Board – CBSE	Class – 9	Topic –Surface Area & Volume

Multiple Choice Question Type

1. If the radius of cylinder is halved and height is doubled, then what will be the curved surface area?

(A) Increase by 1 (B) The same

(C) Double (D) Triple

2. What is the total surface area of a cone having radius $\frac{r}{2}$ and height 21?

(A) $\pi r\left(1+\frac{r}{4}\right)$ (B) $\pi r\left(r+\frac{1}{4}\right)$

(C) $\pi r\left(4+\frac{1}{2}\right)$ (D) $\pi r\left(1+\frac{r}{2}\right)$

3. If a right circular cone has radius 4 cm and slant height 5 cm then what is its volume?

(A) $16\ \pi\ cm^3$ (B) $14\ \pi\ cm^3$

(C) $12\ \pi\ cm^3$ (D) $18\ \pi\ cm^3$

4. The radius of a hemisphere is r. What is its volume?

(A) $\frac{4}{3}\pi r^3$ (B) $\frac{2}{3}\pi r^3$

(C) $4\pi r^3$ (D) $2\pi r^3$

5. What is the total surface area of a hemisphere of radius r?

(A) $4\pi r^2$ (B) πr^2

(C) $2\pi r^2$ (D) $3\pi r^2$

6. If the radius of a sphere is doubled, then what is the ratio of their surface area?

(A) 1: 2 (B) 2: 1

(C) 1: 4 (D) 4: 1

7. Two right circular cones of equal curved surface areas have slant heights in the ratio of 3 : 5. Find the ratio of their radii.

(A) 4 : 1 (B) 3 : 5

(C) 5 : 3 (D) 4 : 5

8. In the cylindrical container, the base radius is 8 cm. If the height of the water level is 20 cm, find the volume of the water in the container.

(A) 5.6721 ltr. (B) 4.0218 ltr.

(C) 3.8925 ltr. (D) 4.97 ltr.

9. A well with 10 m inside diameter is dug 14m deep. Earth taken out of it is spread all around it to make an embankment of height $4\frac{2}{3}$ m. Find the width of the embankment.

(A) 5 m (B) 4 m

(C) 4.3 m (D) 6 m

Answers

1. (b)	2. (a)	3. (a)	4. (b)	5. (d)
6. (c)	7. (c)	8. (b)	9. (a)	

Long Answer Type

1. How much ice-cream can be put into a cone with base radius 3.5 cm and height 12 cm?
2. The total surface area of a cube is 726 cm2. Find the length of its edge.
3. Two cubes of edge 6 cm are joined to form a cuboid. Find the total surface area of the cuboid.

4. Calculate the edge of the cube if its volume is 1331 cm^3.
5. The radii of two cylinders of the same height are in the ratio 4:5, and then find the ratio of their volumes.
6. Find the area of the sheet required to make closed cylindrical vessel of height 1 m and diameter 140 cm.
7. How many balls, each of radius 2 cm can be made from a solid sphere of lead of radius 8 cm?
8. A cone is 8.4 cm high and the radius of its base is 2.1 cm. It is melted and recast into a sphere. Find the radius of the sphere.
9. The radius of a spherical balloon increases from 6 cm to 12 cm as air is being pumped into it. Then what will be the ratio of surface areas of the original balloon to the resulting new balloon?
10. The outer and the inner radii of a hollow sphere are 12 cm and 10 cm. Find its volume.
11. A spherical ball is divided into two equal halves. If the curved surface area of each half is 56.57 cm? Find the volume of the spherical ball. [use $\pi = 3.14$]
12. Find the length of the longest pole that can be put in a room of dimensions10 m × 10 m × 5 m.

