





32. Prove that the points  $(3, 0)$ ,  $(6, 4)$  and  $(-1, 3)$  are the vertices of a right angled isosceles triangle.  
**CBSE 2016, Outside Delhi (30/1)**
33. Find a relation between  $x$  &  $y$  such that the point  $P(x, y)$  is equidistant from the points  $A(-5, 3)$  and  $B(7, 2)$ .  
**CBSE Sample Paper 2016**
34. If  $A(5, 2)$ ,  $B(2, -2)$  and  $C(-2, t)$  are the vertices of a right angled triangle with  $\angle B = 90^\circ$ , then find the value of  $t$ .  
**CBSE 2015, Delhi (30/1/1)**
35. Find the ratio in which the point  $P\left(\frac{3}{4}, \frac{5}{12}\right)$  divides the line segment joining the points  $A\left(\frac{1}{2}, \frac{3}{2}\right)$  and  $B(2, -5)$ .  
**CBSE 2015, Delhi (30/1/1)**
36. Show that the points  $(a, a)$ ,  $(-a, -a)$  and  $(-\sqrt{3}a, \sqrt{3}a)$  are the vertices of an equilateral triangle.  
**CBSE 2015, Foreign (30/2/1)**
37. For what value of  $k$  are the points  $(8, 1)$ ,  $(3, -2k)$  and  $(k, -5)$  collinear?  
**CBSE 2015, Foreign (30/2/1)**
38. The points  $A(4, 7)$ ,  $B(p, 3)$  and  $C(7, 3)$  are the vertices of a right triangle, right-angled at  $B$ . Find the value of  $p$ .  
**CBSE 2015, Outside Delhi (30/1)**
39. Find the relation between  $x$  and  $y$  if the points  $A(x, y)$ ,  $B(-5, 7)$  and  $C(-4, 5)$  are collinear.  
**CBSE 2015, Outside Delhi (30/1)**
40. If a point  $A(0, 2)$  is equidistant from the points  $B(3, p)$  and  $C(p, 5)$ , then find the value of  $p$ .  
**CBSE 2012, Delhi (30/1/1)**
41. Find the ratio in which the line segment joining the points  $(1, -3)$  and  $(4, 5)$  is divided by  $x$ -axis.  
**CBSE 2012, Foreign (30/2/1)**
42. Find the value of  $k$ , if the point  $P(2, 4)$  is equidistant from the points  $A(5, k)$  and  $B(k, 7)$ .  
**CBSE 2012, Outside Delhi (30/1)**
43. Find the value(s) of  $x$  for which the distance between the points  $P(x, 4)$  and  $Q(9, 10)$  is 10 units.  
**CBSE 2011, Delhi (30/1/1)**
44. Find the relation between  $x$  and  $y$  such that point  $P(x, y)$  is equidistant from the points  $A(1, 4)$  and  $B(-1, 2)$ .  
**CBSE 2011, Foreign (30/2/1)**
45. Find the value of  $y$  for which the distance between the points  $A(3, -1)$  and  $B(11, y)$  is 10 units.  
**CBSE 2011, Outside Delhi (30/1)**
46. Show that the points  $(-2, 5)$ ,  $(3, -4)$  and  $(7, 10)$  are the vertices of a right angled isosceles triangle.  
**CBSE 2009, Foreign (30/2/1)**
47. The centre of a circle is  $(2\alpha - 1, 7)$  and it passes through the point  $(-3, -1)$ . If the diameter of the circle is 20 units, then find the value(s) of  $\alpha$ .  
**CBSE 2009, Foreign (30/2/1)**
48. If  $C$  is a point lying on the line segment  $AB$  joining  $A(1, 1)$  and  $B(2, -3)$  such that  $3AC = CB$ , then find the coordinates of  $C$ .  
**CBSE 2009, Foreign (30/2/1)**
49. If the points  $A(4, 3)$  and  $B(x, 5)$  are on the circle with the centre  $O(2, 3)$ , find the value of  $x$ .  
**CBSE 2009, Outside Delhi (30/1)**
50. Find the value of  $k$  if the points  $(k, 3)$ ,  $(6, -2)$  and  $(-3, 4)$  are collinear.  
**CBSE 2008, Foreign (30/2/1), (30/2/2), (30/2/3)**
51. The coordinates of the vertices of  $\triangle ABC$  are  $A(4, 1)$ ,  $B(-3, 2)$  and  $C(0, k)$  given that the area of  $ABC$  is 12 unit<sup>2</sup>, find the value of  $k$ .  
**CBSE Sample Paper III 2008**
52. Find the values of  $x$  for which the distance between the point  $P(2, -3)$  and  $Q(x, 5)$  is 10 units.  
**CBSE Sample Paper II 2008**
53. Find a point on the  $y$ -axis which is equidistant from the points  $A(6, 5)$  and  $B(-4, 3)$ .  
**CBSE Sample Paper I 2008**

