



CBSE NCERT Based Chapter wise Questions (2025-2026)

Class-X

Subject: MATHEMATICS

Chapter Name : Surface Areas & Volumes (Chap : 12)

Total : 6 Marks (expected) [MCQ(1)-1 Mark, LA-(1)-5 Marks]

Level - 1

MCQ Type :

1. If the radius of the sphere is increased by 100%, the volume of the corresponding sphere is increased by
Ⓐ 200% Ⓑ 500% Ⓒ 700% Ⓓ 800%

(Hints : New volume is 8 times of the original volume)

2. The base radii of a cone and a cylinder are equal. If their curved surface areas are also equal, then the ratio of the slant height of the cone to the height of the cylinder is

Ⓐ 2:1 Ⓑ 1:2 Ⓒ 1:3 Ⓓ 3:1

(Hints: $\pi r l = 2\pi r h$)

3. If the perimeter of one face of a cube is 20 cm, then its surface area is
Ⓐ 120 cm^2 Ⓑ 150 cm^2 Ⓒ 125 cm^2 Ⓓ 400 cm^2

(Hints : Edge of cube = 5 cm)

4. Ratio of lateral surface areas of two cylinders with equal height is
Ⓐ 1 : 2 Ⓑ H : h Ⓒ R : r Ⓓ none of these

(Hints : $2\pi Rh : 2\pi rh = R : r$)

5. A solid iron sphere of radius 3 cm is melted and recast into small spherical balls of radius 1 cm each. Assuming no wastage, the number of small spherical balls is :

(A) 9 (B) 27 (C) 18 (D) 81

(Hints : No. of small balls = volume of big sphere \div volume of small sphere)

6. A right circular cylinder just encloses a sphere of radius 7 cm. What is the height of the cylinder?

Ⓐ 7 cm Ⓑ 14 cm Ⓒ 21 cm Ⓓ 28 cm

(Hints : Height of cylinder = diameter of sphere)

7. The radii of two cylinders are in the ratio 2 : 3. If their volumes are the same, what is the ratio of their heights ?

Ⓐ 2 : 3 Ⓑ 3 : 2 Ⓒ 4 : 9 Ⓓ 9 : 4

(Hints : Ratio of heights = $3^2 : 2^2$)

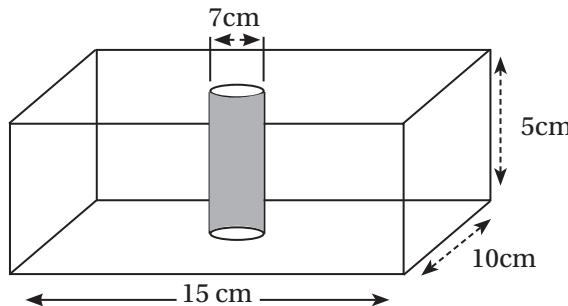
LA Type :

8. 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. Also, find the surface area of the toy. (Take $\pi = 3.14$)

(Hints : Volume of toy = Volume of hemisphere + Volume of cone)

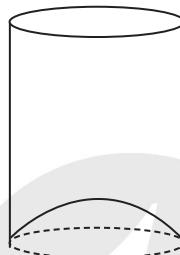
Surface area of toy = Curved surface area of cone + Curved surface area of hemisphere

9. A rectangular metal block has length 15 cm, breadth 10 cm and height 5 cm. From this block, a circular hole of diameter 7 cm is drilled out. Find : (i) the volume of the remaining solid (ii) the surface area of the remaining solid.



(Hints : The volume of the remaining solid = Volume of rectangular block – Volume of the circular hole. The surface area of the remaining solid = Total surface area of the block – 2 (area of circle of the hole) + curved surface of circular hole (cylinder).

10. A juice seller was serving his customers using glasses as shown in the given figure. The inner diameter of the cylindrical glass was 5 cm but bottom of the glass had a hemispherical raised portion which reduced the capacity of the glass. If the height of the glass was 10 cm, find the apparent and actual capacity of the glass (Use $\pi = 3.14$)



(Hints : Apparent capacity of glass = Volume of cylindrical portion

Actual capacity of the glass = Volume of cylinder - Volume of hemisphere)

11. A cylindrical bucket, 32 cm high and with a 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.

(Hints : Volume of the conical heap will be equal to the volume of sand)

12. 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 .

(Hints : Total surface area of the remaining solid = curved surface area of cylinder + curved surface area of the cone + area of upper circular base of the cylinder)

13. A circus tent is in the shape of a cylinder surmounted by a conical top of the same diameter. If their common diameter is 56 m, the height of the cylindrical part is 6 m and the total height of the tent above the ground is 27 m, find the area of canvas used in making the tent.

(Hints : Total curved surface area = CSA of cylinder + CSA of cone)

ANSWER

- 1. (C)
- 2. (A)
- 3. (B)
- 4. (C)

- 8. $25.12 \text{ cm}^3, 42.87 \text{ cm}^2$
- 9. $557.5 \text{ cm}^3, 583 \text{ cm}^2$
- 10. $196.25 \text{ cm}^3, 163.54 \text{ cm}^3$
- 11. $36 \text{ cm}, 12\sqrt{13} \text{ cm}$
- 5. (B)
- 6. (B)
- 7. (D)

- 12. 18 cm^2
- 13. 4136 m^2