13. Calculate the surface area of a hemispherical dome of a temple with radius 14 m to be whitewashed from outside.
14. A school provides milk to the students daily in cylindrical glasses of diameter 7 cm. If the glass is filled with milk up to a height of 12 cm, find how many litres of milk is needed to serve 1600 students.
15. A heap of wheat is in the form of a cone whose diameter is 10.5 m and height is 3 m. find it volume. If 1cm^3 wheat cost is Rs 10, then find total cost.
16. A shot-put is a metallic sphere of radius 4.9 cm. If the density of the metal is 7.8 g/cm^3. Find the mass of the shot-put.

17. A wall of length 10 m is to be built across an open ground. The height of the wall is 5 m and thickness of the wall is 42 cm. If this wall is to be built with bricks of dimensions 42 cm × 12 cm × 10 cm, then how many bricks would be required?

18. The curved surface area of a cylinder is 176 cm^2 and its area of the base is 38.5 cm2. Find the volume of the cylinder. (Take π = 22/7)

19. Rinku has built a cuboidal water tank in his house. The top of the water tank is covered with an iron lid. He wants to cover the inner surface of the tank including the base with tiles of size 10 cm by 8 cm. If the dimensions of the water tank are 180 cm × 120 cm × 60 cm and cost of tiles is f 480 per dozen, then find the total amount required for tiles.

20. The diameter of moon is approximately $\frac{1}{4}$ th of the diameter of earth. What fraction of volume of earth is the volume of moon?

21. A right angled ΔABC with sides 3 cm, 4 cm and 5 cm is revolved about the fixed side of 4 cm. find the volume of the solid generated. Also, find the total surface area of the solid.

22. Curved surface area of cylindrical reservoir 12 m deep is plastered from inside with concrete mixture at the rate of Rs 15 per m^2. If the total payment made is of Rs 5652, then find the capacity of this reservoir in litres.

23. A shopkeeper has one spherical laddoo of radius 5 cm. With the same amount of material, how many laddoos of radius 2.5 cm can be made?

24. A semicircular sheet of metal of radius 14 cm is bent to form an open conical cup. Find the capacity of the cup.

25. A cube and a cuboid have the same volume. The dimensions of the cuboid are in the ratio 1:2: 4. If the difference between the cost of painting the cuboid and cube (whole surface area) at the rate of Rs 5 per m^2 is Rs 80. Find their volumes.

26. Ajay has built a cubical witter tank in his house. The top of the water tank is covered with lid. He wants to cover the inner surface of the tank including the lid with square tiles of side 25 cm. If each inner edge of the water tank is 2 m long and tiles costs Rs 360 per dozen, then find the total amount required for tiles.

27. Manoj Sweets placed an order of making 30 cm × 20 cm × 6 cm cardboard boxes for packing their sweets. For all overlaps, 5 % of total area is required extra. If cost of the cardboard is Rs 2 for 1000 cm^2 , find the cost of the cardboard used for making 500 boxes

28. A cylindrical bucket 32 cm high and with base diameter 36 cm is filled with wheat. This bucket is emptied on the ground and a conical heap is formed. If the height of the conical heap is 24 cm, find the radius and slant height of the heap.

29. A metallic right circular cylinder is 15 cm high and the diameter of its base is 14 cm. It is melted and recasted into another cylinder with radius 4 cm. Find its height and curved surface area of the new cylinder.

30. A spherical metallic shell with 10 cm external diameter weighs 1789 1/2 g. Find the thickness of the shell, if the density of the metal is $7g/cm^3$.

31. A residential house society is built is 4000 sq. m area. It has an underground tank to collect the rain water, the length, breadth and height of which are 50 m, 40 m and 4 m respectively. If it rains at the rate of 2 mm per minute for 5 hours, then calculate the depth of water in the tank. What value is depicted in this problem?

32. Arihant builds a room measuring roof 22 m by 20 m. He also builds a cylindrical tank having diameter of base 2 m and height 3.5 m adjoining the room to collect the rainwater of roof for harvesting. If the tank is just filled with rainwater, find the rainfall in cm. What values are depicted in Arihant's plan?

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