MATHS

NCERT - NCERT MATHEMATICS(ENGLISH)

MENSURATION

Exercise 11 3

1. The lateral surface area of a hollow cylinder is $4224\ cm^2$. It is cut along its height and

formed a rectangular sheet of width 33 *cm.*

Find the perimeter of rectangular sheet?

2. A road roller takes 750 complete revolutions to move once over to level a road. Find the area of the road if the diameter of a road roller is 84 cm and length is 1 m.

3. A suitcase with measures $8 \ cm \times 48 \ cm \times 24 \ cm$ is to be covered with a tarpaulin cloth. How many metres of tarpaulin of width $96 \ cm$ is required to cover 100 such suitcases?

4. Find the side of a cube whose surface area is $600 cm^2$.

5. There are two cuboidal boxes as shown in the adjoining figure. Which box requires the lesser amount of material to make?

6. Describe how the two figures at the right are alike and how they are different. Which box has larger lateral surface area?

7. A closed cylindrical tank of radius 7 m and height 3 m is made from a sheet of metal. How much sheet of metal is required?

8. Rukhsar painted the outside of the cabinet of measure $1m \times 2m \times 15m$. How much surface area did she cover if she painted all except the bottom of the cabinet.

9. Daniel is painting the walls and ceiling of a cuboidal hall with length, breadth and height of $15\ m$, $10\ m$ and $7\ m$ respectively. From each can of paint $100\ m^2$ of area is painted. How many cans of paint will she need to paint the room?

    A. 5

    B. 6

    C. 7

    D. 8

Answer: A

10. A company packages its milk powder in cylindrical container whose base has a diameter of 14 cm and height 20 cm. Company places a label around the surface of the container (as shown in the figure). If the label is placed 2 cm from top and bottom, what is the area of the label.

1. The shape of the top surface of a table is a trapezium. Find its area if its parallel sides are 1 m and 1.2 m and perpendicular distance between them is 0.8 m.

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2. Length of the fence of a trapezium shaped field $ABCD$ is $120m$. If $BC = 48m, CD = 17m$ and $AD = 40m$, find the area of this field. Side AB is perpendicular to the parallel sides AD and BC.

3. The area of a trapezium is $34 \ cm^2$ and the length of one of the parallel sides is $10 \ cm$

and its height is $4\ cm$. Find the length of the other parallel side.

4. The diagonals of a rhombus are 7.5 cm and 12 cm. Find its area.

A. $42cm^2$

B. $45cm^2$

C. $49cm^2$

D. $48cm^2$

Answer: B

5. The diagonal of a quadrilateral shaped field is 24 m and the perpendiculars dropped on it from the remaining opposite vertices are 8 m and 13 m. Find the area of the field.

6. The floor of a building consists of 3000 tiles which are rhombus shaped and each of its diagonals are $45\ cm$ and $30\ cm$ in length. Find the total cost of polishing the floor, if the cost per m^2 is Rs 4.

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7. Find the area of a rhombus whose side is 6 cm and whose altitude is 4 cm. If one of its

diagonals is 8 cm long, find the length of the other diagonal.

8. Top surface of a raised platform is in the shape of a regular octagon as shown in the figure. Find the area of the octagonal surface.

9. Mohan wants to buy a trapezium shaped field. Its side along the river is parallel to and twice the side along the road. If the area of this field is 10500 m^2 and the perpendicular distance between the two parallel sides is 100 m, find the length of the side along the river.

10. Diagram of the adjacent picture frame has outer dimensions $= 24cm \times 28cm$. inner

dimensions $16cm \times 20cm$. Find the area of each section of the frame, if the width of each section is same.

11. There is a pentagonal shaped park as shown in the figure. For finding its area Jyoti and Kavita divided it in two different ways. Find the area of this park using both ways. Can you suggest some other way of finding its area?

Exercise 11 1

1. A square and a rectangular field with measurements as given in the figure have the same perimeter. Which field has a larger area?

