucket in the shape of frustum is closed from both ends .If its radii are R and r respectively and height h and slant height l. Write the formula of its total surface area.

9. A cubic cm of gold is drawn into a wire 0.1 mm in diameter, find the length of the wire.

10. Three solid spheres of radii 3, 4 and 5 cm respectively are melted and converted into a single solid sphere. Find the radius of this sphere.

Revisions Exercise Short Answer Questions

1. A cylindrical bucket 28 cm in diameter and 72 cm high is full of water. The water is emptied into a rectangular tank 66 cm long and 28 cm wide. Find the height of the water level in the tank.

2. How many balls, each of radius 1 cm, can be made from a solid sphere of lead of radius 8 cm?

3. A metallic sphere of radius 10.5 cm is melted and recast into small right circular cones, each of base radius 3.5 cm and height 3 cm. The number of cones so formed is (a) 105 (b) 113 (c) 126 (d) 135

4. A cone and a hemisphere have equal bases and equal volumes. Find the ratio of their

heights.

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5. A cube is inscribed in a sphere of diameter 'd' cm. What is the side of the largest cube so inscribed?

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6. A spherical ball of lead has been melted and meade in to smaller balls of half the radius of

the original one. How many balls can be made?

7. 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.

8. The largest cone is curved out from one face of solid cube of side 21 cm find the volume of the remaining solid.

9. The radius of the base and height of a solid right ciruclar cylinder are in the ratio $2:3$ and its volume is 1671 cm^3 .Find the total surface area of the cylinder.

10. A hemispherical tank full of water is emptied by a pipe at the rate of $\dfrac{25}{7}$ litres per second. How much time will it take to empty half the tank, if it is 3m in diameter?

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Revisions Exercise Long Answer Questions

1. A wooden toy rocket is in the shape of a cone mounted on a cylinder. 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 cy

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

3. 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 flow of water in the pipe in km/hr.

4. 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 bucket i

5. An oil funnel of tin sheet consists of a cylindrical portion 10 cm long attached to a frustum of a cone. If the total height be 22 cm, diameter of the cylindrical portion be 8 cm and the diameter of the top of the funnel be

18 cm, find the area of the tin required to make the funnel.