SURFACE AREAS AND VOLUMES

1. A joker's cap is in the form of cone of base radius 7 cm and height 24 cm. The area of sheet to make 10 such caps is
   (a) 5500 cm^2 (b) 6500 cm^2 (c) 8500 cm^2 (d) 3500 cm^2

2. The curved surface area of a hemisphere of radius 'r' is
   (a) $2\pi r^2$ (b) $4\pi r^2$ (c) $3\pi r^2$ (d) $5\pi r^2$

3. The total surface area of a hemisphere of radius 'r' is
   (a) $2\pi r^2$ (b) $4\pi r^2$ (c) $3\pi r^2$ (d) $5\pi r^2$

4. The curved surface area of a sphere of radius 7 cm is:
   (a) 516 cm^2 (b) 616 cm^2 (c) 716 cm^2 (d) 880 cm^2

5. The curved surface area of a hemisphere of radius 21 cm is:
   (a) 2772 cm^2 (b) 2564 cm^2 (c) 3772 cm^2 (d) 4772 cm^2

6. The curved surface area of a sphere of radius 14 cm is:
   (a) 2464 cm^2 (b) 2428 cm^2 (c) 2464 cm^2 (d) none of these.

7. The curved surface area of a sphere of diameter 14 cm is:
   (a) 516 cm^2 (b) 616 cm^2 (c) 716 cm^2 (d) 880 cm^2

8. Total surface area of hemisphere of radius 10 cm is
   (a) 942 cm^2 (b) 940 cm^2 (c) 842 cm^2 (d) 840 cm^2

9. The radius of a spherical balloon increases from 7 cm to 14 cm s air is being pumped into it. The ratio of surface area of the balloon in the two cases is:
   (a) 4 : 1 (b) 1 : 4 (c) 3 : 1 (d) 1 : 3

10. A matchbox measures 4 cm x 2.5 cm x 1.5 cm. The volume of packet containing 12 such boxes is:
    (a) 160 cm^3 (b) 180 cm^3 (c) 160 cm^2 (d) 180 cm^2

11. A cuboidal water tank is 6 m long, 5 m wide and 4.5 m deep. How many litre of water can it hold?
    (a) 1350 liters (b) 13500 liters (c) 135000 liters (d) 135 liters

12. A cuboidal vessel is 10 m long and 8 m wide. How high must it be made to hold 380 cubic metres of a liquid?
    (a) 4.75 m (b) 7.85 m (c) 4.75 cm (d) none of these

13. The capacity of a cuboidal tank is 50000 litres. The length and depth are respectively 2.5 m and 10 m. Its breadth is
    (a) 4 m (b) 3 m (c) 2 m (d) 5 m

14. A godown measures 40 m × 25 m × 10 m. Find the maximum number of wooden crates each measuring 1.5 m × 1.25 m × 0.5 m that can be stored in the godown.
    (a) 18000 (b) 16000 (c) 15000 (d) 14000

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1. 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?
(a) 4000 m^3 (b) 40 m^3 (c) 400 m^3 (d) 40000 m^3

2. The circumference of the base of a cylindrical vessel is 132 cm and its height is 25 cm. How many litres of water can it hold?
(a) 33.75 litre (b) 34.65 litre (c) 35.75 litre (d) 38.75 litre

3. If the lateral surface of a cylinder is 94.2 cm^2 and its height is 5 cm, then find radius of its base
(a) 5cm (b) 4cm (c) 3cm (d) 6cm

4. It costs Rs 2200 to paint the inner curved surface of a cylindrical vessel 10 m deep. If the cost of painting is at the rate of Rs 20 per m^2, find radius of the base,
(a) 1.75 m (b) 1.85 m (c) 1.95 m (d) 1.65 m

5. The height and the slant height of a cone are 21 cm and 28 cm respectively. Find the volume of the cone.
(a) 5546 cm^3 (b) 7546 cm^3 (c) 5564 m^3 (d) 8546 cm^3

6. Find the volume of the right circular cone with radius 6 cm, height 7 cm
(a) 254 cm^3 (b) 264 cm^3 (c) 274 cm^2 (d) 284 cm^3

