MATHS

BOOKS - NAGEEN PRAKASHAN

ENGLISH

SURFACE AREA AND VOLUME

Solved Examples

1. Find the volume and total surface area of a cuboid, whose length = 15 cm, breadth = 10 cm

and height = 8 cm.

Watch Video Solution

2. The total surface area of a cube is $294cm^2$, find its volume.

Watch Video Solution

3. The length, breadth and height of a cuboid are in the ratio 6 : 5 : 3. If its total surface area

is $504cm^2$, find its dimensions. Also find the volume of the cuboid.

Watch Video Solution

4. Three equal cubes are placed adjacently in a row. Find the ratio of total surface area of the new cuboid to that of the sum of the surface areas of the three cubes.

Watch Video Solution

5. Find the volume of wood required for a closed wooden box with external dimensions $15cm \times 12cm \times 8cm$, if the wood is 0.5 cm thick.

Watch Video Solution

6. The length, breadth and height of a room are 9 m, 7 m and 4 m respectively. There are two doors measuring $2m \times 1.5m$ and four

windows measuring $1.5m \times 1m$. Find the area doors remaining walls.

Watch Video Solution

7. The length, breadth and height of a room are 5 m, 4 m and 3 m respectively. Find the cost of white washing the walls of the room and the ceiling at the rate of $Rs\ 7.\ 50\ per\ m^2$.

Watch Video Solution

8. Shanti sweets stall was placing an order for making cardboard boxes for packing their sweets. Two sizes of boxes were required. If the cost of the cardboard is rs 4 for 1000cm^2 .The bigger of dimensions $25cm \times 20cm \times 5cm$ and the smaller of dimensions $15cm \times 12cm \times 5cm$. For all the overlaps, 5% of the total surface area is required for supplying 250 boxes of each kind.

Watch Video Solution

9. In a box whose dimensions are $12cm \times 4cm \times 3cm$, how long stick can be placed ?

Watch Video Solution

10. Water flows in a tank $150m\ x\ 100m$ at the base, through a pipe whose cross-section is $2dm\ by\ 1.\ 5dm$ at the speed f $15\ km\ per\ hour$. In what time, will the water be $3\ metres\ deep?$

Watch Video Solution

11. A godown measures $40m \times 25m \times 10m$. Find the maximum number of wooden crates each measuring $1.5m \times 1.25m \times 0.5m$ that can be stored in the godown.

Watch Video Solution

12. The sum of length, breadth and depth of a cuboid is 12 cm and its diagonal is $5\sqrt{2}$ cm. Find its surface area.

Watch Video Solution

13. The circumference of the base of a cylinder is 130 cm andheight is 20 cm. Find its curved surface area.

 Watch Video Solution

14. Find the curved surface area of the cylinder whose height is 20 cm and the radius of base is 7 cm.

 Watch Video Solution

15. The area of the base of a right circular cylinder is $42\pi cm^2$ and height is 3.5 cm. Find its volume.

Watch Video Solution

16. The height and radius of the base of a right circular cylinder is 'r'. Find its totalsurface area.

Watch Video Solution

17. The side of a paper of square shape is 44 cm. It is folding and convert into a cylinder. Find the curved surface area and total surface of the cylinder.

Watch Video Solution

18. The radius of base of a cylinder is 7 cm and height is 10 cm. Find its curved surface area and volume.

Watch Video Solution

19. The area of base of a cylinder is $616cm^2$ and height is 30 cm. Find its volume and total surface area.

Watch Video Solution

20. The volume of a cylindrical tub is $6160m^3$. If the diameter of its base is 28 m, then find its depth.

Watch Video Solution

21. The curved surface of a right circular cylinder is $4400cm^2$ and height is 50 cm. Find its volume and total surface area.

Watch Video Solution

22. The total surface area of a cylinder is $1540cm^2$. The height of cylinder is 4 times the radius of the base. Find the height of the cylinder.

Watch Video Solution

23. The radius and height of a cylinder are in the ratio 5 : 7 and its volume if $550\ cm^3$. Find its radius. $\left(Use\ \pi = \frac{22}{7}\right)$

Watch Video Solution

24. The radius of right circular cylinder is 14 cm. If its total surface area is $3872 cm^2$, then find its height.

Watch Video Solution

25. A cylinder is formed by folding a square of side 5 cm. Find its curved surface area and the volume.

Watch Video Solution

26. A rectangular paper of $22cm \times 12cm$ 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.

Watch Video Solution

27. The volume of a cylindrical vessel is $27720cm^3$. Itscurved surface is $2640cm^2$. Find its height and radius of base.

