MATHS

BOOKS - ASHOK PUBLICATION ASSAM

Mensuration

Example

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

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2. 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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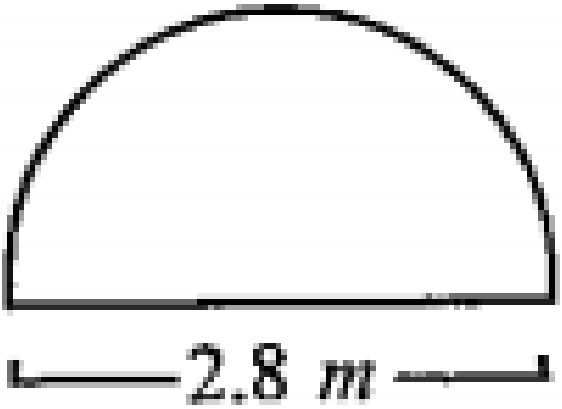
3. An ant is moving around a few food pieces of different shapes scattered on the floor. For which food-piece would the ant have to take a longer round? Remember circumference of a circle can be obtained by using the expression c = 2pir`, where r is the radius of

the circle.

(a)



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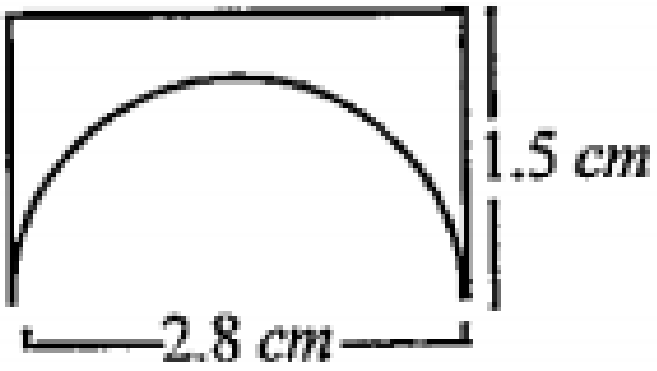
4. An ant is moving around a few food pieces of different shapes scattered on the floor. For which food-piece would the ant have to take a longer round?

Remember circumference of a circle can be obtained by using the expression c = 2pir`, where r is the radius of the circle.

(b)



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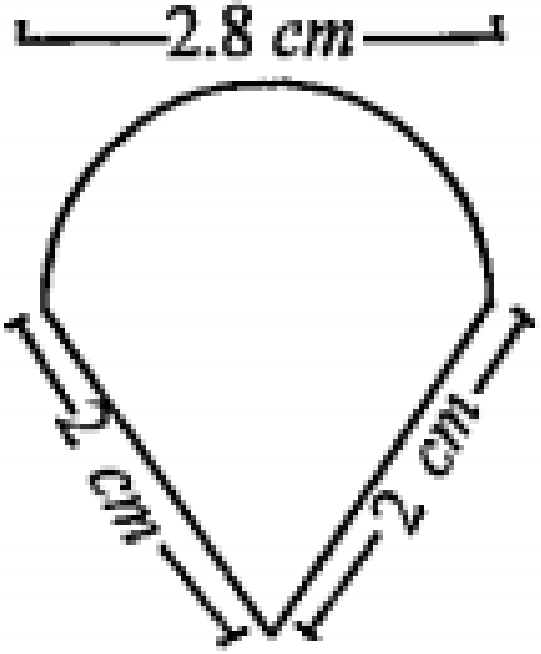
5. An ant is moving around a few food pieces of different shapes scattered on the floor. For which food-

piece would the ant have to take a longer round? Remember circumference of a circle can be obtained by using the expression c = 2pir`, 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 1m and 1.2m and perpendicular distance between then is 0.8 m.

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7. The area of a trapezium is $34m^2$ 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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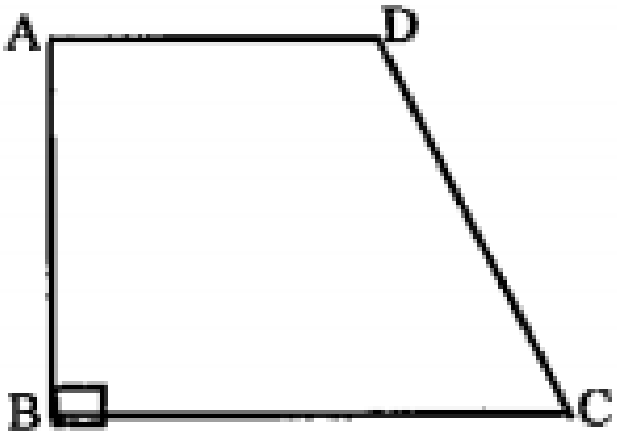
8. Length of the fence of a trapezium shaped field ABCD is 120m. If BC =48m, CD = 17m an AD=40m, find the area of this field. Side AB is perpendicualr to the parallel sides AD and BC.



