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 - 4)

SURFACE AREA AND VOLUME OF COMBINATION OF SOLIDS

Exercise 17.4

6. Dimensions of cuboid   = 15 cm × 10 cm× 3.5 cm

     Volume of the cuboid   = $l \times b \times h$

                            = 15 × 10 × 3.5

                            = 525 cm^3

Radius of each conical depression, r =0.5 cm

              Depth, h   = 1.4 cm

Volume of four conical depressions   = $4 \times \frac{1}{3} \pi r^2 h$

$$= \frac{4}{3} \times \frac{22}{7} \times (0.5)^2 \times 1.4$$

$$= \frac{88}{21} \times 0.25 \times 1.4$$

$$= 1.467 \text{ cm}^3 \text{ approx.}$$

Volume of wood in the stand   = Volume of the cuboid - Volume of four conical depressions

                                   =525 − 1.467

                                   =523.53 cm^3 Approx.

8. Height of the cylinder, h   = 10 cm.
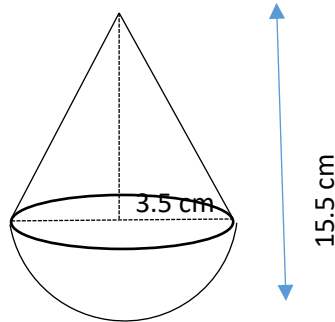
  Radius of the base , r   = 3.5 cm

 Total surface area   = Curved surface area of cylinder+ 2× Curved surface area of hemisphere.

                                 = 2πrh + 2×2πr^2

$$= 2 \times \frac{22}{7} \times 3.5 \times 10 + 2 \times 2 \times \frac{22}{7} \times (3.5)^2$$

$$= 220 + 154$$

$$= 374 \text{ cm}^2$$

9.

15.5 cm

3.5 cm

Total height of the toy = 15.5 cm

Radius of the base of the conical part, r = 3.5 cm

Height of the conical part, h = 15.5 - 3.5 = 12 cm

Slant height, *l*

$$= \sqrt{r^2 + h^2}$$

$$= \sqrt{(3.5)^2 + 12^2}$$

$$= \sqrt{12.25 + 144}$$

$$= \sqrt{156.25} = 12.5 \text{ cm}$$

Total surface area of the toy = Curved Surface area of cone + Curved Surface area of hemisphere.

$$= \pi r l + 2\pi r^2$$

$$= \frac{22}{7} \times 3.5 \times 12.5 + 2 \times \frac{22}{7} \times 3.5 \times 3.5$$

$$= \frac{22}{7} \times 3.5(12.5 + 2 \times 3.5)$$

$$= 11 \times 19.5$$

$$= 214.5 \text{ cm}^2$$

Home Work: Solve **Exercise 17.4** questions 1 to 12 in the Maths copy.