MATHEMATICS

| Board – CBSE | Class – 10 | Topic – Surface Area and Volume |

1. A well of diameter 4 m is dug 21 m deep. The earth taken out of it has been spread evenly all around it in the shape of a circular ring of width 3 m to form an embankment. Find the height of the embankment. **[4 m]**

2. The perimeter of a right triangle is 60 cm. Its hypotenuse is 25 cm. Find the area of the triangle. **[150 cm²]**

3. A solid wooden toy is in the form of a hemisphere surmounted by a cone of same radius. The radius of hemisphere is 3.5 cm and the total wood used in making of toy is $166 \times 5/6$ cm³. Find the height of the toy. Also, find the cost of painting the hemispherical part of the toy at the rate of 10 rupees per cm². **[Rs. 770]**

4. A well of diameter 4 m is dug 14 m deep. The earth taken out is spread evenly all around the well to form a 40 cm high embankment. Find the width of the embankment. **[10 m]**

5. A solid 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 1/12 cm, find the length of wire. **[4.48 km]**

6. From a solid cylinder of height 2.8 cm and diameter 4.2 cm, a conical cavity of the same height and same diameter is hollowed out. Find the total surface area of the remaining solid. **[73.92 cm²]**

7. A wooden toy was made by scooping out a hemispherical of same radius from each end of a solid cylinder. If the height of the cylinder is 10 cm, and its base is of radius 3.5 cm, find the volume of wood in the toy. **[205.33 cm³]**

8. A bucket open at the top and made up of a metal sheet is in the form of a frustum of a cone. The depth of the bucket is 24 cm and the diameters of its upper and lower circular ends are 30 cm and 10 cm respectively. Find the cost of metal sheet used in it at the rate of rupee 10 per 100 cm². **[Rs 171.28]**

9. A solid sphere of radius 10.5 cm is melted and recast into smaller solid cones, each of radius 3.5 cm and height 3 cm. Find the number of cones so formed. **[126]**

10. 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, then find the radius and slant height of the heap. **[43.27 cm]**

11. Find the volume of the largest right circular cone that can be cut out from a cube of edge 4.2 cm?   [19.4 cm³.]

12. A cubical ice cream brick of edge 22cm is to be distributed among some children by filling ice cream cones of radius 2cm and height 7cm up to its brim. How many children will get ice cream cones?   [363]

13. Find the volume of the largest right circular cone that can be cut out from a cube of edge 4.9 cm is?   [30.8cm³.]

14. A plumb line is a combination of which geometric shapes?   [A cone with hemisphere.]

15. The slant height of the frustum of a cone is 5 cm. If the difference between the radii of its two circular ends is 4cm. Write the height of the frustum.   [3cm]

16. A cylinder, a cone and a hemisphere are of same base and of same height. Find the ratio of their volumes?   [3:1:2].

17. A cone of radius 4cm is divided into two parts by drawing a plane through the midpoint of its axis and parallel to its base, compare the volume of the two parts.   [1:7]

18. Metallic solid cubes whose edges are 3cm, 4cm, and 5cm are melted and converted into a single cube .Find the edge of the cube so formed?   [6cm.]

19. How many shots each having diameter 4.2 cm can be made from a cuboidal lead solid of dimensions 66cm X42cm X 21cm?   [1500]

20. Find the number of metallic circular disk with 1.5cm base diameter and of height 0.2 cm to be melted to form a right circular cylinder of height 10cm and diameter 4.5cm?   [450]

21. From a solid cube of side 7cm, a conical cavity of height 7cm and radius 3cm is hollowed out. Find the volume of Remaining solid?   [277cm³.]

22. A cubical block of side 7cm is surmounted by a hemisphere. What is the greatest diameter of the hemisphere can have? Find the surface area of the solid ?   [7cm,332.5cm²]

23. A heap of rice is in the form of a cone of diameter 9m and height 3.5m .Find the volume of the rice. How much canvas cloth is required to just cover the heap?   [74.25m³, 80.61 m²] .

24. A square field and an equilateral triangle park have equal perimeter .If the cost of plugging the field at the rate of Rs 5/m² is Rs 720. Find the cost of maintain the park at the rate of Rs10/m²?
                                                                                                [Rs1108.48]

25. glass spheres each of radius 2cm are packed in a cuboidal box of internal dimensions 16cm × 8cm × 8cmand then the box is filled with water. Find the volume of water filled in the box?
                                                                                                [320cm³]

26. The slant height of the frustum of a cone is 4cm and the circumferences of its circular ends are 18cm and 6cm. Find curved surface area and total surface area of the frustum.

    [48cm², 76.63cm².]

27. A farmer connects a pipe of internal diameter 25cm from a canal into a cylindrical tank in his field, which is 12m in diameter and 2.5m deep. If water flows through the pipe at the rate of 3.6km/hr, in how much time will the tank be filled? Also find the cost of water, if the canal department charges at the rate of Rs0.07/m³? [96min, Rs19.80]

28. A spherical glass vessel has a cylindrical neck 7cm long and 4cm in diameter. The diameter of the spherical part is 21cm find the quantity of water it can hold. [4939cm³.]

29. The surface area of a solid metallic sphere is 616cm2. It is melted and recast into a cone of height 28cm. Find the diameter of the base of the cone so formed. [74.38cm².]