



MCQ WORKSHEET-I
CLASS X: CHAPTER – 13
SURFACE AREAS AND VOLUMES

1. The surface area of a cuboid is
(a) $2(lb + bh + lh)$ (b) $3(lb + bh + lh)$ (c) $2(lb - bh - lh)$ (d) $3(lb - bh - lh)$
 2. The surface area of a cube if edge 'a' is
(a) $7a^2$ (b) $6a^2$ (c) $5a^3$ (d) $5a^2$
 3. The length, breadth and height of a room is 5m, 4m and 3m. The cost of white washing its four walls at the rate of Rs. 7.50 per m^2 is
(a) Rs. 110 (b) Rs. 109 (c) Rs. 220 (d) Rs. 105
 4. The perimeter of floor of rectangular hall is 250m. The cost of the white washing its four walls is Rs. 15000. The height of the room is
(a) 5m (b) 4m (c) 6m (d) 8m
 5. The breadth of a room is twice its height and is half of its length. The volume of room is $512dm^3$. Its dimensions are
(a) 16 dm, 8 dm, 4 dm (b) 12 dm, 8 dm, 2 dm
(c) 8 dm, 4 dm, 2 dm (d) 10 dm, 15 dm, 20 dm
 6. The area of three adjacent faces of a cube is x, y and z. Its volume V is
(a) $V = xyz$ (b) $V^3 = xyz$ (c) $V^2 = xyz$ (d) none of these
 7. Two cubes each of edge 12 cm are joined. The surface area of new cuboid is
(a) $140 cm^2$ (b) $1440 cm^2$ (c) $144 cm^2$ (d) $72 cm^2$
 8. The curved surface area of cylinder of height 'h' and base radius 'r' is
(a) $2\pi rh$ (b) πrh (c) $\frac{1}{2}\pi rh$ (d) none of these
 9. The total surface area of cylinder of base radius 'r' and height 'h' is
(a) $2\pi(r + h)$ (b) $2\pi r(r + h)$ (c) $3\pi r(r + h)$ (d) $4\pi r(r + h)$
 10. The curved surface area of a cylinder of height 14 cm is $88 cm^2$. The diameter of its circular base is
(a) 5cm (b) 4cm (c) 3cm (d) 2cm
 11. It is required to make a closed cylindrical tank of height 1 m and base diameter 140cm from a metal sheet. How many square meters a sheet are required for the same?
(a) $6.45m^2$ (b) $6.48m^2$ (c) $7.48m^2$ (d) $5.48m^2$.
 12. A metal pipe is 77 cm long. Inner diameter of cross section is 4 cm and outer diameter is 4.4 cm. Its inner curved surface area is:
(a) $864 cm^2$ (b) $968 cm^2$ (c) $768 cm^2$ (d) none of these
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MCQ WORKSHEET-II
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SURFACE AREAS AND VOLUMES

1. 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. The area of the playground in m^2 is:
(a) 1584 (b) 1284 (c) 1384 (d) 1184
 2. A cylindrical pillar is 50 cm in diameter and 3.5 m in height. The cost of painting its curved surface at the rate of Rs. 12.50 per m^2 is:
(a) Rs. 68.75 (b) Rs. 58.75 (c) Rs. 48.75 (d) Rs. 38.75
 3. The inner diameter of circular well is 3.5m. It is 10m deep. Its inner curved surface area in m^2 is:
(a) 120 (b) 110 (c) 130 (d) 140
 4. In a hot water heating system there is a cylindrical pipe of length 28 m and diameter 5 cm. The total radiating surface area in the system in m^2 is:
(a) 6.6 (b) 5.5 (c) 4.4 (d) 3.4
 5. The curved surface area of a right circular cone of slant height 10 cm and base radius 7 cm is
(a) 120 cm^2 (b) 220 cm^2 (c) 240 cm^2 (d) 140 cm^2
 6. The height of a cone is 16 cm and base radius is 12 cm. Its slant height is
(a) 10 cm (b) 15 cm (c) 20 cm (d) 8 cm
 7. The curved surface area of a right circular cone of height 16 cm and base radius 12 cm is
(a) 753.6 cm^2 (b) 1205.76 cm^2 (c) 863.8 cm^2 (d) 907.6 cm^2
 8. The curved surface area of a right circular cone of slant height 10 cm and base radius 10.5 cm is
(a) 185 cm^2 (b) 160 cm^2 (c) 165 cm^2 (d) 195 cm^2
 9. The slant height of a cone is 26 cm and base diameter is 20 cm. Its height is
(a) 24 cm (b) 25 cm (c) 23 cm (d) 35 cm
 10. The curved surface area of a cone is 308 cm^2 and its slant height is 14 cm. The radius of its base is
(a) 8 cm (b) 7 cm (c) 9 cm (d) 12 cm
 11. A conical tent is 10 m high and the radius of its base is 24 m. The slant height of tent is
(a) 26 m (b) 28 m (c) 25 m (d) 27 m
 12. The slant height and base diameter of a conical tomb are 25 m and 14 m respectively. The cost of white washing its curved surface at the rate of Rs. 210 per 100 m^2 is
(a) Rs. 1233 (b) Rs. 1155 (c) Rs. 1388 (d) Rs. 1432
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MCQ WORKSHEET-III
CLASS X: CHAPTER – 13
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. A solid right cylinder cone is cut into two parts at the middle of its height by a plane parallel to its base. The ratio of the volume of the smaller cone to the whole cone is
(a) 1 : 2 (b) 1 : 4 (c) 1 : 6 (d) 1 : 8
 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 as 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 x 25 m x 10 m. Find the maximum number of wooden crates each measuring 1.5 m x 1.25 m x 0.5 m that can be stored in the godown.
(a) 18000 (b) 16000 (c) 15000 (d) 14000
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MCQ WORKSHEET-IV
CLASS X: CHAPTER – 13
SURFACE AREAS AND VOLUMES

