

1. A cylinder 3 m high, is open at the top. The circumference of its base is 22 m. Find its total surface area. ( $\pi = \frac{22}{7}$ )
2. A cube of side 4 cm contains a sphere touching its sides. Find the volume of the gap in between.
3. A river 4 m deep and 60 m wide is flowing at the rate of 0.31 km/hour. How much water will fall into the sea in a minute?
4. The outer diameter of a spherical shell is 10 cm and the inner diameter is 8 cm. Find the volume of the metal contained in the shell.
5. What length of tarpaulin 3 m wide will be required to make a conical tent of height 8 m and base radius 6 m? Assume that the extra length of the material required for stitching purpose will be approximately 20 cm. (Use  $\pi = 3.14$ )
6. Twenty cylindrical pillars of a building are to be cleaned. If the diameter of a pillar 0.5 m and height is 4 m, what will be the cost of cleaning them at the rate of Rs. 3 per  $\text{m}^2$ ? (Take  $\pi = 3.14$ )
7. Find the curved surface area of a closed cylindrical petrol storage tank that is 3.8 m in diameter and 4.9 m high.
8. A small indoor greenhouse (herbarium) is made entirely of glass panes (including base) held together with tape. The greenhouse is 30 cm long, 25 cm wide and 25 cm high.
  - a. What is the area of the glass?
  - b. How much tape is needed for all 12 edges?
9. A right triangle ABC with sides 5 cm, 12 cm and 13 cm is revolved about the side 12 cm. Find the volume of the solid so obtained.
10. A solid cube of side 12 cm is cut into eight cubes of equal volume. What will be the side of the new cube? Also, find the ratio between their surface areas.
11. Three solid spheres of iron whose diameters are 2 cm, 12 cm and 16 cm respectively are melted into a single solid sphere. Find the radius of the solid sphere.