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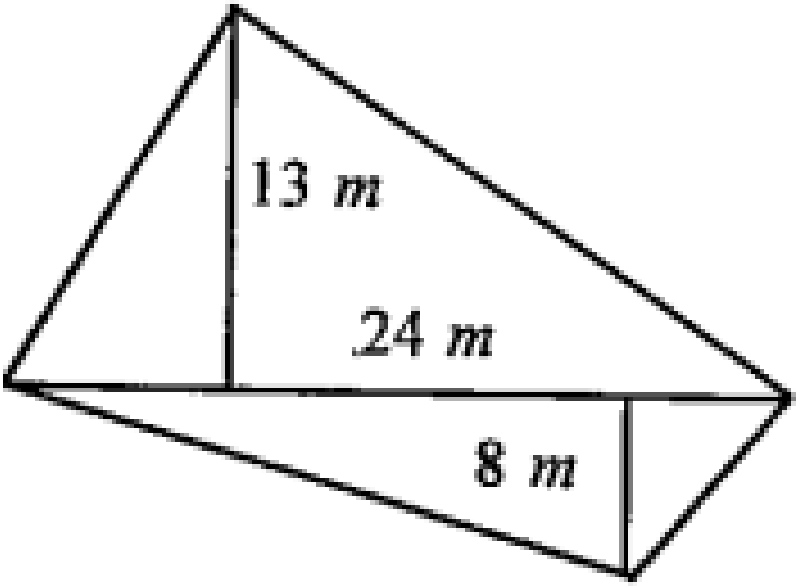
9. The diagonal of a quadrilateral shaped field is 24m and the perpendiculars dropped on it from the remaining opposite vertices are 8m and 13m.Find the area of the field.



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

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11. Find the area of a rhombus whose side is 6cm and whose altitude is 4cm. 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 45cm

and 30cm in length. Find the total cost of polishing the floor, if the cost per m^2 is Rs. 4.

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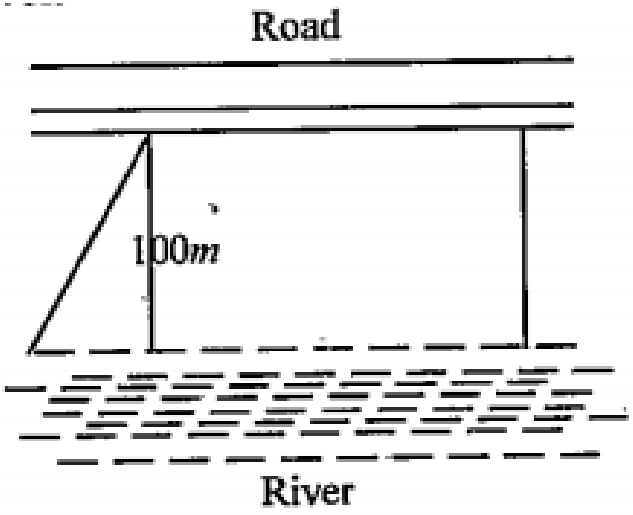
13. Mohan wants to buy a trapezium shaped field. Its side along the river is parallel to and twice the side along the road. If the area of this field is $10500m^2$ and the perpendicular distance between the two parallel

sides is 100m, find the length of the side along the river.



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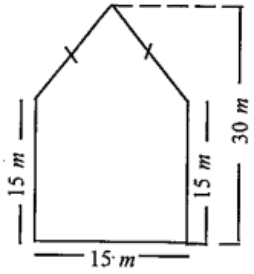
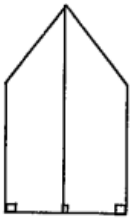
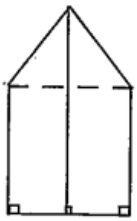
14. There is a pentagonal shaped park as shown in the figure. For finding its are Jyoti and Kavita divided it in two different ways.





Jyoti's diagram



Kavita's diagram

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

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

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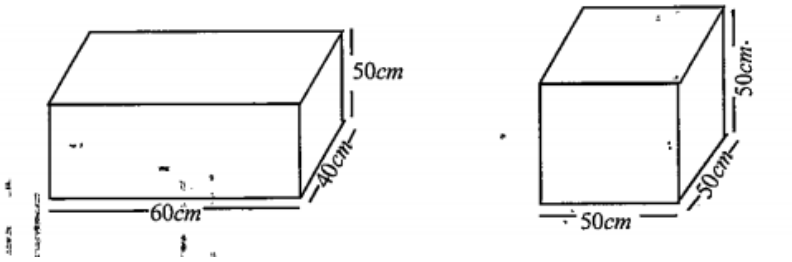
16. There are two cuboidal box as shown in the adjoining figure. Which box requires the lesser amount of material to make?



