Topic -Coordinate Geometry

Learning Outcomes

- Students will be able to apply concept of coordinates to find the unknown coordinates of a point.
- They will be able to check Co linearity of three points.
- They will be able to apply midpoint formula to solve the given problem

ASSERTION REASON

Q1. Assertion: To do farming in a paddy field, we can aptly use the knowledge of coordinate geometry.

Reasoning: Distance formula and section formula helps in doing so.

Choose the correct option.
(A) Both Assertion (A) and Reason(R) are true, and Reason(R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason(R) are true, but Reason(R) is not the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason(R) is false.

(D) Assertion (A) is false, but Reason(R) is true.

CASE STUDY

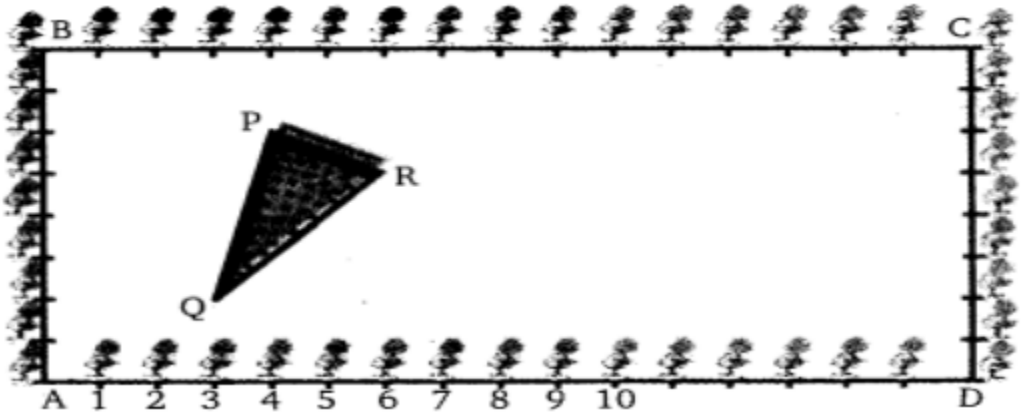
Q2. A market is in the form of a triangle whose vertices are B (–2, 0), C (1, 12). The Third vertex A of this triangle lies on the midpoint of the line joining the points D (2, 1) and E (4, 13).

On the basis of this information answer the following questions:

(i) What will be the coordinates of A ?

(ii) Are points A, D, E are collinear? Justify?

Q3. The class X school students in krishnagar have been allotted a rectangular plot of land for their gardening activity. Saplings of Gulmohar are planted on the boundary at a distance of 1 m from each other. There is triangular grassy lawn in the plot as shown in the figure. The students are to sow seeds of flowering plants on the remaining area of the plot.



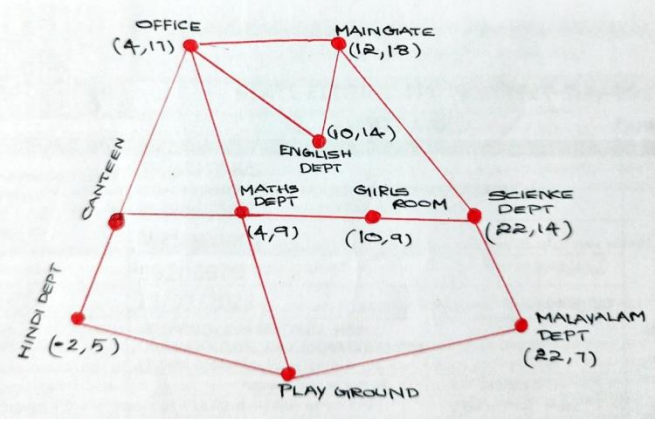
a) What will be the coordinates of R, if C is the origin?
b) What will be the coordinates of Q, if C is the origin?
c) Calculate the area of the triangles if A is the origin.

OR

Calculate the area of the triangles if C is the origin -

Q4. Answer the questions based on the below information:

Shown below is a map of a college compound.



Following are the information collected by analysing the map

- **Hindi department, canteen and office of garden lie in a straight line**
- **The distance between the Hindi department and cantinas half the distance between the canteen and office**
- **The Maths department is exactly midway between the office and the ground.**
    a) **What is the X coordinate of the canteens location**
    b) **What is the shortest distance between the girls room and the science department**
    c) **What are the coordinates of the ground**
    d) **What is the shortest distance between the main gate and science department**

Q5. In class 10, a demo class on Coordinate geometry was conducted. Children were so enthusiastic. The teacher asked 4 of them to come up for the same. Preethi (5, 5), Minu (-5, 5), Joy (-1, -2) and Alsam (0,0) were made to stand on the floor. Teacher asked them to form:

i. A right triangle. Is it possible? If yes, how?
ii. An isosceles triangle
iii. Find the mid-point of the line-segment joining Preethi and Joy

ANSWER KEY

1. (a) Assertion is true, Reasoning is the correct explanation for Assertion
2. i) co-ordinate of A (3, 7)
ii) Yes, as distance AD = distance DE
iii) Co-ordinate of bakery shop (-1/2, 6)
3. a) (10,3) b) (13, 6) c) 4.5 OR 4.5
4. **a) (0,13) b) 2.13 c) (4,1) d) $2\sqrt{29}$**
5. i. Yes, a right triangle is possible with Aslam (0,0), Preethi (5, 5) and Minu (-5, 5)
$\mathrm{AP} = \sqrt{50}, \mathrm{AM} = \sqrt{50}, \mathrm{PM} = \sqrt{100} = 10$
$AP^2 + AM^2 = PM^2$
ii. Isosceles triangle with $\mathrm{AP} = \mathrm{AM} = \sqrt{50}$ is possible.
iii.

Midpoint of PJ is $\left(\frac{5+-1}{2}, \frac{5+-2}{2}\right) = \left(\frac{4}{2}, \frac{3}{2}\right) = \underline{\underline{\left(2, \frac{3}{2}\right)}}$