Watch Video Solution

28. The diameter of a roller is 84 cm and its length is 120 cm. It takes 500 complete revolutions to move once over to level a playground. Find the area of the playground in m^2.

Watch Video Solution

29. There is some water in a cylindrical vessel of diameter 11 cm. A solid cube of side5.5 cm is dropped into the water, which immersed

completely in the water. Find the increase in the height of surface of water in the vessel.

Watch Video Solution

30. 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).

Watch Video Solution

31. The diameter of a right circular cylinder is increased by 20%. Find the percentage decrease in its height if its volume remains unchanged.

Watch Video Solution

32. A cylindrical well of radius 4m and depth 49 m is dug and the taken out is spread evenly on a ground of length40 m and breadth 28 m. If the volume of the earth taken out increases

by 10%, find the increase in the height of the ground.

Watch Video Solution

33. The external and internal radii of a hollow cylinder are 5 cm and 4 cm respectively. If the height of cylinder is 14 cm, then find its internal volume and total surface area.

Watch Video Solution

34. The radius and height of a right circular cone are 4 cm and 9 cm respectively. Its volume will be :

(i) $36\pi cm^3$ (ii) $48\pi cm^3$ (iii) $72\pi cm^3$ (iv) $100\pi cm^3$

Watch Video Solution

35. The ratio of the slant height and radius of the cone is 7 : 4. If itscurved surface area is $550cm^2$, then find its radius.

Watch Video Solution

36. $264m^2$ cloth is used in a conical tent. If its slant height is 12 m, then find its height.

Watch Video Solution

37. The volume of a right circular cone is $9702cm^3$ andheightis 21 cm. Find its curved surface area.

Watch Video Solution

38. Five persons can accommodate in a conical tent. If each person required 18 square decimeter place on warth and 108 cubic decimeter air for breathing, then find the height of the cone.

Watch Video Solution

39. The slant height of a cone is 13 cm and its total surface area is $90\pi cm^2$. Find its radius of base.

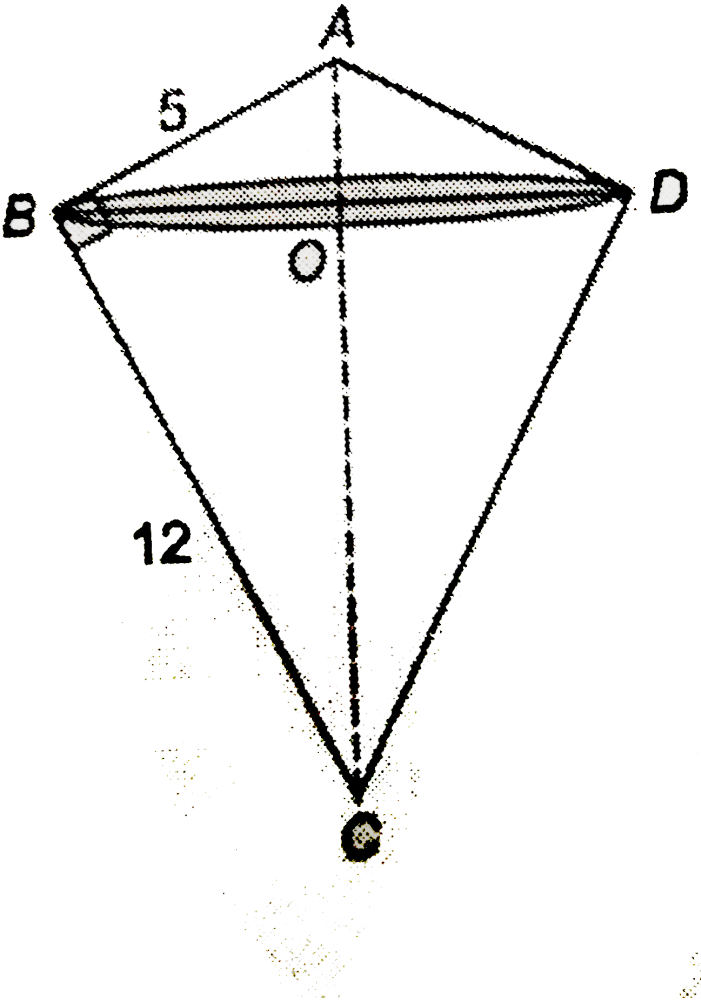
Watch Video Solution

40. The height and radius of a right circular cone are increased by 20%and 25% respectively. Find the ratio of the volume of new cone and old cone.

Watch Video Solution

41. In a right angle, the sides conrtaining right angles are 5 cm and 12 cm. It is rotated aboutits hypotenuse taking it as axis. Find the

volume of formed figure.



Watch Video Solution

42. An open conical cup is formed from a thin metallic semi-circular sheet of diameter 28 cm. Find its volume.

Watch Video Solution

43. 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.