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17. A suitcase with measures $80cm \times 48cm \times 24cm$ is to be covered with a trapaulin 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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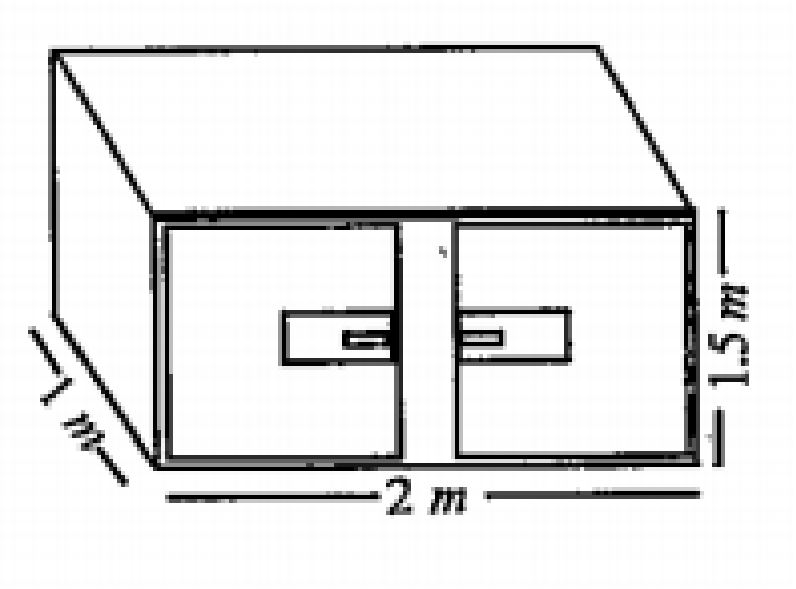
19. Rukhaser painted the outside of the cabinet of measure $1m \times 2m \times 1.5m$. How much surface area did she cover if she paitned all except the bottom of the

cabinet.



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20. Daniel is painting the walls and ceiling of a cuboidal hall with length, breadth and height of 15m, 10m and 7m respectively. From each can of the paint $100m^2$ of

area is painted. How many cans of paint will she need to paint the room?

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

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22. 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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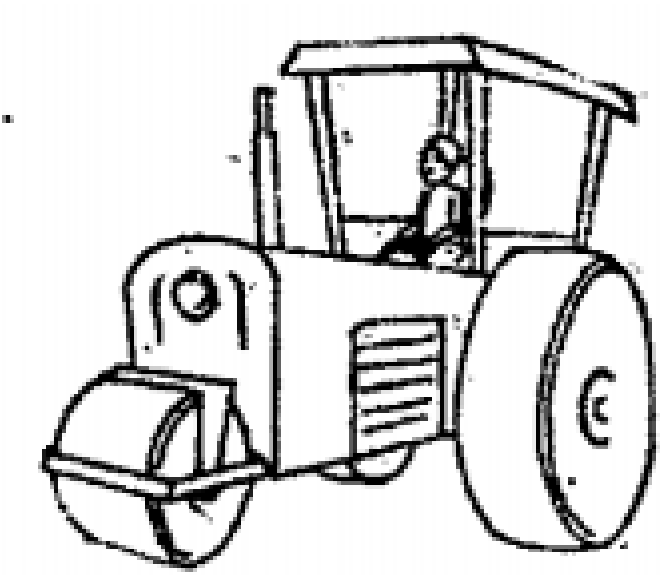
23. A road roller takes 750 complete revolutions to move once over to level a road. Find the area of the road if the diameter of a road roller is 84 cm and length

is 1m.



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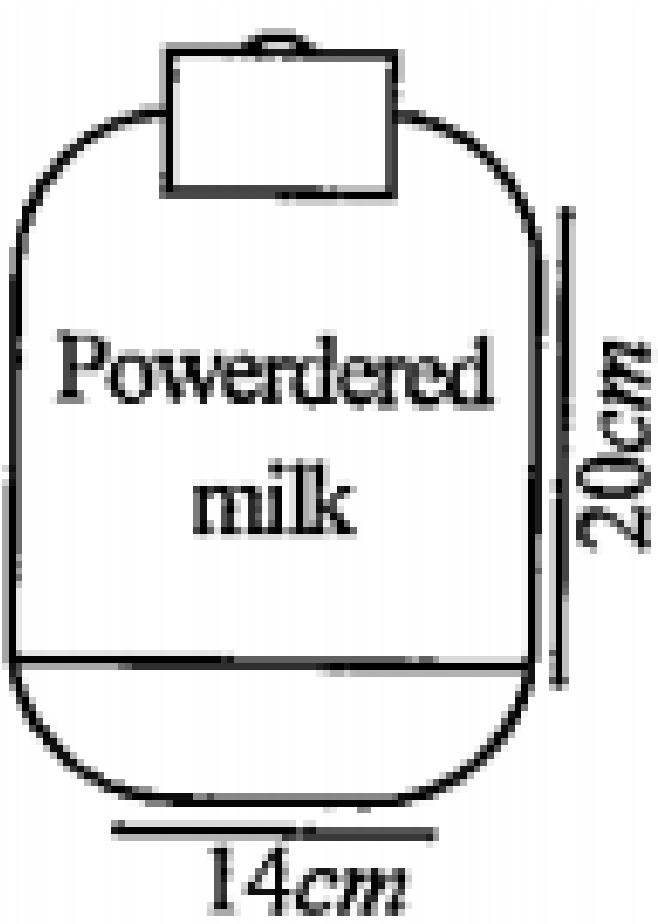
24. A company packages its milk powder in cylindrical container whose base has a diameter of 14 cm and height 20 cm. Company places a label around the surface of the container (as shown in the figure). If the

label is placed 2 cm from top and bottom, what is the area of the label.



