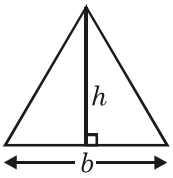
CHAPTER 11

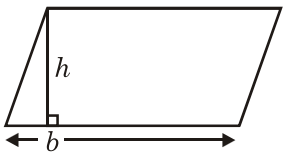
MENSURATION

Points to Remember

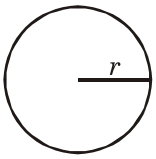
- Area of triangle $= \frac{1}{2} \times b \times h$



- Area of parallelogram $= b \times h$

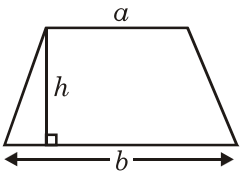


- Area of circle $= \pi r^2$

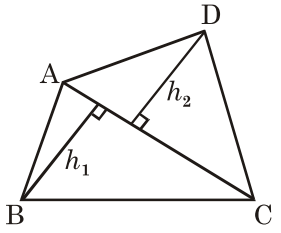


- Perimeter or circumference of circle $= 2\pi r$

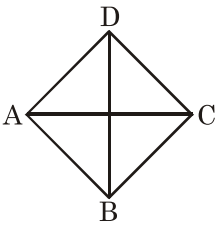
- Area of trapezium $= \frac{1}{2} \times h\,(a + b)$



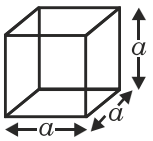
- Area of quadilateral $= \frac{1}{2} \times AC\,(h_1 + h_2)$



❑ Area of Rhombus $= \frac{1}{2} \times$ Product of diagonals.



❑ Cube

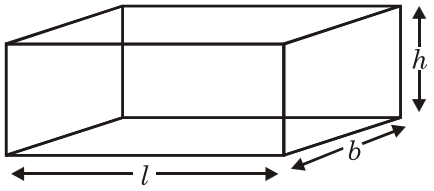


(*i*) Volume of cube = a^3

(*ii*) Lateral surface area of cube = $4a^2$

(*iii*) Total surface area of cube = $6a^2$

❑ Cuboid



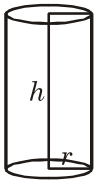
(*i*) Volume of cuboid = lbh

(*ii*) Total surface area of cuboid = $2(lb + bh + hl)$

(*iii*) Lateral surface area of cuboid = area of four walls

$= 2h(l + b)$

❑ Cylinder



(*i*) Volume of cylinder = $\pi r^2 h$

(*ii*) Curved surface area of cylinder = $2\pi rh$

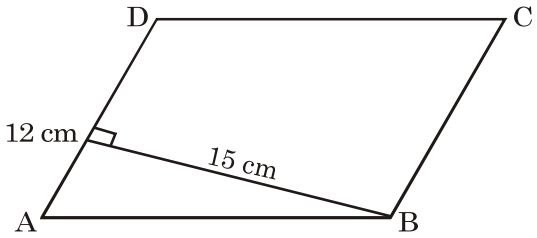
(*iii*) Total surface area of cylinder

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

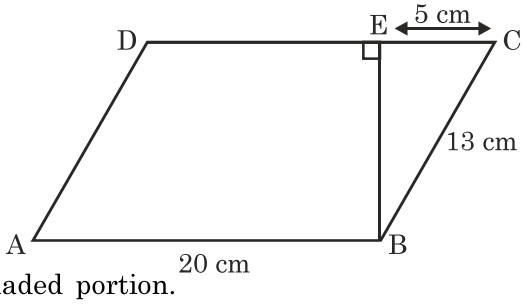
$= 2\pi r(h + r)$

QUESTIONS

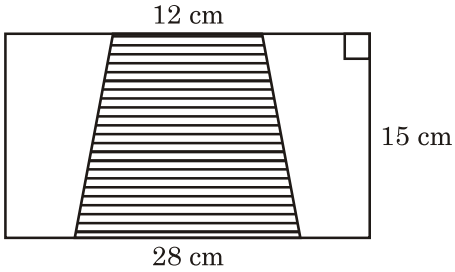
1. In the adjoining figure, find the area of the parallelogram.