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

46. Find the length of canvas, 1.5m in width, is required to make a conical tent 14 m in diameter and 24 m in height. Given that $8\frac{1}{3}\%$ of the canvas is used in folds and stiching. Also, find the cost of canvas at the rate of Rs. 28 per metre.

Watch Video Solution

47. The radius of a sphere is 3 cm. Its total surface area will be :

(1) $18\pi cm^2$ (ii) $36\pi cm^2$ (iii) $72\pi cm^2$ (iv) $108\pi cm^2$

Watch Video Solution

48. Find the volume and curved surface of a sphere whose diameter is 6 cm.

Watch Video Solution

49. Find the volume of a spherewhose diameter is 1 cm.

Watch Video Solution

50. Find the total surface area of a hemisphere whose radius is 1 cm.

Watch Video Solution

51. The diameter of a sphere is 10 cm. Find its surface area.

Watch Video Solution

52. The surface area of a sphere is $100\pi cm^2$. Find its volume.

Watch Video Solution

53. The volume of the two spheres are in the ratio 64: 27 . Find the ratio of their surface areas.

Watch Video Solution

54. The diameter and height of a right circular cylinder are equal to the diameter of a sphere. Find the ratio of volumes of cylinder and sphere.

Watch Video Solution

55. Find the ratio of the surface area of a sphere and total surface area of a hemisphere.

Watch Video Solution

56. A semi-circle of radius 17.5 cm is rotated about its diameter. Find the curved surface of so generated solid.

Watch Video Solution

57. Find the cost of painting at the rate of $Rs.\ 5.60 per m^2$ on the hemispherical dome of diameter 10 m.

Watch Video Solution

58. A sphere and a cube have equal surface areas. What is the ratio of the volume of the sphere to that of the cube?

Watch Video Solution

59. The diameters of three solid balls of iron are 6 cm, 8 cm and 10 cm. They are melted and recast a solid ball. Find the diameter of this ball.

Watch Video Solution

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

Watch Video Solution

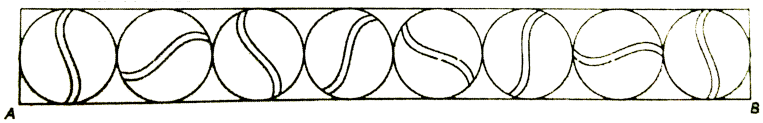
61. A sphere and a cube has same surface area.Show that the ratio of the volume of sphere to cube is $\sqrt{6}:\sqrt{\pi}$

Watch Video Solution

62. 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.

Watch Video Solution

63. The diagram shows the cross-section of eight identical iron balls touching each other on a horizontal surface.



If the volume of a ball is $\frac{9\pi}{2} cm^3$, then what should be the minimum length and depth of a box so that all the balls can be placed in it ?

Watch Video Solution

Problems From Ncert Exemplar

1. The floor of a rectangular hall has a perimeter 250 m. If the cost of painting the four walls at the rate of $Rs\ 10\ per\ m^2$is Rs

15000, find the height of the hall.[Hint : Area of the four walls = Lateral surface area.]

Watch Video Solution

2. A cubical box has each edge 10 cm and another cuboidal box is 12.5 cm long, 10 cm wide and 8 cm high.(i) Which box has the greater lateral surface area and by how much? (ii) Which box has the smaller total surface area and by how much?

Watch Video Solution

3. Shanti Sweet Stall was placing an order for making carboard boxes for packing their sweets. Two sizes of boxes were required. The bigger of dimensions $25cm \times 20cm \times 5cm$ and the smaller of dimensions $15cm \times 12cm \times 5cm$. For all the overlaps, 5% of the total surface area is required extra. If the cost of the carboard is Rs. 4 for $1000cm^2$, find the cost of carboard required for supplying 250 boxes of each kind.

Watch Video Solution

4. Parveen wanted to make a temporary shelter for her car, by making a box-like structure with tarpaulin that covers all the four sides and the top of the car (with the front face as a flap which can be rolled up). Assuming that the stitching margin are very small, and therefore negligible, how much, tarpaulin would be required to make the shelter of height 2.5 m. with base dimensions 4 m x 3 m ?

Watch Video Solution

5. The diameter of a roller is 84 cm and its length is 120 cm. It takes 500 complete revolutions to move once over to level a playground. Find the area of the playground in m^2.