7. The radius and height of a conical vessel are 7 cm and 25 cm respectively. Its capacity in litres is
(a) 1.232 litre (b) 1.5 litre (c) 1.35 litre (d) 1.6 litre

8. The height of a cone is 15 cm. If its volume is 1570 cm^3, find the radius of the base.
(a) 12 cm (b) 10 cm (c) 15 cm (d) 18 cm

9. If the volume of a right circular cone of height 9 cm is 48π cm^3, find the diameter of its base.
(a) 12 cm (b) 10 cm (c) 6 cm (d) 8 cm

10. A conical pit of top diameter 3.5 m is 12 m deep. What is its capacity in kilolitres?
(a) 38.5 kl (b) 48.5 kl (c) 39.5 kl (d) 47.5 kl

11. Find the capacity in litres of a conical vessel with radius 7 cm, slant height 25 cm
(a) 1.232 litre (b) 1.5 litre (c) 1.35 litre (d) none of these

12. 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?
(a) $\frac{1}{64}$ (b) $\frac{1}{32}$ (c) $\frac{1}{16}$ (d) $\frac{1}{48}$

13. The dimensions of a cuboid are 50 cm x 40 cm x 10 cm. Its volume in litres is:
(a) 10 litres (b) 12 litres (c) 20 litres (d) 25 litres

14. The volume of a cuboidal tank is 250 m^3. If its base area is 50 m^2 then depth of the tank is
(a) 5 m (b) 200 m (c) 300 m (d) 12500 m

SURFACE AREAS AND VOLUMES

11. The dimensions of a prayer Hall are 20m x 15m x 8m. Find the cost of painting its walls at Rs. 10 per m^2.

12. Find the curved surface area of a right circular cylinder whose height is 13.5 cm and radius of tis base is 7 cm. Find also its surface area.

13. The exterior diameter of an iron pipe is 25cm and it is one cm thick. Find the whole surface are of the pipe it is 21cm long.

14. A roller 150 cm long has a diameter of 70 cm. To level a playground it takes 750 complete revolutions. Determine the cost of leveling the playground at the rate of 75 paise per m^2.

15. Find the total surface area of a cone, if its slant height is 21 cm and the diameter of its base is 24 cm.

16. The volume of a sphere is 4851 cm^3. How much should its radius be reduced so that it volume becomes $\frac{4312}{3}$ cm^3.

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

18. Find the capacity in litres of a conical vessel whose diameter is 14 cm and slant height is 25 cm.

19. What is the total surface area of a hemisphere of base radius 7cm?

20. A village having a population of 4000, requires 150 litres of water per head per day. It has a tank measuring 20m x 15m x 6m. For how many days, the water of the tank will be sufficient for the village?

21. Mary wants to decorate her Christmas tree. She wants to place the tree on a wooden box covered with coloured paper with picture of Santa Claus on it. She must know the exact quantity of paper to buy for this purpose. If the box has length, breadth and height as 80 cm, 40 cm and 20 cm respectively how many square sheets of paper of side 40 cm would she require?

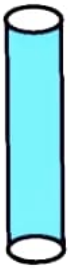
22. Hameed has built a cubical water tank with lid for his house, with each outer edge 1.5 m long. He gets the outer surface of the tank excluding the base, covered with square tiles of side 25 cm. Find how much he would spend for the tiles, if the cost of the tiles is Rs 360 per dozen.

23. A small indoor greenhouse (herbarium) is made entirely of glass panes (including base) held together with tape. It is 30 cm long, 25 cm wide and 25 cm high. (i) What is the area of the glass? (ii) How much of tape is needed for all the 12 edges?

24. 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 × 20 cm × 5 cm and the smaller of dimensions 15 cm × 12 cm × 5 cm. For all the overlaps, 5% of the total surface area is required extra. If the cost of the cardboard is Rs 4 for 1000 cm2, find the cost of cardboard required for supplying 250 boxes of each kind.

25. 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 margins 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 × 3 m?

