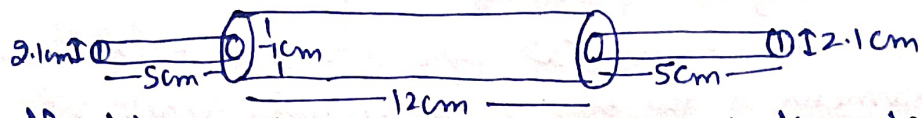


1. A room is the form of a cylinder surmounted by a hemispherical dome. The base radius of the hemi-sphere is half to the height of the cylindrical part. If the room contains $\frac{1408}{21} \text{ m}^3$ of air, find the height of the cylindrical part. ($\pi = \frac{22}{7}$) (cbse-2023) (cbse-2025)

2. A skilled carpenter decided to craft a special rolling pin for the local baker. He carefully joined three cylindrical pieces of wood - two small ones on the ends and one larger in the centre to create a perfect tool. The baker loved the rolling pin, as it rolled out the smoothest dough for breads and pastries.



The length of the bigger cylindrical part is 12cm and diameter is 7cm and the length of each smaller cylindrical part is 5cm and diameter is 2.1.

- find the volume of bigger cylindrical part (cbse-2025)
- find the C.S.A of the bigger cylindrical part
- find the sum of the C.S.A of the two identical smaller cylinders part

3. A wooden cubical die is formed by forming hemispherical depressions on each face of the cube such that face 1 has one depression, face 2 has two depression and so on. The sum of number of hemispherical depressions on opposite faces is always 7. If the edge of the cubical die measure 5cm and each H.S depression is of diameter 1.4cm, find the total surface area of the die so formed. (cbse-2025)

4. From a solid cylinder of height 24cm and radius 5cm, two cones of height 12cm and radius 5cm are hollowed out. find the volume and surface area of the remaining solid. (cbse-2025)

5. From one of the face of a solid wooden cube of side 14cm. maximum number of H.S of diameter 1.4cm are scooped out. find the total no. of H.S that can be scooped out. Also, find the total surface area of the remaining solid (cbse-2025)

6. From one face of a solid cube of side 14cm, the largest possible cone is carved out. Find the volume and surface area of the remaining solid ($\pi = \frac{22}{7}$, $\sqrt{5} = 2.2$) (CBSE-2025)

7. The difference b/w the outer and inner radii of a hollow right circular cylinder of length 14cm and 1cm. If the volume of the metal used in making the cylinder is 176 cm^3 , find the outer and inner radii of the cylinder (CBSE-2024)

8. The word 'Circus' has the same root as 'Circle'. In a closed circular area various entertainment acts including human skill and animal training are presented.

A circus tent is cylindrical upto a height of 8m and conical above it. The diameter of the base is 28m and total height of tent is 18.5m.

- Find the slant height of the conical part (CBSE-2024)
- Determine the floor area of the tent
- Find the area of the cloth used for making tent

9. Temper-proof tetra-packed milk guarantees both freshness and security. 500 ml milk packed in a cuboidal container of dimensions $15 \text{ cm} \times 8 \text{ cm} \times 5 \text{ cm}$. These milk packets are then packed in cuboidal cartons of dimension $30 \text{ cm} \times 32 \text{ cm} \times 15 \text{ cm}$.

- Find the volume of the cuboidal carton (CBSE-2024)
- Find the total surface area of a milk packet
- How much milk can the cup hold.

10. A wooden article was made by scooping out a hemisphere from each end of a solid cylinder, as shown in the figure. If the height of the cylinder is 5.8cm and its base is of radius 2.1cm, find the total surface area of the article. (CBSE-2024)

11. An empty cone is of radius 3cm and height 12cm. Ice-cream is filled in it so that lower part of the cone which is $\left(\frac{1}{8}\right)^{\text{th}}$ of the volume of the cone is unfilled but hemi-sphere is formed on the top. Find volume of the Ice-cream ($\pi = 3.14$)

(CBSE-2023)