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25. Given a cylindrical tank, in which situation will you find surface area and in which situation volumen.

To find how much it can hold.

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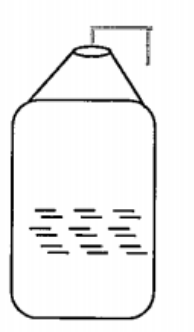
26. Given a cylindrical tank, in which situation will you find surface area and in which situation volumen.



Number of cement bags required to plaster it.

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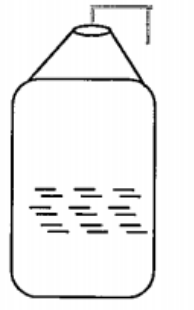
27. Given a cylindrical tank, in which situation will you find surface area and in which situation volumen.



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

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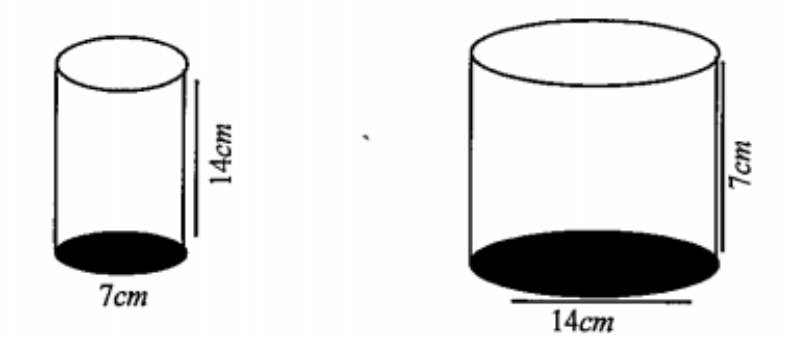
28. Diamter of cylinder A is 7cm, and the height is 14cm. Diameter of cylinder B is 14 cm and height is 7cm. Without doing any calculations can you suggest whose volume is greater? Verify it by finding the volume of both the cylinders. Check whether the cylinder with greater volume also has greater surface area?



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

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

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32. A milk tank is in the form of cylinder whose radius is 1.5 m and length 7 m.

Find the quantity of milk in litres that can be stored in the tank.

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33. If each edge of a cube is doubled,

How many times will its surface area increase?

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

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35. Water is pouring into cubiodal reservior at the 60 litres per minute. If the volumne of reserve is $108m^3$. Find the number of hours it will take to fill the reservoir.

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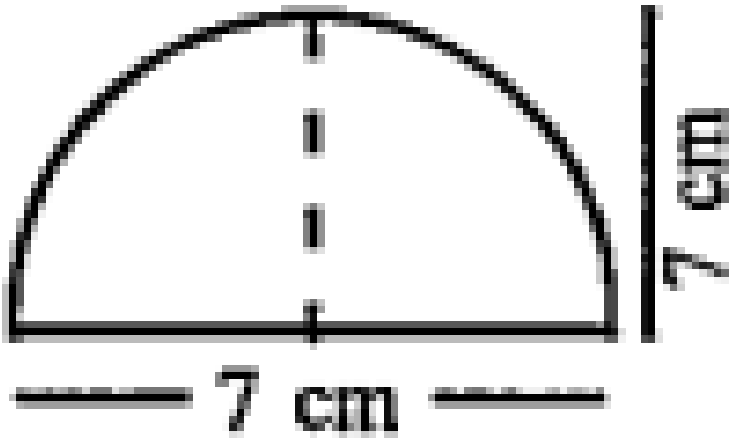
36. Match the following figures with their respective areas in the box.



(ii)

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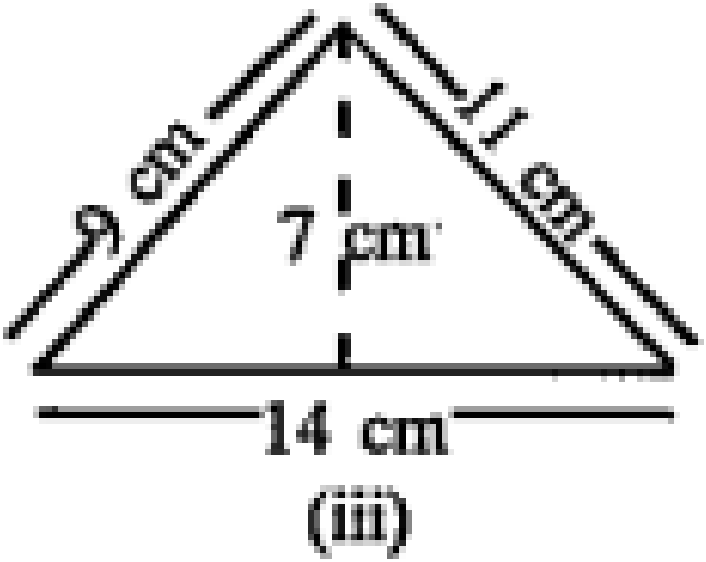
37. Match the following figures with their respective areas in the box.



