INDIAN SCHOOL AL WADI AL KABIR

Class IX, Mathematics

Case Study Based-Heron's Formula

19-04-2023

Q. No.	

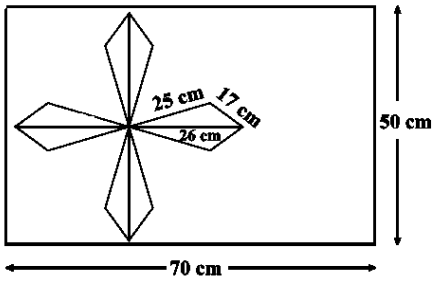
Case Study Based

I

Rohan is very intelligent in maths. He always tries to relate the concept of maths in daily life. In his classroom he noticed a rectangular tile and a design made on the tile. He observed that the design shows 8 identical triangles. Rohan, along with his friend found out the dimensions of the rectangular tile and also the sides of each triangular design on the rectangular tile.

Rectangular Tile: Length = 70 cm, Breadth = 50 cm

Sides of each triangle: 26 cm, 17 cm, 25 cm



Rohan's friend asked him to help answer the following questions:

1.	Find the area and perimeter of the rectangular tile.	1m
2.	Find the semi perimeter of the triangle.	1m
3.	Find the area of one triangle.	2m
4.	Find the total area of the design and the remaining area of the tile excluding the design.	2m

II

Mr Sharma makes a triangular garden table in the balcony of his house. He designs the garden table in the form of an isosceles triangle with perimeter 8m. The ratio of the equal side of the garden table to its base is 3 : 2.

Based on the above information answer the following questions.

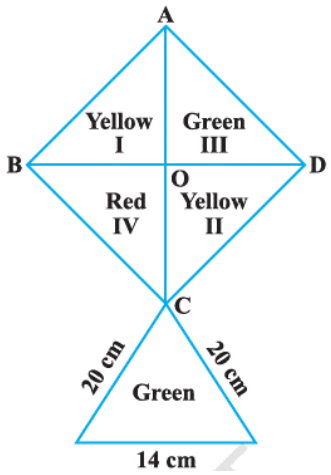
5.	Find the sides of the garden table.	1m
6.	Find the semi-perimeter of the garden table.	1m
7.	If Mr. Sharma wants to polish the top of his garden table, find the area to be polished.	2m

III

Kite Festival is a popular festival in India and it takes place during Makar Sankranti in the month of January.

Lakshmi and her friends decides to make kites for the kite festival, the outline of which is given.

ABCD is a square with diagonal 44 cm.

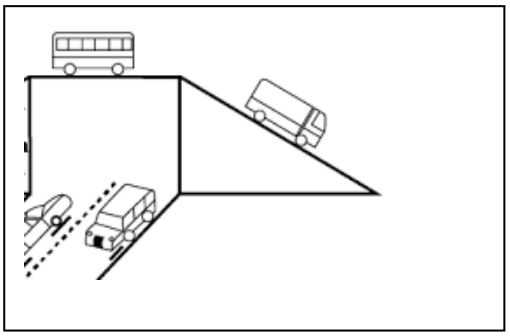


8.	Find the area of yellow shade needed in making the kite.	1m
9.	Find the area of red shade needed for the kite.	1m
10.	Find the area of green shade needed for the kite.	2m

IV

The triangular side walls of a flyover have been used for advertisements. The sides of the walls are 13 m, 14 m and 15 m. The advertisements yield an earning of ₹ 2000 per m^2 a year.

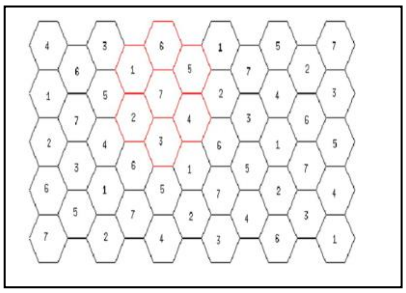
Based on the above information answer the following questions.

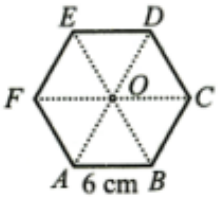


11.	Find the perimeter of the triangular side wall.	1m
12.	Does the sides 13m, 14m and 15m form the sides of a right triangle.	1m
13.	Find the rent paid by the company for hiring one of the the side walls for 1 year.	2m
14.	A company hired one of its walls for 6 months. How much rent did it pay?	2m

V

While designing the GSM distribution of a city or a state, the locality is divided in the shape of hexagons. The hexagon shape of the cells helps the engineers locate the best position to place the tower. The adequate placing of the tower is necessary so that the signal gets radiated evenly in all directions. Hence, the hexagon geometric shape finds its application in communication engineering.





A regular hexagon has a side 6 cm. The three diagonal divides the hexagon into six congruent equilateral triangles with side 6 cm.

Based on the above information answer the following questions.

15.	Find the perimeter of the hexagon.	1m
16.	Find the area of one equilateral triangle.	1m
17.	Find the area of the hexagon.	2m

Answers

Answers	**1**	$3500cm^2$, 240cm	**2**	34cm	**3**	$204\ cm^2$	**4**	$1632cm^2$, $1868\ cm^2$			
	5	3m, 3m, 2m	**6**	4m	**7**	$2\sqrt{2}cm^2$	**8**	$484\ cm^2$			
	9	$242\ cm^2$	**10**	$(242+21\sqrt{39})cm^2$	**11**	42m	**12**	No			
	13	₹168000	**14**	₹84000	**15**	36 cm	**16**	$9\sqrt{3}cm^2$	**17**	$54\sqrt{3}cm^2$	