2. In the figure find the area of the parallelogram.

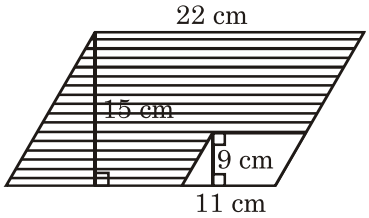


3. In the adjoining figure find the area of the shaded portion.

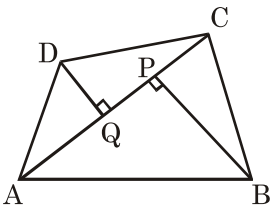


4. Find the area of rhombus whose two diagonals are 18 cm and 11 cm.

5. Find the area of the shaded portion.

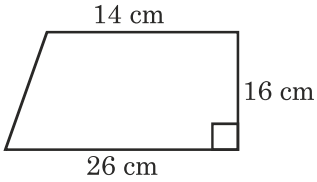


6. Find the area of the quadrilateral *ABCD* given in the figure.

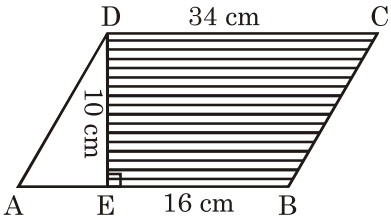


When AC = 15 cm, BP = 10 cm, DQ = 6 cm

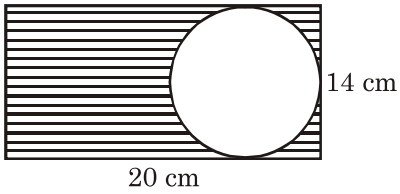
7. In the figure find the area of the given trapezium.



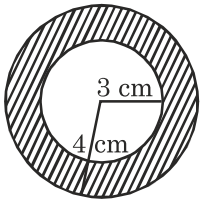
8. Find the area of shaded portion when $DE \perp AB$.



9. Find the circumference of the circle whose radius is 7 cms.
10. A racing track is a circle of radius 28 cm. How many meters Kiran has to run if she takes two (2) rounds of the track?
11. Find the area of the shaded portion.

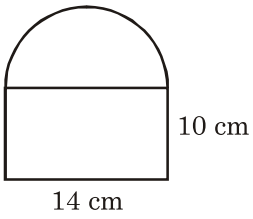


12. Diameters of two circles 15 cm and 25 cm. What is the ratio of their circumferences?
13. Find the ratio of the areas of two circles whose radii is 7 cm and 14 cm.
14. Find the diameter of the circle whose circumference is 220 metre.
15. A wire is in the shape of a square of side 44 cm. If it is refolded into a circular ring, find the radius of the ring.
16. Diameter of a wheel of a car is 70 cm. How much distance will it cover in 10 revolutions.
17. What is the area of triangle whose base is 36 cm and height is 7 cm?
18. What is the area of shaded ring if radius of two circles are 4 cm and 3 cm?

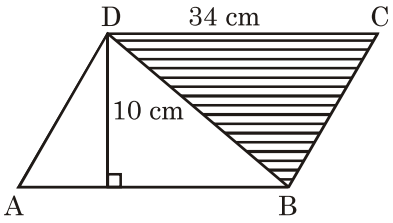


19. Find diameter of circles whose circumference is 66 cm.

20. Find the area of the figure if the upper portion is a semi circle.



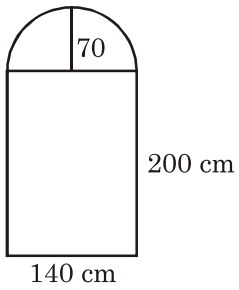
21. Find the area of the triangle shaded in the figure. Where *ABCD* is a parallelogram.



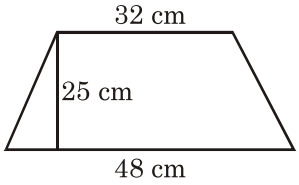
22. What is the radius of a circle of area is 154 cm^2.

23. A room has two circular windows for exhaust fans. What is the area of these windows if the radius of each 7 cm.

24. The windows of a room are of the shape in the figure. How much net is required to cover 2 such windows?

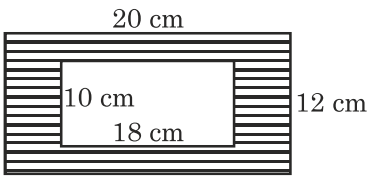


25. Radha wants to make a dress which is of the shape of trapezium. How much cloth is required to make the dress shown in the fig.

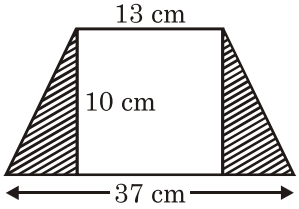


26. How many sq. metres of dug is required to fill a triangular flower bed, whose base is 35 m and height is 8m?

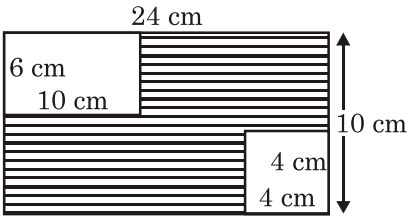
27. Find the area of shaded portion.



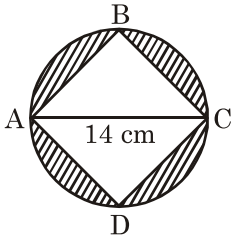
28. Find the area of shaded portion.



