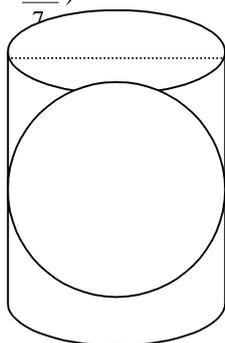


Class : IX

Subject : Mathematics

Assignment 11: Surface Area and Volume

- The dimensions of a cuboid are in the ratio 3:2:2 and the lateral surface area of cuboid is 2000m^2 . The outer surface of the cuboid is painted with coloured enamel at the rate of Rs 8 per m^2 . Find the total cost of painting the outer surface of the cuboid.
- The floor of a cuboidal hall has perimeter equal to 250 m and height 6m. Find the cost of painting its four walls (including doors etc) at the rate of Rs 8 per m^2 .
- Gopal sweets placed an order of making 30cm x 20cm x 6cm cardboard boxes for packing their sweets. For all overlaps, 4% of total area is required extra. If cost of the cardboard is 25p for 100 cm^2 , find the cost of the cardboard used for making 1000 boxes.
- Food Corporation of India stacks bags containing wheat in the shape of cuboidal blocks in an open field on wooden platform and these blocks are covered with tarpaulin. If there be 10 blocks, each having dimensions 10m x 5m x 3m, then find the cost of the tarpaulin used to cover these blocks at the rate of Rs 12.5 per m^2 . Assuming that there is negligible wastage of tarpaulin in folds.
- The diameter of a road roller is 140cm and its length is 2.2m. It takes 400 complete revolutions to move once over to level a stretch of road 2.2m wide. Find the surface area of the stretch of road leveled in m^2 . (Take $\pi = \frac{22}{7}$)
- A closed cylindrical water tank is made from a plastic sheet. Its diameter is 1.4m and height 3.5m. Find
 - Lateral (curved) surface area of the tank.
 - The actual area of the plastic sheet used if $\frac{1}{13}$ of sheet actually used was wasted in making the tank. (Take $\pi = \frac{22}{7}$)
- There are 50 students in class X of a school. Class teacher asks all the students to prepare cylindrical container with a base at the bottom but open at the top, using cardboard. Each student has to make one container of radius of 4.2cm and height 11.2 cm. the class teacher will provide the cardboard to all the students. The cardboard is purchased by the teacher from the market at the rate of Rs 10 per 100 cm^2 . Find the amount spent by the class teacher for the purchase of the cardboard.
- The radius of the base of a conical tent is 12m the tent is 9m high. Find the cost of canvas required to make the tent, if one square metre of canvas costs Rs 120. (Take $\pi = \frac{22}{7}$)
- A conical tent is made of tarpaulin 1.5m wide. Vertical height of the conical tent is 4m and base diameter is 6m. Find the length of the tarpaulin used, assuming that 10% extra material is required for stitching margins and wastage in cutting. (Take $\pi = 3.14$)
- Along a highway 50 conical pillars are constructed. Each pillar has base diameter 28 cm and vertical height 18cm. find the total cost of painting these pillars at the rate of Rs. 120 per m^2 . (Take $\pi = \frac{22}{7}$)
- The hollow sphere, in which the circus motorcyclist performs his stunts, has a diameter of 7m. Find the area available to the motorcyclist for riding. (Take $\pi = \frac{22}{7}$)
- A hemispherical bowl made of brass, 0.2cm thick. The inner radius of the bowl is 4cm. find the outer curved surface area of the bowl. Also find the cost of carving its outer surface at the rate of Rs 2 per cm^2 . (Take $\pi = \frac{22}{7}$)
- A right circular cylinder just encloses a sphere (see figure). If the height of the cylinder is 21cm, then find the surface area of cylinder (Take $\pi = \frac{22}{7}$)