(iii)

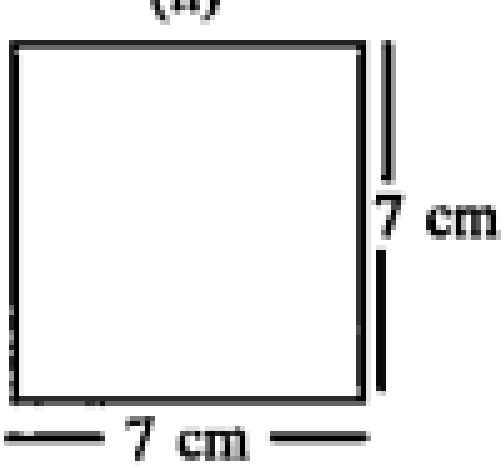
Watch Video Solution

38. Match the following figures with their respective areas in the box.

(iv)

Watch Video Solution

39. Match the following figures with their respective areas in the box.



(v)

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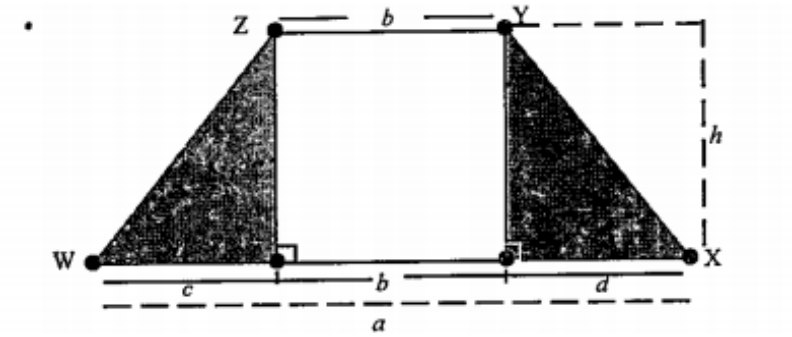
40. Nazm's sister also has a trapezium shaped plot. Divide it into three parts as shown. Show that the area

of trapezium $WXYZ = h\dfrac{a+b}{2}$



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41. The area of a triangle and a area of trapezium WXYZ are same (condition?). Get the expression for the area of trapezium by using the expression for the area of triangle.

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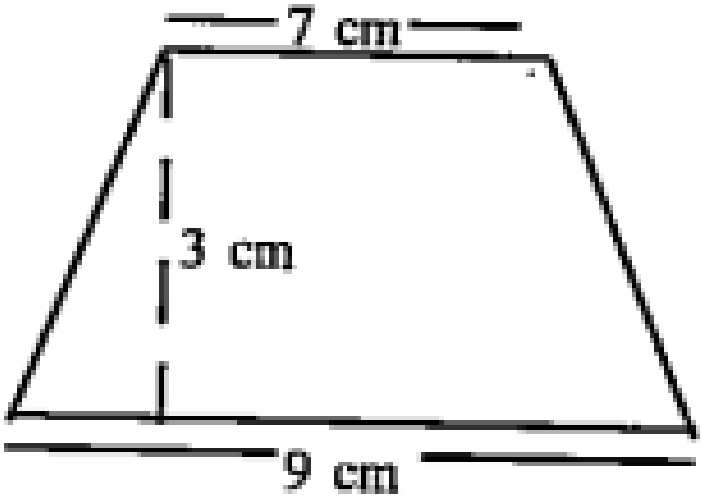
42. Find the area of the following