Watch Video Solution

6. What length of tarpaulin 3 m wide will be required to make conical tent of height 8 m

and base radius 6 m? Assume that the extra length of material that will be required for stitching margins and wastage in cutting is approximately 20 cm

Watch Video Solution

7. A bus stop is barricaded from the remaining part of the road, by using 50 hollow cones made of recycled cardboard. Each cone has a base diameter of $40\ cm$ and height $1\ m$. If the outer side of each of the cones is to be

painted and the cost of painting is $12\ per\ m^2$, what will be the cost of painting all these cones? (Use $\pi = 3.14$ and take $\sqrt{1.04} = 1.02$)

Watch Video Solution

8. The diameter of the moon is approximately one-fourth of the diameter of the earth. What fraction of the volume of the earth is the volume of the moon?

Watch Video Solution

9. A hemispherical bowl is made of steel 0.25cm thick. The inside radius of the bowl is 5cm. Find the volume of steel used in making the bowl.

Watch Video Solution

10. A right circular cylinder just encloses a sphere of radius r as shown in figure. Find the : 1.surface area of the sphere 2. curved surface area of the cylinder 3. ratio of the area obtained in (i) and (ii)

Watch Video Solution

11. A village, having a population of 4000, requires 150 litres of water per head per day. It has a tank measuring $20m \times 15m \times 6m$. For how many days will the water of this tank last?

Watch Video Solution

12. A river 3 m deep and 40 m wide is flowing at the rate of 2 km per hour. How much water will fall into the sea in a minute?

Watch Video Solution

13. A soft drink is available in two packs - (i) a tin can with a rectangular base of length 5cm and width 4cm, having a height of 15cm and (ii) a plastic cylinder with circular base of diameter 7cm and height 10cm. Which

container has greater capacity and by how much?

Watch Video Solution

14. A lead pencil consists of a cylinder of wood with a solid cylinder of graphite filled in the interior. The diameter of the pencil is 7 mm and the diameter of the graphite is 1 mm. If the length of the pencil is 14 cm, find the volume of the wood

Watch Video Solution

15. The diameter of the moon is approximately one-fourth of the diameter of the earth. What fraction of the volume of the earth is the volume of the moon?

Watch Video Solution

16. How many litres of milk can a hemispherical bowl of diameter 10.5 cm hold?

Watch Video Solution

17. A hemispherical tank is made up of an iron sheet 1 cm thick. If the inner radius is 1 m, then find the volume of the iron used to make the tank

Watch Video Solution

18. A cone, a hemisphere and a cylinder stand on equal bases and have the same height. Show that their volumes are in the ratio 1:2:3.

Watch Video Solution

19. Find the amount of water displaced by a solid spherical ball of diameter 4.2 cm , when it is completely immersed in water.

Watch Video Solution

20. Two solid spheres made of the same metal have weight $5920\ g$ and $740\ g$, respectively. Determine the radius of the larger sphere, if the diameter of the smaller one is $5\ cm$.

Watch Video Solution

21. A right triangle with sides 6 cm, 8 cm and 10 cm is revolved about the side 8 cm. Find the volume and the curved surface of the solid so formed.

Watch Video Solution

22. A semi - circular sheet of metal of diameter 28 cm is bent to form an open conical cup. Find the capacity of the cup.

Watch Video Solution

23. A cloth having an area of $165\ m^2$ is shaped into the form of a conical tent of radius $5\ m$.

(i) How many students can sit in the tent, if a student on an average occupies $\frac{5}{7}m^2$ on the ground ?

(ii) Find the volume of the cone.

Watch Video Solution

24. 30 circular plantes, each of radius 14 cm and thickness 3 cm are placed one above the another to from a cylindrical solid . Find

(i) the total surfce area.

(ii) volume of the cylinder so formed.

Watch Video Solution

Exercise 13 A

1. Find the volume and total surface area of a cuboid whose length = 3.5 m, breadth = 2.6 m and height = 0.9 m.

Watch Video Solution

2. The breadth and height of a rectangular solid are 1.20 m and 0.80 m respectively. If the volume of the cuboid is $1.92m^3$, Find its length.

Watch Video Solution

3. The ratio of the length and breadth of a cuboid is 5 : 3. If its height is 5 cm and volume is $4800cm^3$, then find the length and breadth of the cuboid.

Watch Video Solution

4. Three cubes each of side 5 cm are joined end to end. Find the surface area of the resulting cuboid.

Watch Video Solution

5. Three cubes each of volume $125cm^3$ are joined end to end. Find the surfece area of resulting cuboid.

Watch Video Solution

6. The length, breadth and height of a cuboid are in the ratio 5 : 3 : 2. If its volume is $240cm^3$, find its dimensions. Also find the total surface area of the cuboid.

Watch Video Solution

7. Find the volume and total surface area of a cube whose each edge is 2 m 40 cm.

Watch Video Solution

8. The outer dimensions of a closed wooden box are 22 cm, 15 cm and 10 cm. Thickness of the wood is 1 cm. Find the cost of wood required to make the box if $1cm^3$ of wood costs Rs. 1.50.

