<u>Class X</u>   <u>Assignment</u>   <u>Surface Area and Volumes</u>

1. The base radii of two right circular cones of the same height are in the ratio $3:5$. Find the ratio of their volumes.

2. Circumference of edge of hemispherical bowl is 132cm. Find the capacity of bowl. (use $\pi = \frac{22}{7}$)

3. Wall paper, 312m long and 25cm wide is reqd. to cover the walls of the room. Length of the room is 7m and the breadth is twice its height. Determine the height of the room.

4. 50 circular plates, each of radius 7cm and thickness 0.5cm are placed one above another to form a solid right circular cylinder. Find the total surface area and volume of the cylinder so formed.

5. The diameter of the sphere is 42cm.it is melted and drawn into a cylindrical wire of 28cm diameter. Find the length of the wire.

6. A solid sphere of radius 3cm is melted and then cast into small spherical balls of diameter 0.6cm. Find the number of small balls thus obtained.

7. A hemisphere of lead of radius 8cm is cast into a right circular cone of base radius 6cm. Determine the height of the cone, correct to two decimal places.

8. How many spherical bullets be made out of a spherical cube of lead whose edge measures 44cm, each bullet being 4cm in diameter? (use $\pi = \frac{22}{7}$)

9. A hemispherical bowl of internal diameter 36cm contains a liquid. This liquid is to filled in cylindrical bottles of radius 3cm and height 6cm. How many bottles are reqd. to empty the bowl?

10. A solid is in the form of cylinder with hemispherical ends. The total height of the solid is 19cm and diameter of cylinder is 7cm. find the volume and surface area of the solid.

11. Marbles of diameter 1.4cm are dropped into a cylindrical beaker, of diameter 7cm, containing some water. Find the no. of marbles that should be dropped into the beaker so that water level rises by 5.6cm.

12. The diameter of internal and external surfaces of a hollow spherical shell is 6cm and 10cm respectively. If it is melted and recast into a solid cylinder of height $2\frac{2}{3}$ cm. find the diameter of cylinder.

13. A solid metallic sphere of diameter 28cm is melted and recasted into a no. of small cones, each of diameters $4\frac{2}{3}\ cm$ and height 3cm. Find the no. of cones so formed.

14. A hemispherical bowl of internal diameter 30cm contains some liquid. This liquid is filled into cylindrical shaped bottles each of diameter 5cm and height 6cm. find the no. of bottles reqd. to empty the bowl.

15. Solid spheres of diameter 6cm are dropped into a cylindrical beaker containing some water and are fully submerged. If the diameter of the beaker is 18cm and the water rises by 40cm, find the no. of solid spheres dropped in the water.

16. A toy is in the form of the cone mounted on a hemisphere with same radius. The diameter of the base of the conical portion is 7cm and the total height of the toy is 14.5cm. Find the depth of the toy. (use $\pi=\frac{22}{7}$)

17. Water flows in the tank $150m \times 100m$ at the base through a pipe whose cross-section is 2dm by 1.5dm at the speed of 15km/hr. in what time the water be 3m deep?

18. A well with 10m inside diameter is dug 14m deep. Earth taken out of it and spread all around to a width of 5m to form a embankment. Find the height of the embankment.

19. Water is flowing at the rate of 3km/hr through a circular pipe of 20c internal diameter into a circular cistern of diameter 10m and depth 2m. In how much time will the cistern be filled?

20. The cost of painting the total outside surface of a closed cylindrical oil tank 60p per sq. dm is Rs. 237.60. The height of tank is 6 times the radius of the base of the tank. Find its volume.

21. The circumference of the base of 10m high conical tent is 44m. Calculate the length of canvas used in making the tent if the width of canvas is 2m

22. A sector of a circle of a radius 12cm has the angle 120°. It is rolled up so that two bounding radii are joined together to form a cone. Find the volume of the cone.

23. The radius of internal and external surfaces of hollow cylindrical shell is 3cm and 5cm respectively. If it is melted and recast into a solid cylinder of height $2\frac{2}{3}$cm, find the diameter of the cylinder.

24. A toy is in the form of the cone mounted on a hemisphere of radius 3.5cm. if the total height of the toy is 15.5cm, Find the volume of the toy. (Use $\pi=\frac{22}{7}$)

25. If the radii of the circular ends of the conical bucket, which is 45cm high are 28cm, 7cm. Find the capacity of the bucket. (Use $\pi=\frac{22}{7}$)

26. A toy is in the shape of a right circular cylinder with a hemisphere on one end and a cone on the other. The radius and height of the cylindrical part at 5cm and 13cm respectively. The radius of the hemispherical part and the conical part is as same as that of cylindrical part. Find the surface area of toy if the total height of the toy is 30cm.

27. A circus tent is cylindrical to a height of 3m and conical above it. If the base radius is 52.5m and slant height of the conical portion is 53m, find the area of canvas needed to make the tent.

28. A well of diameter3m, is dug 14m deep. The earth is taken out of it has been spread evenly all around it to a width of 4m, to form embankment. Find the height of embankment. (Use $\pi=\frac{22}{7}$)

29. If the radii of the ends of the bucket, 45cm high are 28cm and 7cm, determine the capacity and total surface area of bucket.

30. Water flows at the rate of 10m per minute through a pipe having its diameter as 5mm. How much time will it take to fill a conical vessel whose diameter of base is 40cm and depth is 24cm?

31. Water flows out through a circular pipe whose internal radius is 1cm. at the rate of 80cm/second into an empty cylindrical tank, the radius of hose level of base is 40cm. By how much will the level of water rise in the tank in half an hr?

32. 500 persons took dip in a rectangular tank which is 80m long and 50m broad. What is the rise in the level of water in the tank, if the average displacement of water by a person is $0.04m^2$?

Answers:

1. $9:25$
2. $19404\ cm^3$
3. $3\ m$
4. $1408\ cm^2, 3850\ cm^2$
5. $63\ cm$
6. 1000
7. $28.44\ cm$
8. 2541
9. 72
10. $418\ cm^2, 641.67\ cm^3$
11. 150
12. $D = 14cm$
13. 672
14. 60
15. 90
16. $231cm^2$
17. $100\ hrs.$
18. $4.66cm$
19. $1\ hr.45\ min.$
20. $509.14\ dm^3$
21. $134.31\ m$
22. $189.57\ cm^3$
23. $14\ cm$
24. $243.83\ cm^3$

25. $48510 \ cm^3$

26. $770 \ cm^2$

27. $9735 \ m^2$

28. $1.125 \ m$

29. $48510 \ cm^3$, $8079.50 \ cm^2$

30. $51.2 \ min$

31. $90 \ cm$

32. $0.5 \ cm$