14. A hemispherical dome, open at base, is made from a sheet of fibre, if radius of hemispherical dome is 40cm and $\frac{13}{170}$ of fibre sheet actually used was wasted in making the dome, then find cost of the dome at the rate of Rs 35 per 100 cm^2 . (Take $\pi = 3.14$)
15. A cuboidal water tank is 5.6 m long, 3.5 m wide and 4m deep. All these dimensions are of the interior of the tank. Find in litres, the capacity of the tank. (Take 1m^3 capacity = 1000 l of water)
16. A cuboidal water tank is filled by tap water at the rate of 1.2 litres per second. Find the length of an edge of the tank in centimeters if the tank is completely filled in 24 minutes.
17. A godown measures 30m x 20m x 8m. Find the maximum number of wooden boxes each measuring 1.2m x 0.8m x 0.5m that can be stored in the godown.
18. A village has a population of 5400. 60 litres of water is required per person per day. The village has water tank measuring 48m x 27 m x 5m completely filled with water. For how many days the water of this is sufficient?
19. A river 3.5 m deep and 28m wide is flowing at the rate of 2.4 km per hour. How many litres of water will flow into the sea in 10minutes? ($1\text{m}^3 = 1000$ litres of water).
20. Coins of same size are placed one above the other and a cylindrical block is formed. The volume of the block is 49.28 cm^3 . If diameter of each coin be 2.8cm and thickness 0.2m, then find the number of coins arranged in block. ($\pi = \frac{22}{7}$)
21. Water is supplied to a city population for general use (not for drinking) from a river through a cylindrical pipe. The radius of the cross section of pipe is 10 cm. the speed of water through the pipe is 18 km per hour. Find the quantity of water in litres which is supplied to the city in two hours. ($\pi = 3.14$ and $1\text{m}^3 = 1000\text{l}$)
22. At a mela a stall keeper in one of the food stalls has a large cylindrical vessel of base radius 15cm filled to the height of 32 cm with orange juice. The juice is filled in small cylindrical glasses of radius 3cm upto a height of 8 cm and sold for Rs 3 each. How much money the stall keeper receives after selling the juice completely?
23. A cylindrical reservoir 12 m deep is plastered from inside the lateral surface with concrete mixture. The finished inside surface is measured and the payment is made at the rate of Rs. 15 m². if the total payment made is of Rs 5652, then find the capacity of this reservoir in kilolitres. (Take $\pi = 3.14$)
24. The capacity of a closed cylindrical vessel of height 84 cm is 26.4 litres. How many square metres of metal is required to make seven such vessels. ($\pi = \frac{22}{7}$)
25. A cylindrical groove is made in a cylindrical 21 cm long solid piece of wood. The groove is filled with lead and this cylindrical lead block is of same length as that of the wooden cylinder is 3 cm and the outer diameter of the wooden cylinder is 12 cm, find the volume of the wood and that of the lead. ($\pi = \frac{22}{7}$)
26. Some soft drink is served to 40guests in a party. Each guest is served drink, one and only one time in same size of conical glass and the same quantity to each. AB = 6cm is the diameter of the base of the soft drink cone in the conical glass and the depth of this cone is 5cm. find the quantity of the soft drink in litres which is just sufficient for 40 guests. ($\pi = 3.14$)
27. The diameter of the top of a conical reservoir is 4.5m and depth 14m. Find the capacity of the reservoir in kl. ($\pi = \frac{22}{7}$)
28. The volume of the space inside a right circular conical tent is 22 m³ and its vertical height is 3m. Find the curved surface area of the conical tent. ($\pi = \frac{22}{7}$)
29. A heap of wheat is in the form of a cone of vertical height 3m and volume 86.625 m³. The heap is to be covered by a sheet of canvas. Find the area of the canvas which is just sufficient to cover the heap. ($\pi = \frac{22}{7}$)
30. A shot put is a metallic sphere of radius 4.9 cm. if the density of the metal is 7.8g per cm³, find the mass of the shot put ($\pi = \frac{22}{7}$)
31. There are 42 hemispherical bowls, each of radius 3.5 cm. find the quantity of water in litres which is just sufficient to fill these 42 bowls. ($\pi = \frac{22}{7}$)
32. find the volume of a sphere whose surface area is 55.44 cm^2 ($\pi = \frac{22}{7}$)

33. If the solid sphere of diameter 8.4 cm be immersed in a tub full of water, find the amount of water displaced by the solid sphere.
34. A hemispherical dome is constructed of a metallic sheet 1cm thick, if the inner radius is 99 cm, then find the volume of the metal sheet used. ($\pi = \frac{22}{7}$)
35. 64 solid metallic spheres, each of radius 0.15cm are melted to form a single bigger sphere. Find radius of the bigger sphere.