Watch Video Solution

9. The cost of papering the four walls of a room at 75 paise per square metre is Rs 240. The height of the room is 5 metres. Find the length and the breadth of the room, if they are in the ratio $5:3$.

Watch Video Solution

10. A closed rectangular box has length = 40 cm, breadth = 30 cm and height = 50 cm. It is made of thin metal sheet. Find the cost of metal sheet required to make 20 such boxes, if $1m^2$ of metal sheet costs Rs.45.

Watch Video Solution

11. The length, breadth and height of a room are 7.5 m, 4.5 m and 3.0 m respectively. There is a door of measure $2.0m \times 1.0m$ and also 2

windows each of measure 1.2 m and 0.75 m. Find the cost of white washing its walls and roof at the rate of Rs. 1.20 per square metre.

 Watch Video Solution

12. The cost of papering the walls of a room 12 m long at the rate of Rs. 13.50 per square metre is Rs. 3402 and the cost of matting the floor at Rs. 9.50 per square metre is Rs. 1026. Find the height of the room.

 Watch Video Solution

13. Find the volume of wood required for a closed wooden box with external dimensions $15cm \times 12cm \times 8cm$, if the wood is 0.5 cm thick.

Watch Video Solution

14. Three cubes whose edges are 6 cm, 8 cm and x cm, respectively are melted and recasted into a single cube of edge 12 cm. Find x.

Watch Video Solution

15. 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 three cubes.

Watch Video Solution

16. How many cubes of edge 3 cm can be formed from a wooden piece of dimensions $36cm \times 24cm \times 18cm$?

Watch Video Solution

17. Find the number of bricks required to construct a wall of dimensions $3m \times 1.5m \times 0.4m$, if the dimension of a brick is $30cm \times 15cm \times 8cm$.

Watch Video Solution

18. The external dimension of an open box are $40cm \times 30cm \times 35cm$. All of its walls are 2.5

cm thick, find (i) the capacity of the box, (ii) the wood used in the box.

Watch Video Solution

19. The sum of the length, breadth and height of a cuboid is 38 cm and the length of its diagonal is 22 cm. Find the surface area of the cuboid.

Watch Video Solution

20. A wall 24 m long, 5 m high and 0-25 m thick is to be constructed using bricks each measuring $25cm \times 12.5cm \times 7.5cm$. Find the number of bricks required, if 5% of the wall is occupied by cement and sand mixture.

Watch Video Solution

21. 50 student sit in a classroom. Each student requires $9m^2$ area on floor and $108m^3$ air. If

the length of the room is 25 m, find its heigth and breadth.

Watch Video Solution

22. A rectangular cardboard sheet has length 32 cm and breadth 26 cm. The four squares each of side 3 cm are cut from the corners of the sheet and the sides are folded to make a rectanguler container. Find the capacity of the container.

Watch Video Solution

23. In a shower, 5 cm of rain falls. Find the volume of water that falls on 2 heactares land

Watch Video Solution

24. A feild is 70 m long and 40 m broad. In one corner of the field, a pit which is 10 m long, 8 m broad and 5 m deep, has been dug out. The earth taken out of it is evenly spread over the remaining part of the field. Find the rise in the level of the field.

Watch Video Solution

25. If V is the volume of a cuboid of dimensions $a, b, candS$ is its surface area, then prove that

Watch Video Solution

26. The areas of three adjacent faces of a cuboid are x, y and z. If the volume is V, prove that $V^2 = xyz$.

Watch Video Solution

27. If each edge of a cube is increased by 25%, then the percentage increase in its surface area is: (a) 25% (b) 50% (c) 56.25%

Watch Video Solution

28. Find the percentage increase in the surface area of a cube if each side is tripled.

Watch Video Solution

29. A metallic sheet is of the rectangular shape with dimensions $48cmx36cm$. From each one of its corners, a square of $8cm$ is cutoff. An open box is made of the remaining sheet. Find the volume of the box.

Watch Video Solution

30. 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?

Watch Video Solution

Exercise 13 B

1. A well of internal diameter 14 m and depth 14 m is dug and the earth taken out is spread all around it upto 5 m width and form an

embankment. Find the height of the embankment.

Watch Video Solution

2. If the diameter of cross-section of a wire is decreased by 5% how much percent will the length be increased so that the volume remains the same?

