MATHS

BOOKS - PSEB

MENSURATION

Exercise

1. A square and a rectangular field with measurements as given in the figure have the

same perimeter.Which field has a larger area ?

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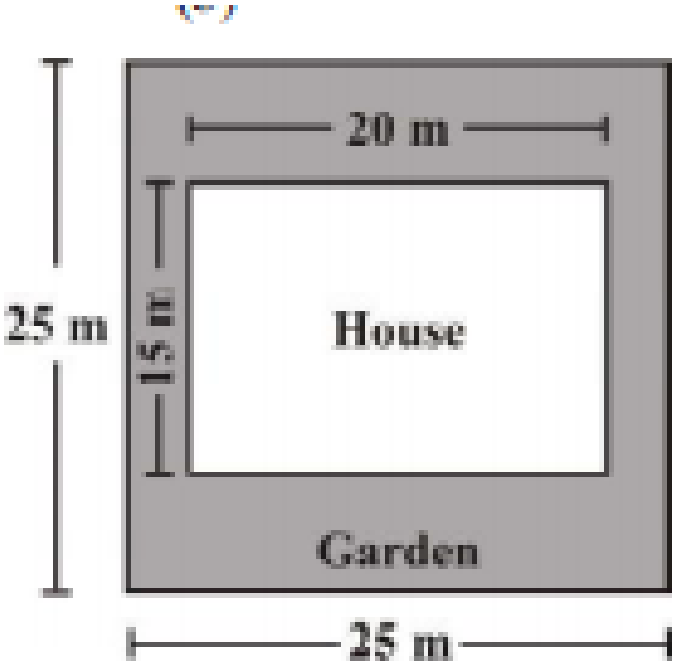
2. Mrs. Kaushik has a square plot with the Bmeasurement as shown in the figure. She wants to construct a house in the middle of the plot. A garden is developed around the house. Find the total cost of developing a garden around the house at the rate of

$Rs55perm^2$.



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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.[Lenght of rectange = 20-(3.5 +3.5) = 13 metres]

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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

$1080m^2$? (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 scatterd 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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6. 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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7. The area of a trapezium is $34cm^2$ 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.

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

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9. 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.

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

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11. Find the area of a rhombus whose side is 5 cm and whose altitude is 4.8 cm. If one of its diagonals is 8 cm long, find the length of the other diagonal.

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12. 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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13. 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 $10500m^2$ and the perpendicular distance between the two parallel sides is 100 m, find the length of the side along the river.

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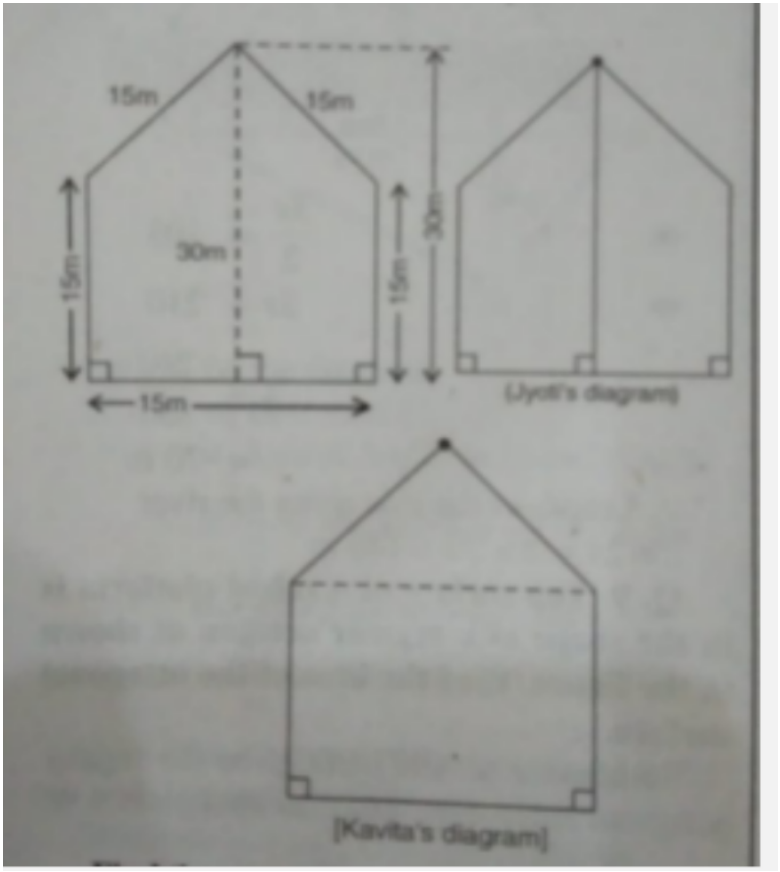
14. There is a pentagonal shaped park as shown in the figure.For finding its area Jyoti and Kavita divided it in two different ways.

Find the area of this park using both ways .Can you suggest some another way of finding its

area?



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15. Diagram of the adjacent picture frame has outer dimensions $24cm \times 28cm$ and inner dimensions $16cm \times 20cm$.Find the area of each section of the frame ,if the width of each section is same.