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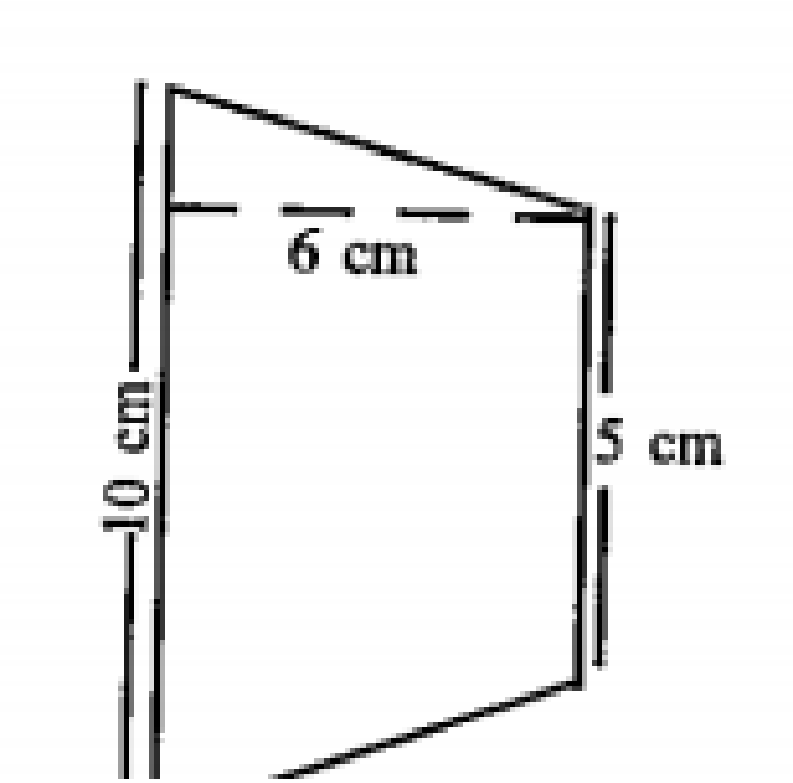
43. Find the area of the following



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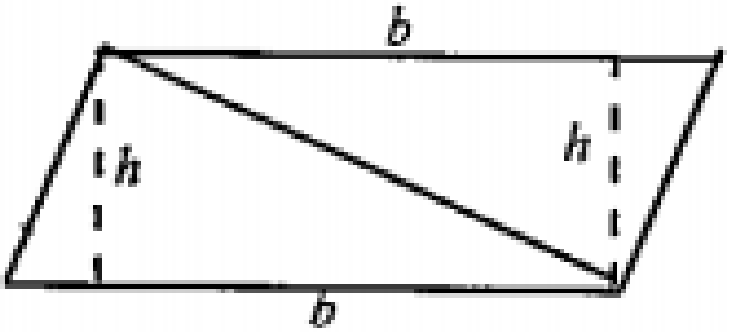
44. We know that parallelogram is also a quadrilateral.

Let us also split such a quadrilateral into two triangles,

find their areas ad hence that of the parallelogram . Does this agree with the formula that you know already?



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45. A parallelogram is divided into two congruent triangles by drawing a diagonal acros sit. Can we divide a trapezium into two congruent triangles?

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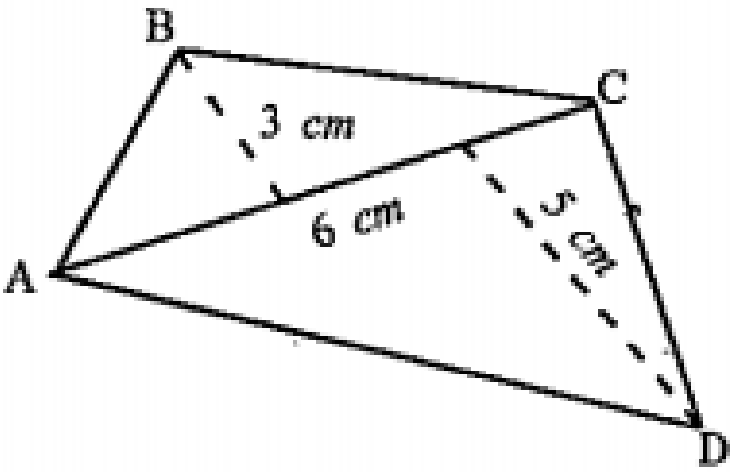
46. Find the area of these quadrillaterals.



(i)

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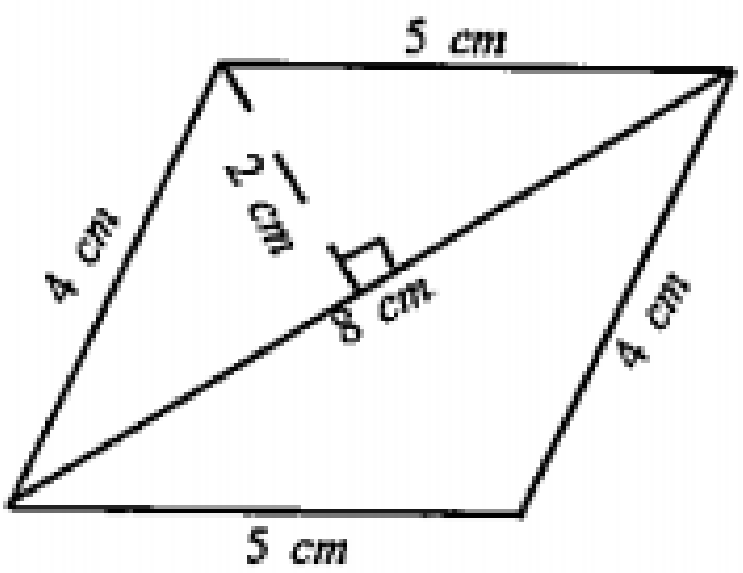
47. Find the area of these quadrillaterals.