29. From the adjoining figure find the area of shaded portion.



30. Find the area of the shaded portion if diameter of circle is 14 cm and *ABCD* is a square.



31. What is the volume of a cubical tank of water of side 1.2m?

32. How many cm^3 of juice can be poured in a cuboidical can whose dimensions are 15 cm × 10 cm × 25 cm.

33. What is the area of curved surface of right circular cylinder with height 14 cm and radius of base 5 cm?

34. Volume of a cube is 1331 cm^3. What is the length of each side?

35. Lateral surface area of a cube is 100m^2. What is the length of its edge?

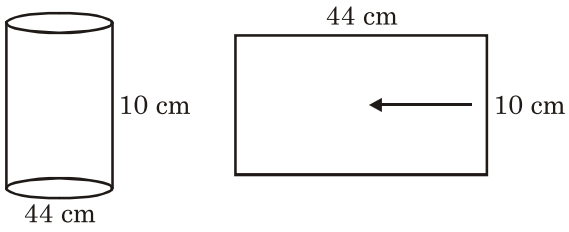
36. Total surface area of a cubical box is 294cm^2. Find the length of its edge.

37. 216 cubes of same size are joined together to form a new cube. What is the ratio of the sides of small and bigger cube?

38. 125 cubes each of edge 2 cm are joined to form a new cube. What is the length of each edge of cube so formed?

39. Three cubes of iron with sides 3 cm, 4 cm and 5 cm are melted to form a new cube. What is the side of the new cube?

40. A rectangular piece of paper 44 cm long and 10 cm broad is rolled along the length to form a cylinder. What is the radius of the base?



41. Two cylinder have same base radius r. If their heights are 5 cm and 15 cm. What is the ratio of their volumes?

42. If base radius of a cylinder is doubled then the volume of new cylinder = _____ times the volume of given cylinder.

43. If the volume of a right circular cylinder, 3 cm high is 462 cm^3. What is the radius of the base of cylinder?

44. What is the total surface area of a cube of side 1.2m?

45. A wire in the shape of a square, is 264 cm long is reshaped as a circle. What is the radius of the circle so formed?

46. What is the length of the largest rod that can be place in a cuboid of dimentions 3m × 4m × 5m.

47. If the edges of a room are in the ratio 3:2:1 and its total surface area is 198 m^2. What is the length of the room?

48. A small cube of side 4 cm is placed in a cube of side 5cm. Find the volume of the air in between the two cubes.

49. Volumes of two cylinders of same height are in the ratio 1:16. What is the ratio of their radii.

50. The sides of a room are in the ratio 5:3:2. If the volume of the room is 3750 cubic meters. Find the length of the room.

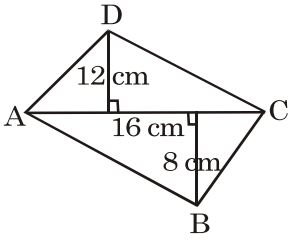
ANSWERS

1. 180 cm^2
2. 240 cm^2
3. 300 cm^2
4. 99 cm^2
5. 231 cm^2
6. 120 cm^2
7. 320 cm^2
8. 250 cm^2
9. 44 cm
10. 3.52 m
11. 126 cm^2
12. 3:5
13. 1:4
14. 70 m
15. 28 m
16. 22 m

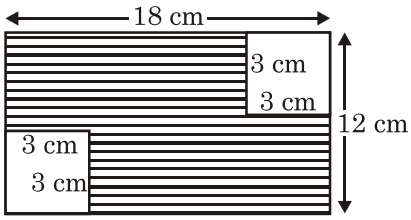
17. 126 cm^2
18. 22 cm^2
19. 21 cm
20. 217 cm^2
21. 170 cm^2
22. 7 cm
23. 308 cm^2
24. 71400 cm^2
25. 1000 cm^2
26. 140 m^2
27. 60 cm^2
28. 120 cm^2
29. 164 cm^2
30. 56 cm^2
31. 1.728 m^3
32. 3750 cm^3
33. 440 cm^2
34. 11 cm
35. 5 m
36. 7 cm
37. 1:6
38. 10 cm
39. 6 cm
40. 7 cm
41. 1:3
42. 4
43. 7 cm
44. 8.64 m^2
45. 42 cm
46. $5\sqrt{2}$ m
47. 9 m
48. 61 cm^3
49. 1:4
50. 25 m

TEST YOUR KNOWLEDGE

1. Capacity of cylindrical tank is 1 m^3. How much litre water it can contain?
2. Find the height of cuboid whose volume is 125 cm^3 and base area is 5 cm^2.
3. Dimension of floor is 12 m × 3m. Find the no. of tiles required to cover it if dimension of each tile is 10 cm × 10 cm.
4. Find the volume of cube whose side is 0.4 cm.
5. Find the volume of cylinder whose radius is 7 cm and height is 5 cm.
6. Find the side of a cube whose total surface area is 600 cm^2.
7. Find the area of quadilateral.

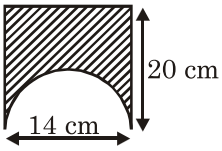


8. Find the area of shaded region.



9. The area of rhombus is 120 cm^2 and one diagonal is 5 cm. Find the length of other diagonal.

10. Find the area bounded by the figure. (Shaded region).



ANSWERS

1. 1000 litre
2. 25 cm
3. 3600
4. 0.064 cm^3
5. 770 cm^3
6. 10 cm
7. 160 cm^2
8. 198 cm^2
9. 48 cm
10. 203 cm^2