

Surface Areas and Volumes

<1M>

1. The lateral surface area of right circular cylinder with base radius 7cm and height 10 cm is:
2. The lateral surface area of cylinder is 176cm^2 & base area 38.5cm^2 . Then its volume is
(A) 803cm^3 (B) 380cm^3 (C) 308cm^3 (D) 830cm^3
3. Ratio of curved surface areas of two cylinders with equal radii is:
(A) $H^2 : h^2$ (B) $2H : h$ (C) $H : h$ (D) None
4. Two cubes of 12cm edge are joined end to end. Find the surface area of the resulting cuboid.
5. Three cubes of sides 6 cm edge are joined end to end. Find the surface area of the resulting cuboid.
6. A solid sphere of radius 6cm is melted and recast into small spherical balls each of diameter 0.6cm. Find the number of balls thus obtained.
7. How many spherical bullets can be made out of a solid cube of lead whose edge measures 55cm, each bullet being 10 cm in diameter?
8. 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) 2681cm^2 (B) 2861cm^2 (C) 2816cm^2 (D) None
9. Ratio of lateral surface areas of two cylinders with equal heights is .
(A) $R : r$ (B) $H : h$ (C) $R^2 : r^2$ (D) None

10. The perimeter of ends of a frustum are 48 cm and 36 cm. If the height of the frustum be 11 cm, find its volume.

- (A) 1400 cm^3 (B) 1500 cm^3 (C) 1554 cm^3 (D) 1600 cm^3

11. Find the maximum volume of a cone that can be curved out of a solid hemisphere of radius r .

- (A) $\frac{4}{3} \pi r^2$ (B) $\frac{1}{3} \pi r^3$ (C) $\frac{1}{3} \pi r^2 h$ (D) None of these

12. A circus tent is in the form of a cone over a cylinder. The diameter of the base is 9 m, the height of cylindrical part is 4.8 m & the total height of the tent is 10.8 m. The canvass required for the tent is:

- (A) 241.84 m^2 (B) 24.184 m^2 (C) 2418.4 m^2 (D) None

13. A fez, the cap used by the turks is shaped like the frustum of a cone. 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.

- (A) 760 cm^2 (B) $710 \frac{2}{7} \text{ cm}^2$ (C) $731 \frac{2}{7} \text{ cm}^2$ (D) None of these

14. Determine the ratio of the volume of a cube to that of a sphere which will exactly fit inside the cube.

- (A) 1:1 (B) $2:\pi$ (C) $\pi:5$ (D) $6:\pi$

15. If the radii of the circular ends of a conical bucket are 28 cm and 7 cm & height is 45 cm. The capacity of the bucket is:

- (A) 48105 cm^3 (B) 48510 cm^3 (C) 48150 cm^3 (D) None

16. A cuboidal metal of dimensions $44\text{cm} \times 30\text{cm} \times 15\text{cm}$ was melted & cast into a cylinder of height 28cm its radius is:

- (A) 10 cm (B) 20 cm (C) 15 cm (D) None

17. Find the volume of the largest right circular cone that can be cut out of a cube whose edge is 9 cm .

- (A) 170 cm^3 (B) 180.5 cm^3 (C) 190.76 cm^3 (D) 190.93 cm^3

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) 2681cm^2 (B) 2861cm^2 (C) 2816cm^2 (D) None

19. A top is of the shape of a cone over a hemisphere. The radius of the hemisphere is 3.5 cm . The total height of the top is 15.5 cm . The total area of top is:

- (A) 215.4cm^2 (B) 21.45cm^2 (C) 214.5cm^2 (D) None

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

- (A) 14 cm (B) 12 cm (C) 16 cm (D) None

21. If the radii of the circular ends of a conical bucket is 45cm high, are 28cm and 7cm , find the capacity of the bucket.

- (A) 25390 cm^3 (B) 32670 cm^3 (C) 43209 cm^3 (D) 48510 cm^3

22. Liquid is full in a hemisphere of inner diameter 9cm . This is to poured into cylindrical bottles of diameter 3 cm & height 4 cm . The number of bottles required are:

- (A) 54 (B) 45 (C) 50 (D) None

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

- (A) 2 cm (B) 4 cm (C) 6 cm (D) 8 cm

24. 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?

- (A) 50 sq m (B) 44 sq m (C) 40 sq m (D) 35 sq m

25. Spherical ball of diameter 21 cm, is melted and recasted into cubes, each of side 1 cm. Find the number of cubes thus formed.

- (A) 4045 (B) 4380 (C) 4851 (D) 4982

26. Two cubes each of 10 cm edge are joined end to end. Find the surface area of the resulting cuboid.

- (A) 900 cm^2 (B) 1000 cm^2 (C) 1100 cm^2 (D) None of these

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

- (A) 5021 (B) 4531 (C) 4851 (D) None of these

29. Metallic spheres of radii 6cm, 8cm and 10cm respectively, are melted to form a single solid sphere. Find the radius of the resulting sphere.