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 $48\pi \text{ cm}^3$, 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
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MCQ WORKSHEET-V
CLASS X: CHAPTER – 13
SURFACE AREAS AND VOLUMES

1. The length, breadth and height of a cuboidal solid is 4 cm, 3 cm and 2 cm respectively. Its volume is
(a) $(4 + 3 + 2) \text{ cm}^3$ (b) $2(4 + 3 + 2) \text{ cm}^3$ (c) $(4 \times 3 \times 2) \text{ cm}^3$ (d) $2(4 + 3) \times 2 \text{ cm}^3$
 2. The volume of a cuboidal solid of length 8 m and breadth 5 m is 200 m^3 . Find its height.
(a) 5 m (b) 6 m (c) 15 m (d) 18 m
 3. The curved surface area of a sphere is 616 cm^2 . Its radius is
(a) 7 cm (b) 5 cm (c) 6 cm (d) 8 cm
 4. If radius of a sphere is $\frac{2d}{3}$ then its volume is
(a) $\frac{32}{81} \pi d^3$ (b) $\frac{23}{4} \pi d^3$ (c) $\frac{32}{3} \pi d^3$ (d) $\frac{34}{3} \pi d^3$
 5. The capacity of a cylindrical tank is 6160 cm^3 . Its base diameter is 28 m. The depth of this tank is
(a) 5 m (b) 10 m (c) 15 m (d) 8 m
 6. The volume of a cylinder of radius r and length h is:
(a) $2\pi rh$ (b) $\frac{4}{3} \pi r^2 h$ (c) $\pi r^2 h$ (d) $2\pi r^2 h$
 7. Base radius of two cylinder are in the ratio 2 : 3 and their heights are in the ratio 5 : 3. The ratio of their volumes is
(a) 27 : 20 (b) 25 : 24 (c) 20 : 27 (d) 15 : 20
 8. If base radius and height of a cylinder are increased by 100% then its volume increased by:
(a) 30% (b) 40% (c) 42% (d) 33.1%
 9. The diameter of a sphere is 14 m. The volume of this sphere is
(a) $1437\frac{1}{3} \text{ m}^3$ (b) $1357\frac{1}{3} \text{ m}^3$ (c) $1437\frac{2}{3} \text{ m}^3$ (d) $1337\frac{2}{3} \text{ m}^3$
 10. The volume of a sphere is 524 cm^3 . The diameter of sphere is
(a) 5cm (b) 4cm (c) 3cm (d) 7cm
 11. The total surface area of a cylinder is $40\pi \text{ cm}^2$. If height is 5.5 cm then its base radius is
(a) 5cm (b) 2.5cm (c) 1.5cm (d) 10cm
 12. The area of circular base of a right circular cone is 78.5 cm^2 . If its height is 12 cm then its volume is
(a) 31.4 cm^3 (b) 3.14 cm^3 (c) 314 cm^3 (d) none of these
 13. The base radius of a cone is 11.3 cm and curved surface area is 355 cm^2 . Its height is (Take $\pi = \frac{355}{113}$)
(a) 5 cm (b) 10 cm (c) 11 cm (d) 9 cm
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MCQ WORKSHEET-VI
CLASS X: CHAPTER – 13
SURFACE AREAS AND VOLUMES

