

Class 10-Mathematics

Instructions for students: The notes provided must be copied to the Maths copy and then do the homework in the same copy.

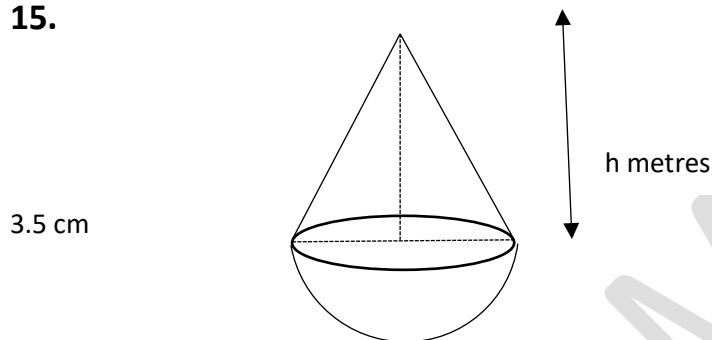
Chapter 17

MENSURATION (Part - 5)

SURFACE AREA AND VOLUME OF COMBINATION OF SOLIDS

Exercise 17.4

15.



Radius of base of the cone = 3.5 m

Radius of hemisphere = $3.5 \text{ m} = \frac{7}{2}$

Volume of hemisphere = $\frac{2}{3} \pi r^3$

$$= \frac{2}{3} \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times \frac{7}{2}$$

$$= \frac{11 \times 7 \times 7}{3 \times 2}$$

$$= \frac{539}{6}$$

Volume of cone = $\frac{2}{3} \times \frac{539}{6}$

$$= \frac{539}{9}$$

$$\frac{1}{3} \pi r^2 h = \frac{539}{9}$$

$$\frac{1}{2} \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times h = \frac{539}{9}$$

$$\frac{77}{6} h = \frac{539}{9}$$

$$\begin{aligned}
 h &= \frac{539}{9} \times \frac{6}{77} \\
 &= \frac{14}{3} = 4.67 \text{ m}
 \end{aligned}$$

$$\begin{aligned}
 \text{Surface area of the buoy} &= 2\pi r^2 + \pi r l \\
 &= 2 \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} + \frac{22}{7} \times \frac{7}{2} \times \frac{35}{6} \\
 &= 77 + \frac{385}{6} \\
 &= \frac{847}{6} \\
 &= 141.17 \text{ m}^2
 \end{aligned}$$

$$\begin{aligned}
 19. \text{ Common radius, } r &= 7 \text{ cm} \\
 \text{Height of the cone, } h_1 &= 4 \text{ cm} \\
 \text{Height of the cylinder, } h_2 &= 4 \text{ cm} \\
 \text{Volume of solid} &= \text{Volume of cone} + \text{Volume of cylinder} \\
 &\quad + \text{Volume of hemisphere} \\
 &= \frac{1}{3} \pi r^2 h_1 + \pi r^2 h_2 + \frac{2}{3} \pi r^3 \\
 &= \frac{1}{3} \times \frac{22}{7} \times 7 \times 7 \times 4 + \frac{22}{7} \times 7 \times 7 \times 4 \\
 &\quad + \frac{2}{3} \times \frac{22}{7} \times 7 \times 7 \times 7 \\
 &= 22 \times 7 \left(\frac{4}{3} + 4 + \frac{14}{3} \right) \\
 &= 22 \times 7 \times \frac{30}{3} \\
 &= 22 \times 7 \times 10 \\
 &= 1540 \text{ cm}^3
 \end{aligned}$$

Home Work: Solve Exercise 17.4 questions 13 to 22 in the Maths copy.

MATHS PRACTICAL

Points to remember .

**Read and understand the experiment.*

**In the Maths Practical Copy write down AIM, MATERIAL REQUIRED , METHODOLOGY , TABULAR COLUMN and CONCLUSION on the ruled page. DIAGRAM and CALCULATION on the plane page.*

**Follow the PROCEDURE properly to get the correct conclusion.*

**MATHS PRACTICAL COPY must be a soft cover Lab copy with atleast 50 to 60 pages.*

EXPERIMENT NO.3

AIM: To calculate the approximate distance between two metropolitan cities in India by distance formula of co-ordinate Geometry.

MATERIALS REQUIRED :

1. Xerox of an outline map of India on a graph paper(provided the map should have a scale).
2. Ruler

METHODOLOGY: Distance = $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

PROCEDURE : Follow all the steps below in order.

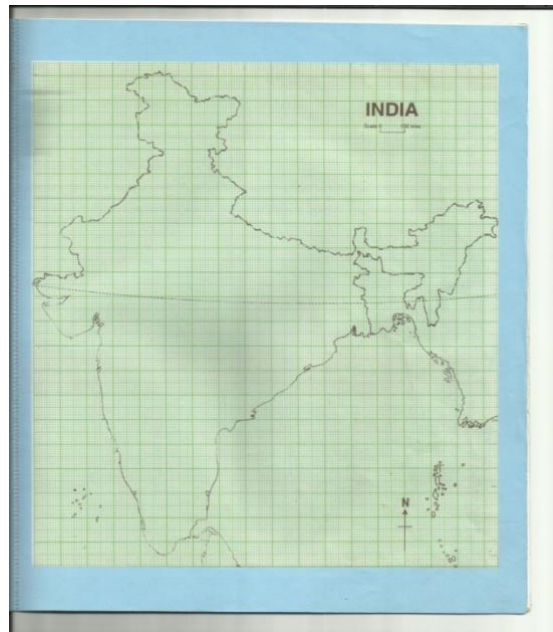
Step 1. Draw the axes on a graph sheet where the outline map of India is present.

Step 2. Mark the metropolitan cities and note down the corresponding co-ordinates.

Step 3. Calculate the distance between the points by distance formula.

Step 4. Convert the distance into actual distance by the scale given on the map.

Step 5. Attach Xerox with the practical copy and join the cities with ruler and pencil where the distance is calculated.



**OBSERVATION
CALCULATIONS:**

Scale factor:.....

TABLE AND

CONCLUSION:

Serial no :	City 1		City 2		Distance in the graph	Actual Distance (km)
	Name	Co- ordinates	Name	Co-ordinates		
1						
2						
3						

- 1) The distance between-----and-----is-----km.
- 2) The distance between-----and-----is-----km.
- 3) The distance between-----and-----is-----km