26. Savitri had to make a model of a cylindrical kaleidoscope for her science project. She wanted to use chart paper to make the curved surface of the kaleidoscope. What would be the area of chart paper required by her, if she wanted to make a kaleidoscope of length 25 cm with a 3.5 cm radius?



27. A metal pipe is 77 cm long. The inner diameter of a cross section is 4 cm, the outer diameter being 4.4 cm. Find its

(i) inner curved surface area,

(ii) outer curved surface area,

(iii) total surface area.

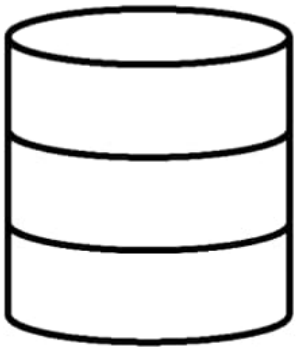
28. Find (i) the lateral or curved surface area of a closed cylindrical petrol storage tank that is 4.2 m in diameter and 4.5 m high. (ii) how much steel was actually used, if $\frac{1}{12}$ of the steel actually used was wasted in making the tank.

29. Find the curved surface area of a right circular cone whose slant height is 10 cm and base radius is 7 cm.

30. The height of a cone is 16 cm and its base radius is 12 cm. Find the curved surface area and the total surface area of the cone (Use $\pi = 3.14$).

31. A corn cob shaped somewhat like a cone, has the radius of its broadest end as 2.1 cm and length (height) as 20 cm. If each 1 cm^2 of the surface of the cob carries an average of four grains, find how many grains you would find on the entire cob.

32. In the adjoining figure you see the frame of a lampshade. It is to be covered with a decorative cloth. The frame has a base diameter of 20 cm and height of 30 cm. A margin of 2.5 cm is to be given for folding it over the top and bottom of the frame. Find how much cloth is required for covering the lampshade.



33. A conical tent is 10 m high and the radius of its base is 24 m. Find (i) slant height of the tent. (ii) cost of the canvas required to make the tent, if the cost of 1 m2 canvas is Rs 70.

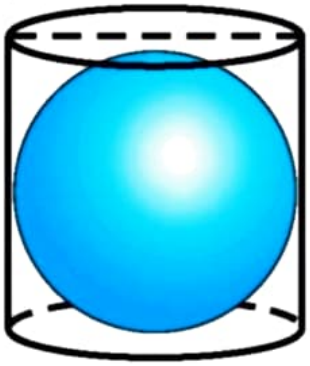
34. What length of tarpaulin 3 m wide will be required to make conical tent of height 8 m and base radius 6 m? Assume that the extra length of material that will be required for stitching margins and wastage in cutting is approximately 20 cm (Use $\pi = 3.14$).

35. The slant height and base diameter of a conical tomb are 25 m and 14 m respectively. Find the cost of white-washing its curved surface at the rate of Rs 210 per 100 m^2.

36. A joker's cap is in the form of a right circular cone of base radius 7 cm and height 24 cm. Find the area of the sheet required to make 10 such caps.

37. A hemispherical dome of a building needs to be painted. If the circumference of the base of the dome is 17.6 m, find the cost of painting it, given the cost of painting is Rs 5 per 100 cm^2.

38. A right circular cylinder just encloses a sphere of radius *r*. Find (i) surface area of the sphere, (ii) curved surface area of the cylinder, (iii) ratio of the areas obtained in (i) and (ii).



39. A hemispherical bowl is made of steel, 0.25 cm thick. The inner radius of the bowl is 5 cm. Find the outer curved surface area of the bowl.

40. A wall of length 10 m was to be built across an open ground. The height of the wall is 4 m and thickness of the wall is 24 cm. If this wall is to be built up with bricks whose dimensions are 24 cm × 12 cm × 8 cm, how many bricks would be required?

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

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

43. A solid cube of side 12 cm is cut into eight cubes of equal volume. What will be the side of the new cube? Also, find the ratio between their surface areas.

44. 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?

45. The capacity of a closed cylindrical vessel of height 1 m is 15.4 litres. How many square metres of metal sheet would be needed to make it?

46. 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 and that of the graphite.