Latex Assgnment10

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Ex 10.7.4

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 two other 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 Fig. 1. 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 tthe 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 the $\triangle AD$ and compare it with he area of $\triangle ABC$.
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 points 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?
   (v) 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 triangle.

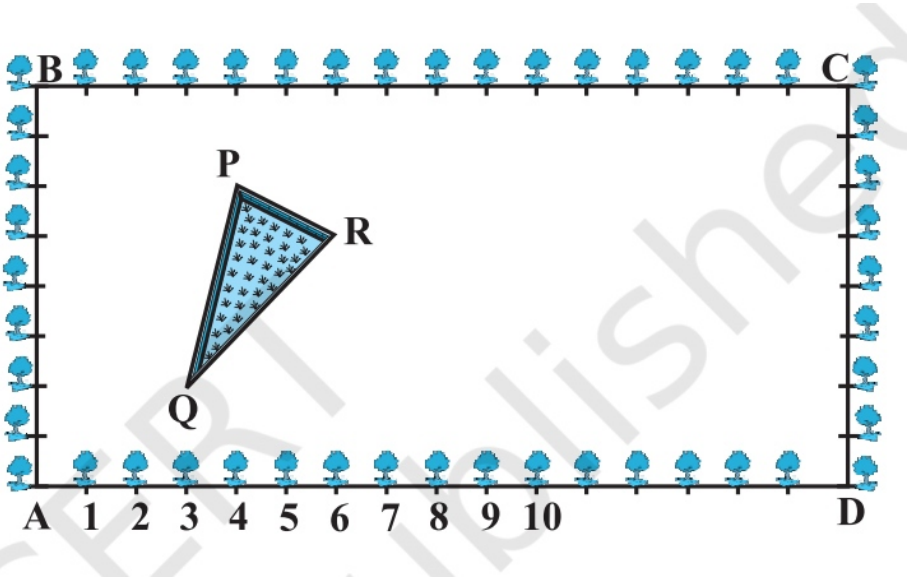

Figure 1: 7.14

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.