1. If the dimensions of a cuboid are 3 cm, 4 cm and 10 cm, then its surface area is
A. 82 cm^2 B. 123 cm^2 C. 164 cm^2 D. 216 cm^2
2. The volume of the cuboid in Q.1 is
A. 17 cm^3 B. 164 cm^3 C. 120 cm^3 D. 240 cm^3
3. The surface area of a cuboid is 1372 sq. cm. If its dimensions are in the ratio of 4 : 2 : 1, then its length is
A. 7 cm B. 14 cm C. 21 cm D. 28cm
4. The base radius and height of a right circular cylinder are 7 cm and 13.5 cm. The volume of cylinder is
A. 1579 cm^3 B. 1897 cm^3 C. 2079 cm^3 D. 2197 cm^3
5. The base radius of a cone is 5 cm and its height is 12 cm. Its slant height is
A. 13 cm B. 19.5 cm C. 26 cm D. 52cm
6. The curved surface area of a cylinder of height 14 cm is 88 sq. cm. The diameter of the cylinder is
A. 0.5 cm B. 1.0 cm C. 1.5 cm D. 2.0 cm
7. The lateral surface area of a right circular cone of height 28 cm and base radius 21 cm is
A. 1155 cm^2 B. 1055 cm^2 C. 2110 cm^2 D. 2310 cm^2
8. The circumference of the base of a 8 m high conical tent is $\frac{264}{7} \text{ m}^2$. The area of canvas required to make the tent is
A. $\frac{1360}{7} \text{ cm}^2$ B. $\frac{1360}{14} \text{ cm}^2$ C. 286 cm^2 D. 98 cm^2
9. The area of metal sheet required to make a closed hollow cone of height 24 m and base radius 7 m is
A. 176 m^2 B. 352 m^2 C. 704 m^2 D. 1408 m^2
10. The diameter of a sphere whose surface area is 346.5 cm^2 is
A. 5.25 cm B. 5.75 cm C. 11.5 cm D. 10.5 cm
11. The radius of a spherical balloon increases from 7 cm to 14 cm when air is pumped into it. The ratio of the surface area of original balloon to inflated one is
A. 1 : 2 B. 1 : 3 C. 1 : 4 D. 4 : 3

12. The circumference of the base of a cylindrical vessel is 132 cm and its height is 25 cm. If 1000 cu.cm = 1 liter, the number of litres, of water the vessel can hold is
- A. 17.325 B. 34.65 C. 34.5 D. 69.30
13. The number of litres of milk a hemispherical bowl of radius 10.5 cm can hold is
- A. 2.47 B. 2.476 C. 2.376 D. 3.476
14. The number of bricks, each measuring 18 cm × 12 cm × 10 cm are required to build a wall 12 m × 0.6 m × 4.5 m if $\frac{1}{10}$ of its volume is taken by mortar, is
- A. 15000 B. 13500 C. 12500 D. 13900
15. The radius of a sphere is 10 cm. If its radius is increased by 1 cm, the volume of the sphere is increased by
- A. 13.3% B. 21.1% C. 30% D. 33.1%
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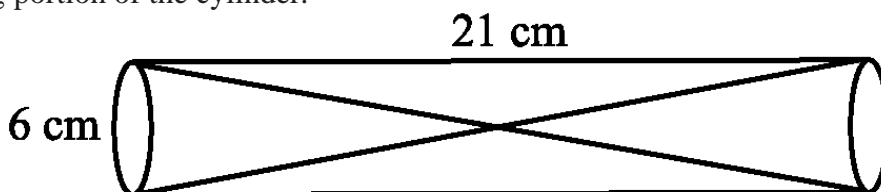
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MCQ WORKSHEET-VII
CLASS X: CHAPTER – 13
SURFACE AREAS AND VOLUMES