(iii)

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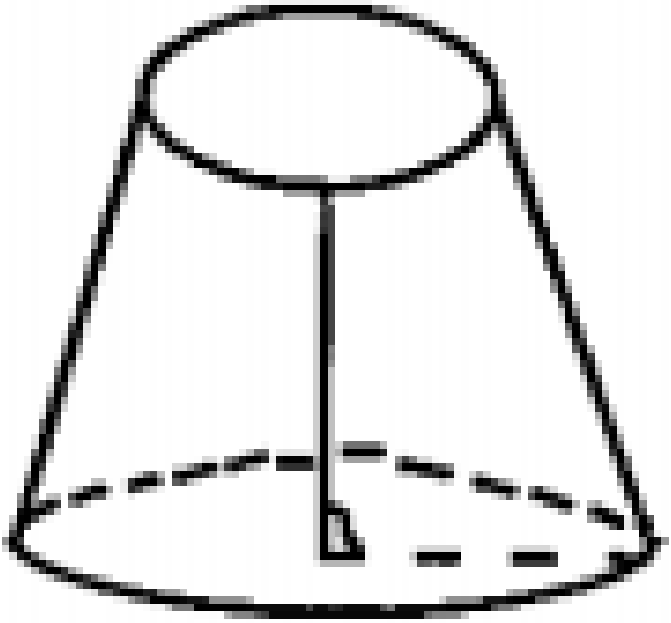
48. Why is it incorrect to call the solid shown here a cylinder?



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49. Can we say that the total surface area of cuboid = lateral surface area $+2 \times$ area of base?

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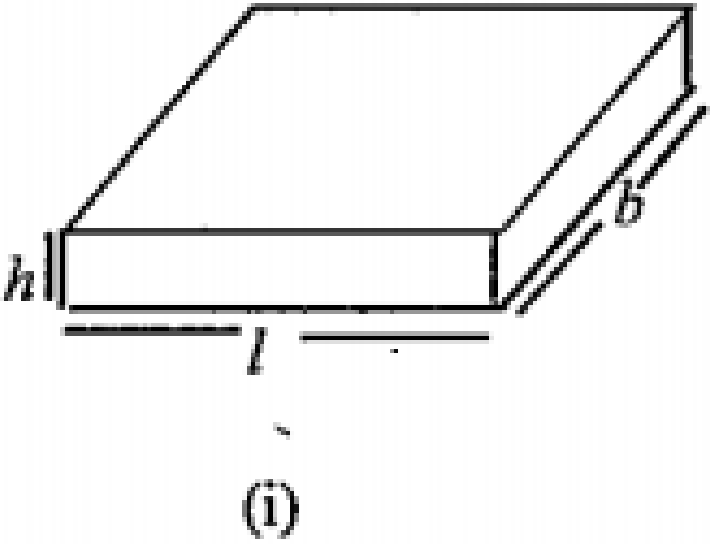
50. If we interchange the lenths of the base and the height of a cuboid to get another cuboid, will its lateral surface area change?



(i)

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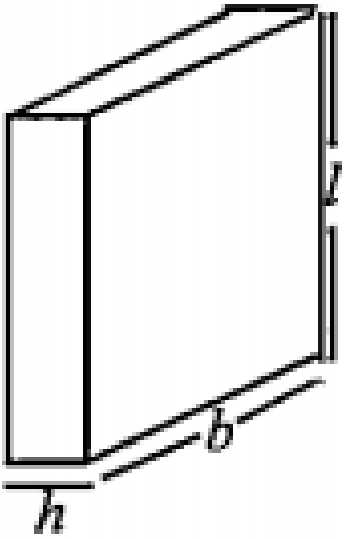
51. If we interchange the lenths of the base and the height of a cuboid to get another cuboid, will its lateral surface area change?



(ii)

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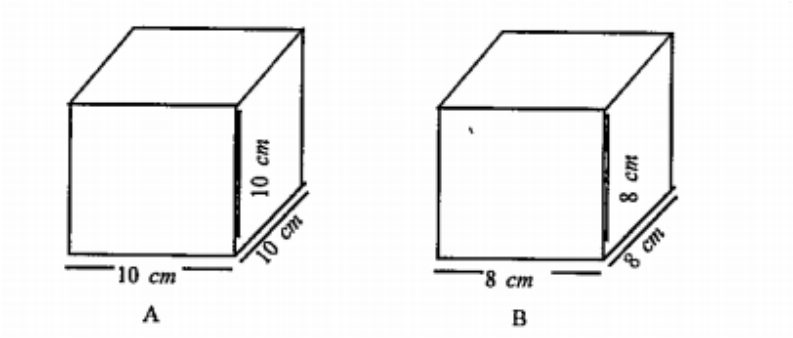
52. Find the surface area of cube A and lateral surface area of cube B.