Watch Video Solution

Exercise 13 C

1. The area of base of a conical drum is $44m^2$ and its height is 2.1 m. Find its volume.

Watch Video Solution

2. The height of a right circular cone is 6 cm and area of its base is $18.5cm^2$. Find its volume.

Watch Video Solution

3. The volume of a right circular cone is $74cm^3$ and area of its base is $18.5cm^2$. Find its height.

Watch Video Solution

4. (i) The area of base of a right circular cone is $60cm^2$ and its volume is $200cm^3$. Find the height of the cone.

Watch Video Solution

5. The height of a cone is 7 cm and its radius of base is 3 cm. Find its volume.

Watch Video Solution

6. The vertical height of a right circular cone is 9 cm and radius of its base is 4 cm. Find its volume.

Watch Video Solution

7. The ratio of the volumes of two cones of same base is 8 : 27. Find the ratio of their heights.

 Watch Video Solution

8. The radii of the bases of a right circular cylinder and a right circular cone are equal. Their vertical heights are 7 cm and 14 cm respectively. Find the ratio of their volumes.

 Watch Video Solution

9. The ratio of the heights of two cones of same base is 4 : 3. If the volume of small cone is $462\pi cm^3$, then find the volume of new cone.

Watch Video Solution

10. Find the ratio of the volume of a cone and a cylinder of same radii and same heights.

Watch Video Solution

11. The height of a right circular cone is 7 cm and radius is 24 cm. Find the slant height of the cone.

Watch Video Solution

12. The cap of a joker is conical in which $840cm^2$ cloth is used. Find its slant height if the circumference of its base is 56 cm.

Watch Video Solution

13. The slant height of a cone is 10.5 cm and diametre of base is 14 cm. Find its curved surface area.

Watch Video Solution

14. The circumference of the base of a cone is $24\pi cm$ and its vertical height is 5 cm. Find its slant height.

Watch Video Solution

15. The base radius and height of a conical tent are 8 m and 15 m respectively. Find the area of the cloth used in this tent.

Watch Video Solution

16. The base radius and slant height of a cone are 8 cm and $2\sqrt{13}cm$ respectively. Find the volume of the cone.

Watch Video Solution

17. Find the volume of a box if its length, breadth and height are 20 cm, 10 cm and 30 cm respectively.

Watch Video Solution

18. The height and slant height of a cone are 12 cm and 13 cm respectively. Find its volume.

Watch Video Solution

19. The base area and height of a right circular conical tent are $154m^2$ and 4 m respectively. Find the area of cloth used in the tent.

Watch Video Solution

20. The cloth used in a conical tent is 330 square metre. Find its vertical height if its slant height is 15 m.

Watch Video Solution

21. The height and curved surface of a right circular cone are 24 cm and $550cm^2$. Find the volume of this cone.

Watch Video Solution

22. The base radius and total surface area of a cone are 7 cm and $704cm^2$. Find its slant height.

Watch Video Solution

23. The circumference of the base of a conical tent is 44 m and its height is 24 m. Find the area of cloth used in this tent.

Watch Video Solution

24. Find the volume of that largest cone that can be cut from a cube of edge 14 cm.

Watch Video Solution

25. Find the volume of that largest cone that can be cut from a cube of edge 8 cm.

Watch Video Solution

26. The base area and volume of a conical tent are $154m^2$ and $1232m^3$. Find the area of cloth used in this tent.

Watch Video Solution

27. The volume of a cone is $18\pi cm^3$. Find its height if height and diameter of base are same.

Watch Video Solution

28. Five person can accommodate in a conical tent. If each person requires $16dm^2$ are on floor and $100dm^3$ air for breathe, then find the height of the tent.

Watch Video Solution

29. The ratio of the base radius and height of a cone is 5 : 12. Find its slant height and radius if its volume is $800\pi m^3$.

Watch Video Solution

30. The ratio of the base radius and height of a cone is 5 : 12. Its volume is $314m^3$. Find its radius, height and slant height. Given that $\pi = 3.14$.

Watch Video Solution

31. The ratio of the base radius and height of a cone is 3 : 4. Its volume is $301.44cm^3$. Find its curved surface area. Given that $\pi = 3.14$.

Watch Video Solution

32. Find the total surface area of a right circular cone whose slant height is 25 cm and area of base is $154cm^2$.

Watch Video Solution

33. The base and height of a cylinder and cone are same. The ratio of their curved surface area is 8 : 5. Prove that the ratio of the radius and height will be 3 : 4.

Watch Video Solution

34. The sides containing right angle of a right angled triangle are 8 cm and 6 cm. It is rotated about the side of 8 cm. Find the total surface area of the formed solid.

Watch Video Solution

35. The sides containing right angles of a right angled triangle are 8 cm and 6 cm it is rotated about its hypotenuse . Find the volume and total surface area of the solid formed.