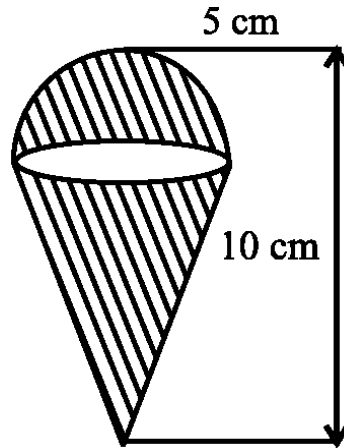
1. The total surface area of a solid hemisphere of radius r is
(A) πr^2 (B) $2\pi r^2$ (C) $3\pi r^2$ (D) $4\pi r^2$
 2. The volume and the surface area of a sphere are numerically equal, then the radius of sphere is
(A) 0 units (B) 1 units (C) 2 units (D) 3 units
 3. A cylinder, a cone and a hemisphere are of the same base and of the same height. The ratio of their volumes is
(A) 1 : 2 : 3 (B) 2 : 1 : 3 (C) 3 : 1 : 2 (D) 3 : 2 : 1
 4. Small spheres, each of radius 2cm, are made by melting a solid iron ball of radius 6cm, then the total number of small spheres is
(A) 9 (B) 6 (C) 27 (D) 81
 5. A solid sphere of radius r cm is melted and recast into the shape of a solid cone of height r . Then the radius of the base of cone is
(A) $2r$ (B) r (C) $4r$ (D) $3r$
 6. Three solid spheres of diameters 6cm, 8cm and 10cm are melted to form a single solid sphere. The diameter of the new sphere is
(A) 6 cm (B) 4.5 cm (C) 3 cm (D) 12 cm
 7. The radii of the ends of a frustum of a cone 40 cm high are 38 cm and 8 cm. The slant height of the frustum of cone is
(A) 50 cm (B) $10\sqrt{7}$ cm (C) 60.96 cm (D) $4\sqrt{2}$ cm
 8. The circular ends of a bucket are of radii 35 cm and 14 cm and the height of the bucket is 40 cm. Its volume is
(A) 60060 cm^3 (B) 80080 cm^3 (C) 70040 cm^3 (D) 80160 cm^3
 9. If the radii of the ends of a bucket are 5 cm and 15 cm and it is 24 cm high, then its surface area is
(A) 1815.3 cm^2 (B) 1711.3 cm^2 (C) 2025.3 cm^2 (D) 2360 cm^2
 10. If the radii of the ends of a 42 cm high bucket are 16 cm and 11 cm, determine its capacity (take $\pi = \frac{22}{7}$)
(A) 24222 cm^3 (B) 24332 cm^3 (C) 24322 cm^3 (D) none of these
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PRACTICE QUESTIONS
CLASS X: CHAPTER – 13
SURFACE AREAS AND VOLUMES

1. A cone of maximum size is carved out from a cube of edge 14 cm. Find the surface area of the cone and of the remaining solid left out after the cone carved out.
2. A solid metallic sphere of radius 10.5 cm is melted and recast into a number of smaller cones, each of radius 3.5 cm and height 3 cm. Find the number of cones so formed.
3. A canal is 300 cm wide and 120 cm deep. The water in the canal is flowing with a speed of 20 km/h. How much area will it irrigate in 20 minutes if 8 cm of standing water is desired?
4. A cone of radius 4 cm is divided into two parts by drawing a plane through the mid point of its axis and parallel to its base. Compare the volumes of the two parts.
5. Three cubes of a metal whose edges are in the ratio 3:4:5 are melted and converted into a single cube whose diagonal is $12\sqrt{3}$ cm. Find the edges of the three cubes.
6. Three metallic solid cubes whose edges are 3 cm, 4 cm and 5 cm are melted and formed into a single cube. Find the edge of the cube so formed.
7. How many shots each having diameter 3 cm can be made from a cuboidal lead solid of dimensions $9\text{cm} \times 11\text{cm} \times 12\text{cm}$?
8. A bucket is in the form of a frustum of a cone and holds 28.490 litres of water. The radii of the top and bottom are 28 cm and 21 cm, respectively. Find the height of the bucket.
9. A cone of radius 8 cm and height 12 cm is divided into two parts by a plane through the mid-point of its axis parallel to its base. Find the ratio of the volumes of two parts.
10. Two identical cubes each of volume 64 cm^3 are joined together end to end. What is the surface area of the resulting cuboid?
11. From a solid cube of side 7 cm, a conical cavity of height 7 cm and radius 3 cm is hollowed out. Find the volume of the remaining solid.
12. Two cones with same base radius 8 cm and height 15 cm are joined together along their bases. Find the surface area of the shape so formed.
13. Two solid cones A and B are placed in a cylindrical tube as shown in the below figure. The ratio of their capacities is 2:1. Find the heights and capacities of cones. Also, find the volume of the remaining portion of the cylinder.



