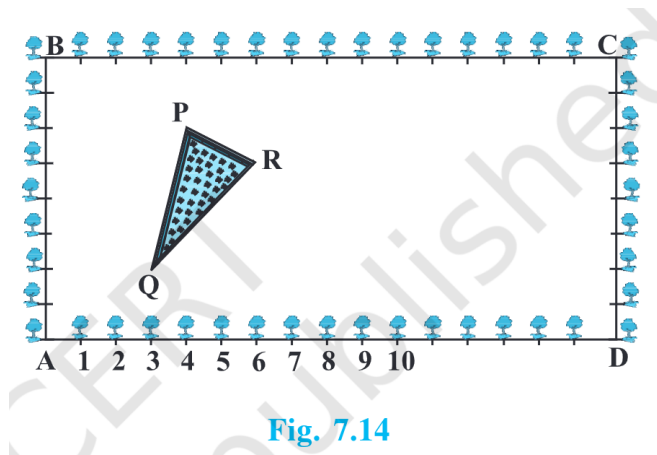


CHAPTER-7
COORDINATE GEOMETRY

Exercise 7.4

1. Determine the ratio in which the line $2x + y - 4 = 0$ divides the line segment joining the points $A(2, -2)$ and $B(3, 7)$.
2. Find a relation between x and y if the points (x, y) , $(1, 2)$ and $(7, 0)$ are collinear.
3. Find the centre of a circle passing through the points $(6, -6)$, $(3, -7)$ and $(3, 3)$.
4. The two opposite vertices of a square are $(-1, 2)$ and $(3, 2)$. Find the coordinates of the other two vertices.
5. The Class X students of a secondary school in Krishinagar have been allotted a rectangular plot of land for their gardening activity. Sapling of Gulmohar are planted on the boundary at a distance of 1m from each other. There is a triangular grassy lawn in the plot as shown in the Fig.7.14. The students are to sow seeds of flowering plants on the remaining area of the plot.



(i) Taking A as origin, find the coordinates of the vertices of the triangle.

(ii) What will be the coordinates of the vertices of $\triangle PQR$ if C is the origin?

Also calculate the areas of the triangles in these cases. What do you observe?

6. The vertices of a $\triangle ABC$ are A(4,6), B(1,5) and C(7,2). A line is drawn to intersect sides AB and AC at D and E respectively, such that $\frac{AD}{AB} = \frac{AE}{AC} = \frac{1}{4}$. Calculate the area of $\triangle ADE$ and compare it with the area of the $\triangle ABC$.

7. Let A (4, 2), B(6, 5) and C(1, 4) be the vertices of $\triangle ABC$.

(i) The median from A meets BC at D. Find the coordinates of the point D.

(ii) Find the coordinates of the point P on AD such that $AP : PD = 2 : 1$

(iii) Find the coordinates of points Q and R on medians BE and CF respectively such that $BQ : QE = 2 : 1$ and $CR : RF = 2 : 1$.

(iv) What do you observe?

Note : The point which is common to all the three medians is called the centroid and this point divides each median in the ratio 2 : 1.

If $A(x_1, y_1)$, $B(x_2, y_2)$ and $C(x_3, y_3)$ are the vertices of $\triangle ABC$, find the coordinates of the centroid of the triangle.

8. ABCD is a rectangle formed by the points A(-1, -1), B(-1, 4), C(5, 4) and D(5, -1). P, Q, R and S are the mid-points of AB, BC, CD and DA respectively. Is the quadrilateral PQRS a square? a rectangle? or a rhombus? Justify your answer.