Watch Video Solution

36. The sides containing right angles of a right angled triangle are 8 cm and 6 cm. It is rotated

about its hypotenus. Find the volume and total surface area of the formed solid.

Watch Video Solution

Exercise 13 D

1. Find the volume of the sphere whose radius is :

(a) 2 cm

(b) 3 cm

(c) 1 cm

Watch Video Solution

2. Find the volume of the sphere whose diameter is :

(a) 7 cm

(b) 1 cm

Watch Video Solution

3. Find the surface area of the sphere whose diameter is :

(a) 14 cm

(b) 10 cm

(c) 2 cm

Watch Video Solution

4. Find the surface area of the sphere whose radius is :

(a) 7 cm

(b) 3.5 cm

(c) 1 cm

Watch Video Solution

5. Find the total surface area of the hemisphere whose radius is :

(a) 14 cm

(b) 5 cm

Watch Video Solution

6. The ratio of the radii of two spheres is 1 : 3. Find the ratio of their volume.

Watch Video Solution

7. If the radius of one sphere is twice the radius of second sphere, then find the ratio of their volumes.

Watch Video Solution

8. If the ratio of the volumes of two spheres is 1 : 8, then find the ratio of their radii.

Watch Video Solution

9. The ratio of the volumes of two spheres is 64 : 27. Find the ratio of their radii. Also find the ratio of their surfaces.

10. (i) The numberical value of the volume and surface of a sphere are equal. Find the diameter of the sphere.

(ii) The curved surved surface of a sphere is

equal to the area of a circle of radius 2.8 cm. Find the volume of the sphere.

Watch Video Solution

11. The ratio of the surfaces of two spheres is 2 : 3. Find the ratio of their volumes.

Watch Video Solution

12. If the radius a sphere becomes double, then find the percentage increase in the

surface.

Watch Video Solution

13. The volume of a sphere is $\frac{704}{21}cm^3$. Find its total surface.

Watch Video Solution

14. The volume of a sphere is $179\frac{2}{3}cm^3$. Find its total surface.

Watch Video Solution

15. (a) The total surface of a sphere is $676\pi cm^2$

. Find the radius of the sphere.

(b) The total surface of a sphere is $4\pi cm^2$.

Find the volume and diameter of the sphere.

(c) The total surface of a sphere is $1386cm^2$.

Find the diameter of the sphere.

(d) The total surface of a sphere is $3600\pi cm^2$.

Find the volume of the sphere.

 Watch Video Solution

16. Find the ratio of the total surface area of a sphere and a hemisphere of same radius.

Watch Video Solution

17. Three metallic spherical balls of radii 3 cm, 4 cm and 5 cm are melted and recast into a big spherical ball. Find the radius of this big ball.

Watch Video Solution

18. Three metallic spheres are melted and recast into a big solid sphere. Find the radius of big solid sphere if the diameter of three metallic spheres are 16 cm, 12 cm and 2 cm.

Watch Video Solution

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

Watch Video Solution

20. The small spherical balls of diameter 0.6 cm are drawn by melting a solid metallic sphere of 3 cm radius. Find the number of small balls constructed.

Watch Video Solution

Revision Exercise Very Short Answer Questions

1. Find the volume of a cuboid which is 15 m long, 12 m wide and $4.5m$ high.

Watch Video Solution

2. Find the total surface area of a cube whose edge measure 20 cm.

Watch Video Solution

3. Find the lateral surface area of a cuboid whose dimensions are $24m \times 25cm \times 6m$.

Watch Video Solution

4. A cubical box has each edge 10 cm. Find the length of longest rod which can be put into the box.

Watch Video Solution

5. Find the area of four walls of a room whose length is 6 m, breadth is 5 m and heigth is 4 m.

Watch Video Solution

6. The length of each edge of a rectangular box is l cm. Find its total surface area.

Watch Video Solution

7. The radius of a cylinder is r and heigth is h. Find its volume.

Watch Video Solution

8. The radius of the base of a cylinder is 14 cm and heigth is 10 cm. Find its volume.

Watch Video Solution

9. The circumference of the base of a cylinder is 44 cm. Find its diameter.

Watch Video Solution

10. The diameter of the base of a cylinder is 7 cm and height is 5 cm. Find its curved surface area.

Watch Video Solution

11. The radius of base of a cone is r and height is h. Find its volume.

Watch Video Solution

12. The diameter of the base of a cone is 6 cm and height is 4 cm. Find its curved surface area.

Watch Video Solution

13. The height of a cone is 24 cm and radius of base is 7 cm. Find its salant height.

Watch Video Solution

14. Find the volume of a sphere of radis r.

Watch Video Solution

15. The radius of a sphere is $\sqrt{7}cm$. Find its curved surface area.

Watch Video Solution

16. The diameter of a sphere is $2\sqrt{3}cm$. Find its curved surface area.

Watch Video Solution

17. The diameter of a sphere is 1 cm. Find its volume.

Watch Video Solution

Revision Exercise Short Answer Questions

1. The curved surface area of a cylinder is twice the sum of areas of its two end surfaces. Find

the ratio of its heigth and radius.