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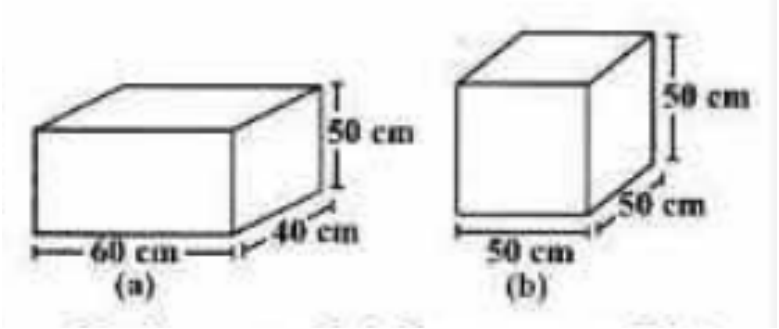
16. There are two cuboidal boxes as shown in the adjoining figure. Which box requires the

lesser amount of material to make?



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17. A suitcase with measures $80cm \times 48cm \times 24cm$ is to be covered with a tarpaulin cloth. How many metres of tarpaulin of width 96 cm is required to cover 100 such suitcases?

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

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19. Rukhsar painted the outside of the cabinet of measure $1m \times 2m \times 1.5m$.How much surface area did she cover if she painted all except the bottom of the cainet?

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20. 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 $100m^2$ of area is painted. How many cans of paint will she need to paint the room?

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21. Describe how the two given figures are like and how they are different?Which box has larger lateral surface area?

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22. 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?

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23. The lateral surface area of a hollow cylinder is $4224cm^2$. It is cut along its height and formed a rectangular sheet of width 33 cm. Find the perimeter of rectangular sheet?

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24. 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.

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25. A compnay 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?

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26. Given a cylindrical tank, in which situation will you find surface area and in which situation volume: To find the number of smaller tanks that can be filled with water from it.

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27. Given a cylindrical tank, in which situation will you find surface area and in which situation volume: Number of cement bags required to plaster it.

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28. Given a cylindrical tank, in which situation will you find surface area and in which situation volume: To find the number of smaller tanks that can be filled with water from it.

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29. 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?

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

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31. 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?

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32. Find the height of the cylinder whose volume is $1.54m^3$ and diameter of the base is 140 cm ?

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33. 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?

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34. If each edge of a cube is doubled: how many times will its surface area increase?

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35. If each edge of a cube is doubled: how many times will its volume increase?

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36. 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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Example

1. Find the area of quadrilateral PQRS shown in Fig 11.11.

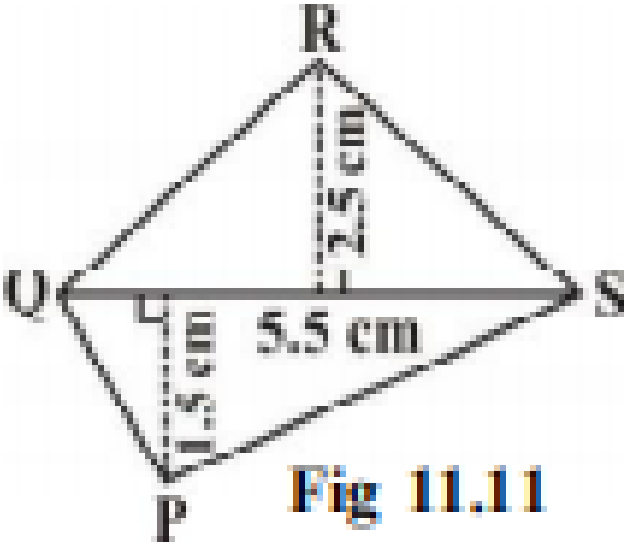

Fig 11.11

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2. Find the area of a rhombus whose diagonals are of lengths 10 cm and 8.2 cm.

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

A.

B.

C.

D.

Answer:

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

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5. There is a hexagon MNOPQR of side 5 cm (Fig 11.20). Aman and Ridhima divided it in two different ways (Fig 11.21). Find the area of this hexagon using both ways.

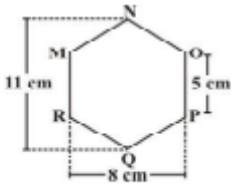
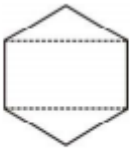
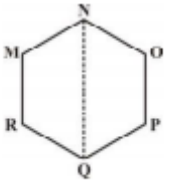


Fig 11.20


Ridhima's method



Aman's method

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6. An aquarium is in the form of a cuboid whose external measures are

$80cmX30cmX40cm$. The base, side faces and back face are to be covered with a coloured paper. Find the area of the paper needed?

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7. 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.

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8. In a building there are 24 cylindrical pillars. The radius of each pillar is 28 cm and height is 4 m. Find the total cost of painting the curved surface area of all pillars at the rate of $Rs8perm^2$.

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

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

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11. 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 $0.8m^3$?

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12. A rectangular paper of width 14 cm is rolled along its width and a cylinder of radius 20 cm is formed. Find the volume of the cylinder (Fig 11.45). $\left(Take \frac{22}{7} f \text{ or } \pi\right)$

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13. A rectangular piece of paper $11cm \times 4cm$ is folded without overlapping to make a

cylinder of height 4 cm. Find the volume of the cylinder.

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