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



15. Marbles of diameter 1.4 cm are dropped into a cylindrical beaker of diameter 7 cm containing some water. Find the number of marbles that should be dropped into the beaker so that the water level rises by 5.6 cm.
16. How many spherical lead shots each of diameter 4.2 cm can be obtained from a solid rectangular lead piece with dimensions 66 cm, 42 cm and 21 cm.
17. How many spherical lead shots of diameter 4 cm can be made out of a solid cube of lead whose edge measures 44 cm.
18. A wall 24 m long, 0.4 m thick and 6 m high is constructed with the bricks each of dimensions 25 cm \times 16 cm \times 10 cm. If the mortar occupies $\frac{1}{10}$ th of the volume of the wall, then find the number of bricks used in constructing the wall.
19. Find the number of metallic circular disc with 1.5 cm base diameter and of height 0.2 cm to be melted to form a right circular cylinder of height 10 cm and diameter 4.5 cm.
20. A bucket is in the form of a frustum of a cone of height 30 cm with radii of its lower and upper ends as 10 cm and 20 cm, respectively. Find the capacity and surface area of the bucket. Also, find the cost of milk which can completely fill the container, at the rate of Rs 25 per litre (use $\pi = 3.14$).
21. A solid toy is in the form of a hemisphere surmounted by a right circular cone. The height of the cone is 4 cm and the diameter of the base is 8 cm. Determine the volume of the toy. If a cube circumscribes the toy, then find the difference of the volumes of cube and the toy. Also, find the total surface area of the toy.
22. A solid metallic hemisphere of radius 8 cm is melted and recasted into a right circular cone of base radius 6 cm. Determine the height of the cone.
23. A rectangular water tank of base 11 m \times 6 m contains water upto a height of 5 m. If the water in the tank is transferred to a cylindrical tank of radius 3.5 m, find the height of the water level in the tank.