(A) 8 cm

(B) 10 cm

(C) 12 cm

(D) 14 cm

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30. A cylindrical vessel of diameter 9 cm has some water in it. A cylindrical iron piece of diameter 6 cm & height 4.5 cm is dropped in it. After it was completely immersed, the raise in the level of water is:

31. With a bucket of radius 14 cm & height 16 cm, 27 buckets of lime was poured to form a conical heap. If its area is 5544 cm^2 , the canvass required to cover it is:

32. A piece of metal pipe is 77 cm long with inside diameter of the cross section is 4 cm. If the outer diameter is 4.5 cm & the metal weighs 8 gm/cu cm, the weight of pipe is:

33. The diameter of a copper sphere is 6 cm. The sphere is melted and is drawn into a long wire of uniform circular cross-section. If the length of the wire is 36 cm, find its radius.

34. A right circular cone is of height 8.4 cm and radius of its base is 2.1 cm. It is melted and recast into a sphere. Find the radius of the sphere.

35. Three cubes whose edges measure 3 cm, 4 cm and 5 cm respectively to form a single cube. Find its edge. Also, find surface area of the new cube.

36. 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.

37. A piece of metal pipe is 66 cm long with inside diameter of the cross section is 4 cm. If the outer diameter is 5.5 cm & the metal weighs 7 gm/cu cm, the weight of pipe is

38. The length of a cold storage is double its breadth. Its height is 3 meters. The areas of its four walls (including door) is 108 m². Find its volume.

39. A circus tent is cylindrical to a height of 3 m and conical above it. If its base radius is 52.5 m and slant height of a conical portion is 53 m, find the area of the canvas required to make the tent.

40. The ratio of base radius and height of a cone is 3:4. If the cost of smoothening the curved surface area at 5 paise / sq.cm is Rs.11550. Then volume of liquid is:

41. A drinking glass is in the shape of a frustum of a cone of height 14 cm. The diameter of its two circular ends are 4 cm and 2 cm. Find the capacity of the glass.

42. A metallic right circular cone of height 9 cm & base radius 7 cm is melted into a cuboid whose two sides are 11 cm & 6 cm. What is the third side of the cuboid?

43. The radii of the circular ends of a frustum of height 6 cm are 14 cm and 6 cm respectively. Find the lateral surface area and total surface area of the frustum.

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45. 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.

46. A vessel is in conical shape. If its volume is 33.264 lt. and height is 72 cm, the cost of repairing its CSA at Rs.12/sq.m is:

47. The total surface area of a cylinder is 220 sq.cm with height 6.5 cm. Then its volume is:

48. The largest sphere is curved out of a cube of a side 7 cm. Find the volume of the sphere.

49. From a circle of radius 15 cm a sector with 216° angle is cut out and its bounding radii are bent so as to form a cone. Then its volume:

50. The cost of painting the curved surface area of cone at Rs 5 cm^2 is Rs 3520. Which of the following volume of the cone, if its slant height is 25cm ?

51. A hemispherical bowl of internal diameter 40 cm contains a liquid. This liquid is to be filled in cylindrical bottles of radius 4 cm and height 8 cm. How many bottles are required to empty the bowl?

52. A conical vessel whose internal radius is 6cm and height is 25cm is full of water. The water is emptied into a cylindrical vessel with internal radius 10cm. Find the height to which the water rises.

53. Determine the ratio of the volume of cube to that of a sphere which will exactly fit inside the cube.

54. The radii of the circular ends of a conical bucket which is 49cm high, are 35cm and 14cm. Find the capacity of the bucket.

55. Find the volume of the largest right circular cone that can be cut out of a cube whose edge is 10cm.

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56. 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 240cm high and the conical part is 36cm high. Find the weight of the pillar if one cubic cm of iron weights 7.8 grams.

57. The interior of a building is in the form of a right circular cylinder of diameter 4.2m and height 4m surmounted by a cone. The vertical height of cone is 2.1m. Find the outer surface and volume of the building.

58. A circus tent is cylindrical upto a height of 3m and conical above. If the diameter of the base is 105m and vertical height of the conical part is 7.26 m. Find the total canvas used in making the tent.

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

60. 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 $\frac{8}{9}$ of the curved surface of the whole cone. Find the ratio of the line-segment in which the cone's altitude is divided by the plane.

61. A sphere of diameter 7 cm is dropped in a right circular cylinder vessel partly filled with water. The diameter of the cylindrical vessel is 14 cm. If the sphere is completely submerged in water, by how much will the level of water rise in the cylindrical vessel?