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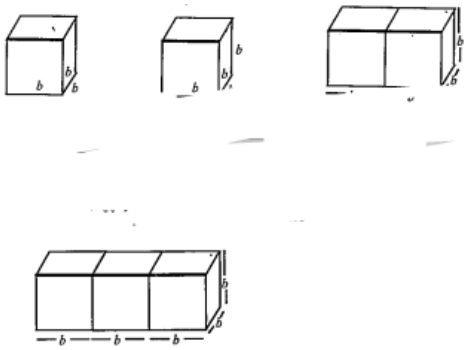
53. Two cubes each with side b are joined to form a cuboid. What is the surface area of this cuboid? Is it $12b^2$? Is the surface area of cuboid formed by joining

three such cubes, $18b^2$? Why?



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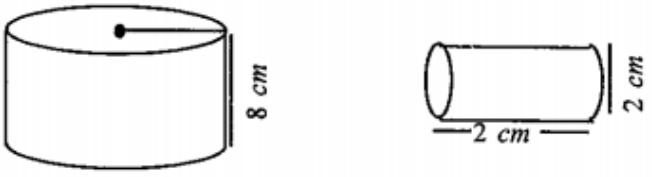
54. Find total surface area of the following cylinders.



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55. Note that lateral surface area of a cylinder is the circumference of $base \times height$ of cylinder. Can we write lateral surface area of a cuboid as perimeter of $base \times height$ of cuboid?

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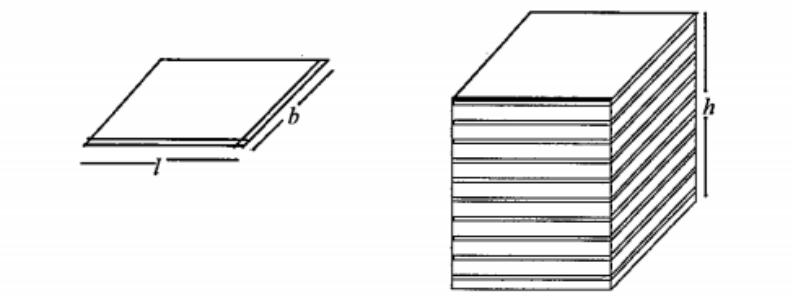
56. Take a sheet of paper. Measure its area. Pile up such sheets of paper of same size to make cuboid. Measure the height of this pile. Find the volumne of the couboid by finding the product of the area of the sheet and the height of this pile of sheets.

This activity illustrates the idea that volume of a solid can ve deduce by thsi method also (if the base and top

of the solid are congruent and parallel to each other and its edges are perpendicular to the base). Can you think of such objects whose volumne can be found by using this method?



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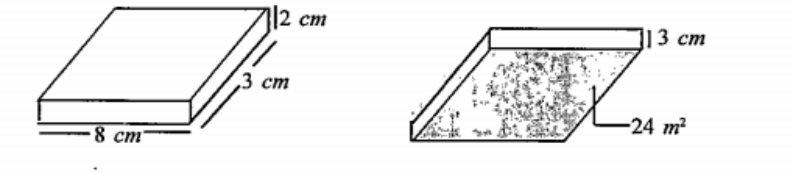
57. Find the volume of the following cuboids.



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58. Find the volume of the following cubes.

with a side 4 cm

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59. Find the volume of the following cubes.

with a side 1.5 m

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60. A company sells biscuitws. For packing purpose they are using cuboidal boxes : box

$A \to 3cm \times 8cm \times 20cm, b \otimes B \to 4cm \times 12cm \times 10cm$

. What size of the box will be econmical for the company? Why? Can you suggest any other size (dimensions) which has the sdame volumne but is more economical than these?

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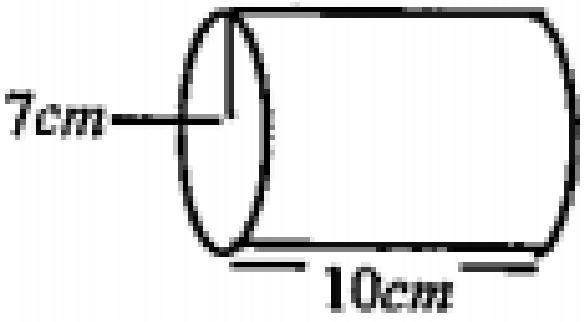
61. Find the volume of the following cylinders.



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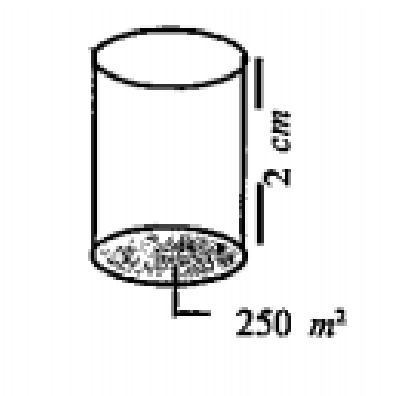
62. Find the volumne of the following cylinders.



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