2. Mrs. Kaushik has a square plot with the measurement as shown in the figure. She

wants to construct a house in the middle of the plot. A garden is developed around the house. Find the total cost of developing a garden around the house at the rate of Rs 55 per m^2.

3. The shape of a garden is rectangular in the middle and semi circular at the ends as shown in the diagram. Find the area and the

perimeter of this garden [Length of rectangle is $20 - (35 + 35)$ metres].

A. $129.5, 47$

B. $129.5, 48$

C. $127.7, 49$

D. $189.5, 50$

Answer: B

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4. A flooring tile has the shape of a parallelogram whose base is 24 cm and the corresponding height is 10 cm. How many such tiles are required to cover a floor of area 1080 m^2? (If required you can split the tiles in whatever way you want to fill up the corners).

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5. An ant is moving around a few food pieces of different shapes scattered on the floor. For

which food-piece would the ant have to take a longer round? Remember, circumference of a circle can be obtained by using the expression $c = 2\pi r$, where r is the radius of the circle.

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Solved Examples

1. There is a regular hexagon MNOPQR of side 5 cm . aman and ridhima divided it into two

different ways . Find the area of this hexagon both ways.

2. The area of a rhombus is $240 \ cm^2$ and one of the diagonals is $16 \ cm$. Find the other diagonal.

3. The area of a trapezium shaped field is 480 m^2, the distance between two parallel sides is $15\ m$ and one of the parallel side is $20\ m$. Find the other parallel side.

4. Find the height of a cylinder whose radius is $7\ cm$ and the total surface area is $968\ cm^2$.

5. In a building there are 24 cylindrical pillars. The radius of each pillar is $28cm$ and height is $4m$. Find the total cost of painting the curved surface area of all pillars at the rate of Rs 8 per m^2.

6. The internal measures of a cuboidal room are $12m \times 8m \times 4m$. Find the total cost of whitewashing all four walls of a room, if the cost of white washing is Rs 5 per m^2. What will

be the cost of white washing if the ceiling of the room is also whitewashed.

7. An aquarium is in the form of a cuboid whose external measures are $80cm \times 30cm \times 40cm$. The base, side faces and back face are to be covered with a coloured paper. Find the area of the paper needed?

8. A godown is in the form of a cuboid of measures $60m \times 40m \times 30m$. How many cuboidal boxes can be stored in it if the volume of one box is $8m^3$?

9. Find the height of a cuboid whose volume is $275cm^3$ and base area is $25cm^2$.

10. A rectangular paper of width $14cm$ is rolled along its width and a cylinder of radius $20cm$ is formed. Find the volume of the cylinder (Fig 11.45) ? (Take $\dfrac{22}{7}$ for π)

11. A rectangular piece of paper $11cm \times 4cm$ is folded without overlapping to make a cylinder of height $4cm$. Find the volume of the cylinder.

Exercise 11 4

1. Find the height of a cuboid whose base area is $180cm^2$ and volume is $900cm^3$?

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2. Diameter of cylinder A is 7 cm, and the height is 14 cm. Diameter of cylinder B is 14 cm and height is 7 cm. Without doing any

calculations can you suggest whose volume is greater? Verify it by finding the volume of both the cylinders. Check whether the cylinder with greater volume also has greater surface area?

3. Given a cylindrical tank, in which situation will you find surface area and in which situation volume.(a) To find how much it can hold.(b) Number of cement bags required to

plaster it.(c) To find the number of smaller tanks that can be filled with water from it.

4. If each edge of a cube is doubled,

(i) how many times will its surface area increase?

(ii) how many times will its volume increase?

5. A milk tank is in the form of cylinder whose radius is 1.5 m and length is 7 m. Find the quantity of milk in litres that can be stored in the tank?

6. Find the height of the cylinder whose volume is $154m^3$ and diameter of the base is $140cm$?

7. A cuboid is of dimensions $60cm \times 54cm \times 30cm$. How many small cubes with side 6 cm can be placed in the given cuboid?

8. Water is pouring into a cubiodal reservoir at the rate of 60 litres per minute. If the volume of reservoir is $108m^3$, find the number of hours it will take to fill the reservoir.

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