21 SURFACE AREA AND VOLUME OF SOLIDS

Q1. Find the lateral surface area, total surface area and volume of the following :

a. A cube of edge 3.2 cm

Lateral surface area = _____

Total surface area = _____

Volume = _____

b. A cuboid having length 1.2 cm, breadth 0.5 cm and height 0.2 cm

Lateral surface area = _____

Total surface area = _____

Volume = _____

Q2. Fill in the blanks:

a. If the diagonal of a cube is 6 cm long, each edge of the cube measures _____.

b. A cube having volume 24 m^3 will have a diagonal measuring _____.

c. A cube having each edge _____ long will have a total surface area of 150 mm^2.

d. A cuboid having length 2 cm, breadth 4 cm and height $\sqrt{5}$ cm will have diagonals measuring _____.

Q3. Find the length of the longest rod that can be placed in a room of dimensions 30 m, 24 m and 18 m.

Answer: _____

Q4. Raju has to plaster the inside of an open tank 12 m long, 10 m wide and 2 m deep. If the material required for plastering costs ₹ 3 per sq metre and the labour charges are ₹ 2.5 per m^2, find the total cost of plastering the tank.

Answer: _____

Q5. A cuboidal box measuring 45 cm by 15 cm by 30 cm is used to store metal cubes 1.5 cm long. Find the maximum number of cubes that can fit into the cuboidal box.

Answer: _____

Q6. Two glass cubes, each 15 cm wide, are melted to form a glass cuboid. If the cuboid is 15 cm long and 3 cm wide, find its height.

Answer: _____

Q7. The edges of two cubes are in the ratio 4 : 5. Find the ratio of their volume and total surface area.

Ratio of their volume : _____

Ratio of their total surface area : _____

Q8. Two identical cuboidal tanks having length 2 m and and breadth 3 m respectively are filled with water upto a height of 4 m each. A drum having radius 30 cm and height 84 cm is lowered into Tank 1 and the water is poured into Tank 2. Find the new water level of Tank 1 and Tank 2.

a. Water level of Tank 1: _____

b. Water level of Tank 2: _____

Q9. A cylindrical water pipe is 21 cm long. If the difference between the outer and inner curved surface area is 396 cm^2, find the thickness of the pipe.

Answer: _____

Q10. The ends of two identical pipes each of length 25 m and outer radius 16 cm are joined together to form a long pipe. If the thickness of the pipe is 2 cm, find the inner curved surface area (in cm^2) of the longer pipe.

Answer: _____

Answers

1. a. 40.96 cm^2; 61.44 cm^2; 32.768 cm^3; b. 0.68 cm^2, 1.88 cm^2, 0.12 cm^3
2. a. $2\sqrt{3}$ cm; b $8\sqrt{3}$ m; c. 5mm; 5 cm
3. $30\sqrt{2}$ m
4. ₹ 1144
5. 6000 cubes
6. 150 cm
7. 64 : 125; 16 : 25
8. a. 3.9604 m; b. 4.0396 m
9. 3 cm
10. 4400 cm^2