24. A building is in the form of a cylinder surmounted by a hemispherical dome. The base diameter of the dome is equal to $\frac{2}{3}$ of the total height of the building. Find the height of the building, if it contains $67\frac{1}{21}$ m³ of air.
25. How many cubic centimetres of iron is required to construct an open box whose external dimensions are 36 cm, 25 cm and 16.5 cm provided the thickness of the iron is 1.5 cm. If one cubic cm of iron weighs 7.5 g, find the weight of the box.
26. The barrel of a fountain pen, cylindrical in shape, is 7 cm long and 5 mm in diameter. A full barrel of ink in the pen is used up on writing 3300 words on an average. How many words can be written in a bottle of ink containing one fifth of a litre?
27. Water flows at the rate of 10m/minute through a cylindrical pipe 5 mm in diameter. How long would it take to fill a conical vessel whose diameter at the base is 40 cm and depth 24 cm?
28. A heap of rice is in the form of a cone of diameter 9 m and height 3.5 m. Find the volume of the rice. How much canvas cloth is required to just cover the heap?
29. A factory manufactures 120000 pencils daily. The pencils are cylindrical in shape each of length 25 cm and circumference of base as 1.5 cm. Determine the cost of colouring the curved surfaces of the pencils manufactured in one day at Rs 0.05 per dm².
30. Water is flowing at the rate of 15 km/h through a pipe of diameter 14 cm into a cuboidal pond which is 50 m long and 44 m wide. In what time will the level of water in pond rise by 21 cm?
31. A solid iron cuboidal block of dimensions 4.4 m × 2.6 m × 1m is recast into a hollow cylindrical pipe of internal radius 30 cm and thickness 5 cm. Find the length of the pipe.
32. 500 persons are taking a dip into a cuboidal pond which is 80 m long and 50 m broad. What is the rise of water level in the pond, if the average displacement of the water by a person is 0.04m³?
33. 16 glass spheres each of radius 2 cm are packed into a cuboidal box of internal dimensions 16 cm × 8 cm × 8 cm and then the box is filled with water. Find the volume of water filled in the box.
34. A milk container of height 16 cm is made of metal sheet in the form of a frustum of a cone with radii of its lower and upper ends as 8 cm and 20 cm respectively. Find the cost of milk at the rate of Rs. 22 per litre which the container can hold.
35. A cylindrical bucket of height 32 cm and base radius 18 cm is filled with sand. This bucket is emptied on the ground and a conical heap of sand is formed. If the height of the conical heap is 24 cm, find the radius and slant height of the heap.
36. A rocket is in the form of a right circular cylinder closed at the lower end and surmounted by a cone with the same radius as that of the cylinder. The diameter and height of the cylinder are 6 cm and 12 cm, respectively. If the slant height of the conical portion is 5 cm, find the total surface area and volume of the rocket [Use $\pi = 3.14$].
37. A building is in the form a cylinder surmounted by a hemispherical vaulted dome and contains $41\frac{19}{21}$ m³ of air. If the internal diameter of dome is equal to its total height above the floor, find the height of the building?
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38. A hemispherical bowl of internal radius 9 cm is full of liquid. The liquid is to be filled into cylindrical shaped bottles each of radius 1.5 cm and height 4 cm. How many bottles are needed to empty the bowl?
39. A solid right circular cone of height 120 cm and radius 60 cm is placed in a right circular cylinder full of water of height 180 cm such that it touches the bottom. Find the volume of water left in the cylinder, if the radius of the cylinder is equal to the radius of the cone.
40. Water flows through a cylindrical pipe, whose inner radius is 1 cm, at the rate of 80 cm/sec in an empty cylindrical tank, the radius of whose base is 40 cm. What is the rise of water level in tank in half an hour?
41. The rain water from a roof of dimensions 22 m 20 m drains into a cylindrical vessel having diameter of base 2 m and height 3.5 m. If the rain water collected from the roof just fill the cylindrical vessel, then find the rainfall in cm.
42. A pen stand made of wood is in the shape of a cuboid with four conical depressions and a cubical depression to hold the pens and pins, respectively. The dimension of the cuboid are 10 cm, 5 cm and 4 cm. The radius of each of the conical depressions is 0.5 cm and the depth is 2.1 cm. The edge of the cubical depression is 3 cm. Find the volume of the wood in the entire stand.
43. A cone of radius 10cm is divided into two parts by drawing a plane through the midpoint of its axis, parallel to its base. Compare the volume of the two parts.
44. 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 segments into which the cone's altitude is divided by the plane.
45. From a solid cylinder of height 24cm and diameter 10cm, two conical cavities of same radius as that of the cylinder are hollowed out. If the height of each conical activity is half the height of cylinder, find the total surface area of the remaining cylinder.
46. A farmer connects a pipe of internal diameter 20cm from a canal into a cylindrical tank to her field, which is 10m in diameter and 2m deep. If water flows through the pipe at the rate of 3km/hr, in how much time will the tank be filled?
47. A toy is in the form of a cone on a hemi-sphere of diameter 7 cm. The total height of the top is 14.5cm. Find the volume and total surface area of the toy.
48. A vessel in the form of hemi-spherical is mounted by a hollow cylinder. The diameter of the bowl is 14cm and the total height of the vessel is 13 cm. Find the capacity of the vessel.
49. A cylindrical with radius and height is 4cm and 8cm is filled with Ice-cream and ice-cream is distributed to 10 Children in equal can having hemi-spherical tops. If the height of the conical portion is 4 times the radius of its base, find the radius of the ice-cream cone.
50. A tent has cylindrical surmounted by a conical roof. The radius of the cylindrical base is 20m. The total height of tent is 6.3m and height of cylindrical portion is 4.2m, find the volume and surface area of tent.
51. Rasheed got a playing top (*lattu*) as his birthday present, which surprisingly had no colour on it. He wanted to colour it with his crayons. The top is shaped like a cone surmounted by a
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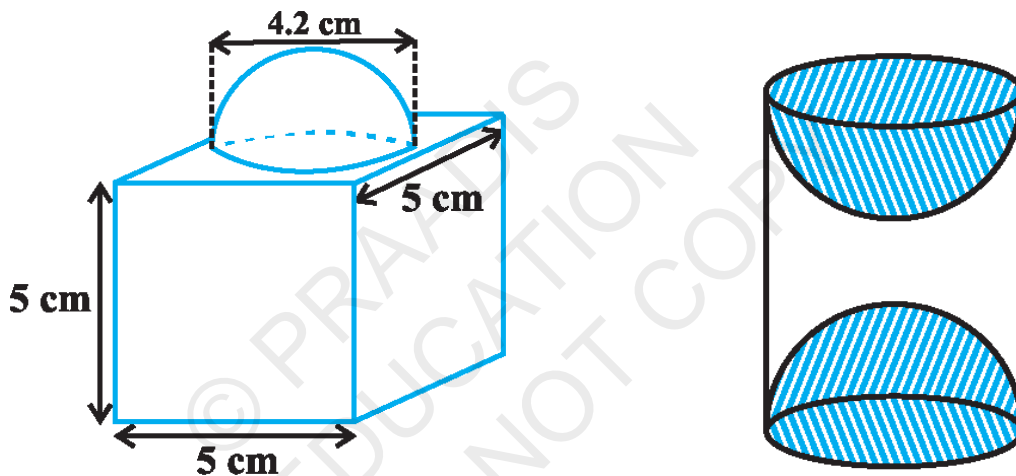
hemisphere. The entire top is 5 cm in height and the diameter of the top is 3.5 cm. Find the area he has to colour. (Take $\pi = 22/7$)

