1. Find the distance between the points $\mathbf{A}(-\frac{7}{3}, 5)$ and $\mathbf{B}(\frac{2}{3}, 5)$.

2. Check whether 13cm, 12cm, 5cm can be the sides of a right triangle.

3. (a) If PL and PM are two tangents to a circle with centre O from an external point **P** and $PL = 4$ cm, find the length of OP, where radius of the circle is 3 cm.

   (b) Find the distance between two parallel tangents of a cicle of radius 2.5 cm.

4. Find the coordinates of the points which divides the line segment joining the points $\mathbf{A}(7, -1)$ and $\mathbf{B}(-3, -4)$ in the ratio $2 : 3$.

5. To divide a line segment QP internally in the ratio $2 : 3$, we draw a ray QY such that $\angle$ PQY is acute. What will be the minimum number of points to be located at equal distances on the ray QY ?

6. Answer any four of the following questions :

   (i) The point which divides the line segment joining the points $(7, -6)$ and $(3, 4)$ in the ratio $1 : 2$ lies in

   (A) I quadrant
   (B) II quadrant
   (C) III quadrant
   (D) IV quadrant

   (ii) If the $\mathbf{A}(1, 2)$, $\mathbf{O}(0, 0)$ and $\mathbf{C}(a, 6)$ are collinear, then the value of a is

   (A) 6
   (B) $\frac{3}{2}$
   (C) 3
   (D) 12

   (iii) The distance between the points $\mathbf{A}(0, 6)$ and $\mathbf{B}(0, -2)$ is

   (A) 6 units
   (B) 8 units
   (C) 4 units
   (D) 2 units

   (iv) If $(\frac{a}{3}, 4)$ is the mid-point of the line segment joining the points $(-6, 5)$ and $(-2, 3)$, then the value of 'a ' is

   (A) -4
   (B) 4
   (C) -12
   (D) 12

(v) What kind of triangle is formed with vertices $\mathbf{A}(0,2)$, $\mathbf{B}(-3,0)$ and $\mathbf{C}(3,0)$?

(A) A right triangle

(B) An equilateral triangle

(C) An isosceles triangle

(D) A scalene triangle

7. (a) If the distance between the points $(k,-2)$ and $(3,-6)$ is 10 units, find the positive value of k.

   (b) Find the length of the segment joining $\mathbf{A}(-6,7)$ and $\mathbf{B}(-1,-5)$.Also, find the mid-point of AB.

8. A man goes 5 metres due to West and then 12 metres due North. How far is he from the starting point ?

9. Students of a school are standing in rows and columns in their school playground to celebrate their annual sports day. **A**, **B**, **C** and **D** are the positions of four students as shown in the figure.

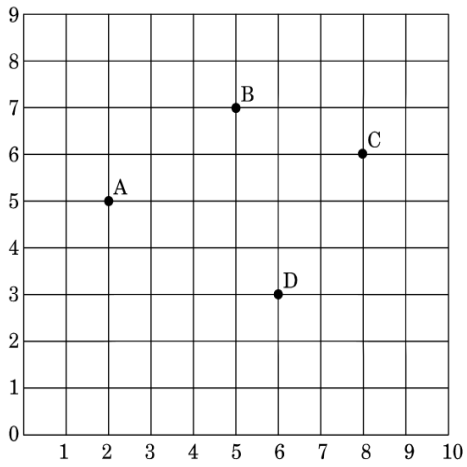

Figure 1: Based on the above, answer the following question :

(i) The figure formed by the points **A**, **B**, **C** and **D** is a

(A) sqaure

(B) parallelogram

(C) rhombus

(D) quadrilateral

(ii) If the sports teacher is sitting at the origin, then which of the four students is closest to him ?

(A) **A**
(B) **B**
(C) **C**
(D) **D**

(iii) The distance between **A** and **C** is

(A) $\sqrt{37}$ units
(B) $\sqrt{35}$ units
(C) 6 units
(D) 5 units

(iv) The coordinates of the mid-point of line segment AC are

(v) If a point **P** divides the line segment AD in the ratio $1 : 2$, then coordinates of **P** are

(A) $(\frac{8}{3}, \frac{8}{3})$
(B) $(\frac{10}{3}, \frac{13}{3})$
(C) $(\frac{13}{3}, \frac{10}{3})$
(D) $(\frac{16}{3}, \frac{11}{3})$

10. (a) Check whether the points $\mathbf{P}(5, -2)$, $\mathbf{Q}(6, 4)$ and $\mathbf{R}(7, -2)$ are the vertices of an isosceles triangle PQR.

    (b) Find the ratio in which $\mathbf{P}(4, 5)$ divides the join of $\mathbf{A}(2, 3)$ and $\mathbf{B}(7, 8)$.

11. The coordinate of the three consecutive vertices of a parallelogram ABCD are $\mathbf{A}(1, 3)$, $\mathbf{B}(-1, 2)$, and $\mathbf{C}(2, 5)$. Find the cordinates of the fourth vertex **D**.

12. (a) If $\mathbf{P}(2, 2)$, $\mathbf{Q}(-4, -4)$ and $\mathbf{R}(5, -8)$ are the vertices of a $\triangle$PQR, then find the length of the median through **R**.

    (b) Find the ratio in which y-axis divides the line segment joining the points $\mathbf{A}(5, -6)$ and $\mathbf{B}(-1, -4)$.Also, find the coordinates of the point of intersection.

13. (a) Find the ratio in which the line segment joining the points $\mathbf{A}(1, -5)$ and $\mathbf{B}(-4, 5)$ is divided by the ax-axis. Also, find coordinates of the point of division.

    (b) The points $\mathbf{A}(0, 3)$, $\mathbf{B}(-2, a)$ and $\mathbf{C}(-1, 4)$ are the vertices of a rigth triangle, right-angled at **A**. Find the value of a.