



# MATHS

## BOOKS - S CHAND MATHS (ENGLISH)

### BASIC CONCEPTS OF POINTS AND THEIR COORDINATES

#### Exercise 15 A

1. Where will a point lie if (i) its ordinate is zero, (ii) its abscissa is zero?



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2. Where will a point lie if (i) the abscissa equals the ordinate, (ii) the, positive abscissa equals the negative of the positive ordinate?



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## Exercise 15 B

1. Find the mid-points of the lines joining

- (i)  $(5, 8), (9, 11)$ , (ii)  $(0, 0), (8, -5)$ , (iii)  
(iv)  $(-7, 0), (0, 10)$ , (v)  $(-4, 3), (6, -7)$ ,



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2. Find the mid-points of the sides of a triangle whose vertices are

$$A(1, -1)B(4, -1)C(4, 3).$$



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3. Find the centre of a circle if the end points of a diameter are

$$A(-5, 7) \text{ and } B(3, -11).$$



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4. If M is the mid-point of AB, find the co-ordinates of :

(i) A if the co-ordinates of M and B are M

$(2, 8)$  and  $B(-4, 19)$

and (ii) B if the co-ordinates of A and M are

$A(-1, 2)$ ,  $M(-2, 4)$ .



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5. Find the distance between each of the following pairs of points:

(i)  $(7,9)$  ,  $(4,5)$ : (ii)  $(15, 11)$ ,  $(3, 6)$  : (iii)  $(4, -5)$ ,  $(0, 0)$ : (iv)  $(2, -11)$ ,  $(-4, -3)$



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6. Find the radius of the circle that has its centre at  $(0, -4)$  and passes through  $(\sqrt{13}, 2)$ .



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7. Find the lengths of the sides of the triangle whose vertices are

$A(3, 4)$ ,  $B(2, -1)$  and  $C(4, -6)$ .



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8. The vertices of

$$\triangle ABC$$

are

$$A(-1, 3), B(1, 1) \text{ and } C(5, 1).$$

Find the length of the median to (i) AB, (ii) AC, (iii) BC.



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9. A circle has its centre at the origin and a radius of

$$\sqrt{12}.$$

State whether each of the following points is on, outside or inside the circle:

$$(1, -\sqrt{7}), (3, 5), (2, 2\sqrt{2}).$$



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**10.** Find the coordinates of the points which divides internally the join of the points

(i)  $(8, 9)$  and  $(-7, 4)$

in the ratio

$2:3$ , (ii)  $(1, -2)$  and  $(4, 7)$

in the ratio

$1:2$ .



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**11.** Find the coordinates of the point which divides externally the join of the points

(i)  $(-4, 4)$  and  $(1, 7)$

in the ratio  $2:1$ , (ii)  $(3, 4)$  and  $(-6, 2)$

in the ratio

$3:2$ .



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**12.** Find the coordinates of the points of trisection of the line joining the points  $(2, 3)$  and  $(6, 5)$ .



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**13.** The line joining the points  $(3, 2)$  and  $(6, 8)$  is divided into four equal parts, find the coordinates of

the points of section.



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**14.** In what ratio does the point

$$\left(1, \frac{-7}{2}\right)$$

divide the join of

$$(-2, -4) \text{ and } \left(2, \frac{-10}{3}\right) ?$$



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**15.** In what ratio is the line joining the points

(i)  $(2, -3)$  and  $(5, 6)$  divided by the x - axis, (ii)  $(3, -6)$  and

$(-6, 8)$  divided by the y - axis?



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16. Find the ratio in which the axes divide the line joining the points  $(2, 5)$  and  $(1, 9)$ .



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17. Find the centroid of the triangle whose angular points are  $(-4, 6)$ ,  $(2, -2)$  and  $(2, 5)$  respectively.



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**18.** If

$(x_1, y_1) = (2, 3)$ ,  $x_2 = 3$  and  $y_3 = -2$  and  $G$  is  $(0, 0)$ ,

find

$y_2$  and  $x_3$ .



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**19.** Find the coordinates of the in-centre of the triangle whose vertices are  $(-36, 7)$ ,  $(20, 7)$  and  $(0, -8)$ .



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1. Find the area of the triangle whose vertices are

(i)  $(4,2)$ ,  $(4,5)$  and  $(-2, 2)$ ,

(ii)  $(0, 0)$ ,  $(-2,3)$  and  $(10,7)$ ,

(iii)  $(a, 0)$ ,  $(0, b)$  and  $(x, y)$ .



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2. Find the area of the quadrilateral whose vertices are

(i)  $(1, 1)$ ,  $(7, -3)$ ,  $(12, 2)$  and  $(7, 21)$ ,

(ii)  $(1, 1)$ ,  $(3, 4)$ ,  $(5, -2)$  and  $(4, -7)$ .



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3. If  $(7,a)$ ,  $(-5,2)$  and  $(3,6)$  are collinear, find  $a$ .



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4. If the area of the quadrilateral whose angular points A, B, C, D taken in order are  $(1, 2)$ ,  $(-5, 6)$ ,  $(7, -4)$  and  $(-2, k)$  be zero, find the value of  $k$ .



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5. The straight lines

$$y = m_1x + c_1, y = m_2x + c_2, \text{ and } x = 0$$

intersect in the three points P, Q, and R. Find the area

of the triangle PQR. What is the value of the area if

$$c_1 = c_2?$$



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## Chapter Test

1. Centroid of a triangle is  $(1, 4)$  and two of its vertices are  $(4, -3)$  and  $(-9, 7)$ . Find the area of the triangle.



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2. Find the third vertex of a triangle if two of its vertices are at  $(-1, 4)$  and  $(5, 2)$  and the medians

through these vertices meet at  $(0, -3)$ .



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