52. 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 cylindrical portion is 3 cm. If the conical portion is to be painted orange and the cylindrical portion yellow, find the area of the rocket painted with each of these colours. (Take $\pi = 3.14$)
53. 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.
54. A tent is in the shape of a cylinder surmounted by a conical top. If the height and diameter of the cylindrical part are 2.1 m and 4 m respectively, and the slant height of the top is 2.8 m, find the area of the canvas used for making the tent. Also, find the cost of the canvas of the tent at the rate of Rs 500 per m^2
55. 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 .
56. A juice seller was serving his customers using glasses. The inner diameter of the cylindrical glass was 5 cm, but the bottom of the glass had a hemispherical raised portion which reduced the capacity of the glass. If the height of a glass was 10 cm, find the apparent capacity of the glass and its actual capacity. (Take $\pi = 3.14$)
57. A solid toy is in the form of a hemisphere surmounted by a right circular cone. The height of the cone is 2 cm and the diameter of the base is 4 cm. Determine the volume of the toy. If a right circular cylinder circumscribes the toy, find the difference of the volumes of the cylinder and the toy. (Take $\pi = 3.14$)
58. 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.
59. A pen stand made of wood is in the shape of a cuboid with four conical depressions to hold pens. The dimensions of the cuboid are 15 cm by 10 cm by 3.5 cm. The radius of each of the depressions is 0.5 cm and the depth is 1.4 cm. Find the volume of wood in the entire stand.
60. A vessel is in the form of an inverted cone. Its height is 8 cm and the radius of its top, which is open, is 5 cm. It is filled with water up to the brim. When lead shots, each of which is a sphere of radius 0.5 cm are dropped into the vessel, one-fourth of the water flows out. Find the number of lead shots dropped in the vessel.
61. 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. (Use $\pi = 3.14$)
62. A solid consisting of a right circular cone of height 120 cm and radius 60 cm standing on a hemisphere of radius 60 cm is placed upright in a right circular cylinder full of water such that it touches the bottom. Find the volume of water left in the cylinder, if the radius of the cylinder is 60 cm and its height is 180 cm.
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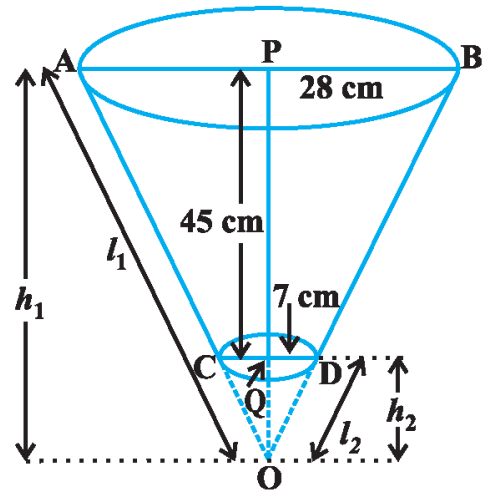
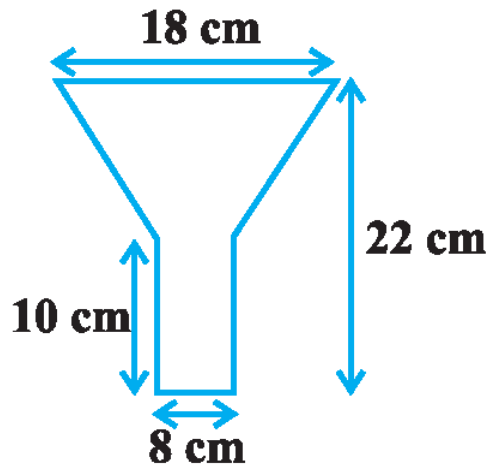
63. A spherical glass vessel has a cylindrical neck 8 cm long, 2 cm in diameter; the diameter of the spherical part is 8.5 cm. By measuring the amount of water it holds, a child finds its volume to be 345 cm^3 . Check whether she is correct, taking the above as the inside measurements, and $\pi = 3.14$.
64. A cone of height 24 cm and radius of base 6 cm is made up of modeling clay. A child reshapes it in the form of a sphere. Find the radius of the sphere.
65. Selvi's house has an overhead tank in the shape of a cylinder. This is filled by pumping water from a sump (an underground tank) which is in the shape of a cuboid. The sump has dimensions $1.57 \text{ m} \times 1.44 \text{ m} \times 95 \text{ cm}$. The overhead tank has its radius 60 cm and height 95 cm. Find the height of the water left in the sump after the overhead tank has been completely filled with water from the sump which had been full. Compare the capacity of the tank with that of the sump. (Use $\pi = 3.14$)
66. A copper rod of diameter 1 cm and length 8 cm is drawn into a wire of length 18 m of uniform thickness. Find the thickness of the wire.
67. A hemispherical tank full of water is emptied by a pipe at the rate of $3\frac{4}{7}$ litres per second. How much time will it take to empty half the tank, if it is 3m in diameter? (Take $\pi = 22/7$)
68. A 20 m deep well with diameter 7 m is dug and the earth from digging is evenly spread out to form a platform 22 m by 14 m. Find the height of the platform.
69. 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.
70. A container shaped like a right circular cylinder having diameter 12 cm and height 15 cm is full of ice cream. The ice cream is to be filled into cones of height 12 cm and diameter 6 cm, having a hemispherical shape on the top. Find the number of such cones which can be filled with ice cream.
71. How many silver coins, 1.75 cm in diameter and of thickness 2 mm, must be melted to form a cuboid of dimensions $5.5 \text{ cm} \times 10 \text{ cm} \times 3.5 \text{ cm}$?
72. A cylindrical bucket, 32 cm high and with radius of base 18 cm, is filled with sand. This bucket is emptied on the ground and a conical heap of sand is formed. If the height of the conical heap is 24 cm, find the radius and slant height of the heap.
73. Water in a canal, 6 m wide and 1.5 m deep, is flowing with a speed of 10 km/h. How much area will it irrigate in 30 minutes, if 8 cm of standing water is needed?
74. A farmer connects a pipe of internal diameter 20 cm from a canal into a cylindrical tank in her field, which is 10 m in diameter and 2 m deep. If water flows through the pipe at the rate of 3 km/h, in how much time will the tank be filled?
75. Hanumappa and his wife Gangamma are busy making jaggery out of sugarcane juice. They have processed the sugarcane juice to make the molasses, which is poured into moulds in the shape of a frustum of a cone having the diameters of its two circular faces as 30 cm and 35 cm and the vertical height of the mould is 14 cm. If each cm^3 of molasses has mass about 1.2 g, find the mass of the molasses that can be poured into each mould. (Take $\pi = 22/7$)
76. 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 is 40 cm and that of the cylindrical base is 6 cm. Find the area of the metallic sheet used to make the bucket, where we do not take into account the handle of the bucket. Also, find the volume of water the bucket can hold.