Watch Video Solution

2. The ratio of the radii of two cylinder is 1:2 and the ratio of their heigths is 2:1. Find the ratio of their volumes.

Watch Video Solution

3. The diameter of a roller is 2.4 m and its length is 1.68 m. If its rotates 1000 time to

level a ground. Find the area of the ground.

Watch Video Solution

4. The total surface area of a rigth circular cylinder is $165\pi cm^2$. If the radius of its base is 5 cm, find its heigth and volume.

Watch Video Solution

5. The total surface area of a solid cylinder is $616cm^2$. If the ratio between its curved surface

area and total surface area is 1:2, find the volume of the cylinder.

 Watch Video Solution

6. Each face of a cube has perimeter equal to 32 cm. Find its surface area and volume.

 Watch Video Solution

7. A school auditorium is 40 m long, 30 m broad and 12 m high. If each student requires

$1.2m^2$ of the floor area, find the maximum number of students who can be accommodated in this auditorium.

Watch Video Solution

8. The internal dimensions of a rectangular box are $12cm \times xcm \times 9cm$. If the length of longest rod that can be placed in this box is 17 cm, find x.

Watch Video Solution

9. The ratio of the radii of two cones is 1:2 and the ratio of their heigths is 2:1. Find the ratio of their volumes.

Watch Video Solution

10. Find the volume, curved surface area and the total surface area of a cone having base radius 35 cm and height 84 cm.

Watch Video Solution

11. Find the volume of a cone having radius of the base 35 cm and slant height 37 cm.

Watch Video Solution

12. Find the volume and surface area of a sphere of radius 21 cm.

Watch Video Solution

13. The internal and external diameters of a hollow hemi spherical vessel are 20 cm and 28

cm, respectively. Find the cost of painting the vessel at the rate of 14 paise per cm^2.

Watch Video Solution

14. A hemispherical bowl is made of steel, 0.5 cm thick. The inside radius of the bowl is 4 cm. Find the volume of steel used in making the bowl.

Watch Video Solution

Revision Exercise Long Answer Questions

1. How many cubic metres of earth must be dug out to sink a well 14 m deep and having a radius of 4 m. If the earth taken out is spread over a plot of dimension $(25m \times 16m)$. What is the height of the plateform so formed?

Watch Video Solution

2. A cuboid shape soap bar has volume 150 cc. Find its thickness if its length is 10 cm and

breadth is 5 cm.

Watch Video Solution

3. A copper wire of diameter 6 mm is evenly wrapped on a cylinder of length of length 15 cm and diameter 49 cm to cover its volume surface. Find the length and volume of wire. If the specific gravity of copper be 9g per cubic cm. Find the weigth of the wire.

Watch Video Solution

4. A cylindrical tub of radius 12 cm contains water to a depth of 20 cm. A spherial iron ball is dropped into the tub and thus the level of water is raised by 6.75 cm. What is the radius of the ball?

Watch Video Solution

5. A hollow spherical shell is made of a metal of density $4.5 gpercm^3$. If its internal and external radii are 8 cm and 9 cm, respectively find the weigth of the shell.

Watch Video Solution

6. A cylindrical metallic pipe is 14 cm long. The difference between the outside and inside surface is $44cm^2$. If the pipe is made up of 99 cubic cm of metal, find the outer and inner radii of the pipe.

Watch Video Solution

7. From the four corners of a rectangular cardboard $38cm \times 26cm$ square pieces of size 3 cm are cut and the remaining cardboard is used to form an open box. Find the capacity of the box formed.

Watch Video Solution

8. A rectangular container whose base is a square of side 12 cm, contains sufficient water to submerge a rectangular solid

$8cm \times 6cm \times 3cm$. Find the rise in level of the water in the container when the solid is in it.

Watch Video Solution

9. A find is 15 m long and 12 m broad. At one corner of this field a rectangular pit of dimensions $8m \times 2, 5m \times 2m$ is dug and the dug out soil is spread evenly over the rest of the field. Find the rise in the level of the rest of the field.

Watch Video Solution

10. A certain quantity of wood costs $Rs.\ 250 \text{per}\ \ m^3$. A solid cubical block of such wood is bougth for $Rs.\ 182.25$. Calculate the volume of the block and edge of the cube.

Watch Video Solution