77. A container, opened from the top and made up of a metal sheet, is in the form of a frustum of a cone of height 16 cm with radii of its lower and upper ends as 8 cm and 20 cm, respectively. Find the cost of the milk which can completely fill the container, at the rate of Rs 20 per litre. Also find the cost of metal sheet used to make the container, if it costs Rs 8 per 100 cm². (Take $\pi = 3.14$)
78. A metallic right circular cone 20 cm high and whose vertical angle is 60° is cut into two parts at the middle of its height by a plane parallel to its base. If the frustum so obtained be drawn into a wire of diameter $\frac{1}{16}$ cm, find the length of the wire.
79. A right triangle, whose sides are 3 cm and 4 cm (other than hypotenuse) is made to revolve about its hypotenuse. Find the volume and surface area of the double cone so formed.
80. The decorative block shown in Fig. is made of two solids - a cube and a hemisphere. The base of the block is a cube with edge 5 cm, and the hemisphere fixed on the top has a diameter of 4.2 cm. Find the total surface area of the block. (Take $\pi = 22/7$).



81. A wooden article was made by scooping out a hemisphere from each end of a solid cylinder, as shown in above Fig.. If the height of the cylinder is 10 cm, and its base is of radius 3.5 cm, find the total surface area of the article.
82. A sphere of diameter 12 cm, is dropped in a right circular cylindrical vessel, partly filled with water. If the sphere is completely submerged in water level in the cylindrical vessel rises by $3\frac{5}{9}$ cm. find the diameter of the cylindrical vessel.
83. An iron pillar has lower part in the form of a right circular cylinder and the upper part is in the form of a right circular cone. The radius of the base of the cone and cylinder is 8cm. The cylindrical part is 240cm high and the conical part is 36cm high. Find the weight of the pillar if 1 cm³ of iron weighs 7.5 grams.
84. An oil funnel made of tin sheet consists of a 10 cm long cylindrical portion attached to a frustum of a cone. If the total height is 22 cm, diameter of the cylindrical portion is 8 cm and the diameter of the top of the funnel is 18 cm, find the area of the tin sheet required to make the funnel (see below figure)



85. The radii of the ends of a frustum of a cone 45 cm high are 28 cm and 7 cm (see above sided Fig). Find its volume, the curved surface area and the total surface area. (Take $\pi = 22/7$)

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