### 3 Marks:

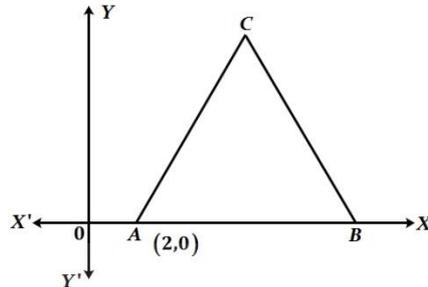
54. The vertices of a triangle are  $A(-1,3)$ ,  $B(1, -1)$  and  $C(5,1)$ . Find the length of the median through the vertex  $C$ .

CBSE Sample Paper 2017

55. Find the coordinates of the points of trisection of the line segment joining the points  $(3, -2)$  and  $(-3, -4)$ .

CBSE 2017, Foreign (30/2/1)

56. In the given figure,  $\Delta ABC$  is an equilateral triangle of side 3 units. Find the coordinates of the other two vertices.



CBSE 2017, Foreign (30/2/1)

57. Show that  $\Delta ABC$  with vertices  $A(-2,0)$ ,  $B(0,2)$  and  $C(2,0)$  is similar to  $\Delta DEF$  with vertices  $D(-4,0)$ ,  $F(4,0)$  and  $E(0,4)$ .

CBSE 2017 (30/2/1), (30/1/1)

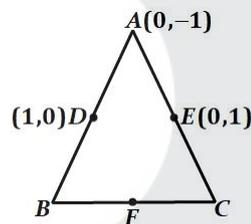
58. The area of a triangle is 5 sq units. Two of its vertices are  $(2,1)$  and  $(3, -2)$ . If the third vertex is  $(\frac{7}{2}, y)$ , find the value of  $y$ .

CBSE 2017, Delhi (30/1/1)

59. If the point  $C(-1, 2)$  divides internally the line-segment joining the points  $A(2, 5)$  and  $B(x, y)$  in the ratio 3 : 4, find the value of  $x^2 + y^2$ .

CBSE 2016, Foreign (30/2/1)

60. In figure,  $ABC$  is a triangle coordinates of whose vertex  $A$  are  $(0, -1)$ .  $D$  and  $E$  respectively are the mid-points of the sides  $AB$  and  $AC$  and their coordinates are  $(1,0)$  and  $(0,1)$  respectively. If  $F$  is the mid-point of  $BC$ , find the areas of  $\Delta ABC$  and  $\Delta DEF$ .



CBSE 2016, Delhi (30/1/1)

61. If the point  $P(x, y)$  is equidistant from the points  $A(a + b, b - a)$  and  $B(a - b, a + b)$ . Prove that  $bx = ay$ .

CBSE 2016, Outside Delhi (30/1)

62. Find the area of the triangle  $ABC$  with  $A(1, -4)$  and mid-points of sides through  $A$  being  $(2, -1)$  and  $(0, -1)$ .

CBSE 2015, Delhi (30/1/1)

63. Point  $A$  lies on the line segment  $PQ$  joining  $P(6, -6)$  and  $Q(-4, -1)$  in such a way that  $\frac{PA}{PQ} = \frac{2}{5}$ . If point  $P$  also lies on the line  $3x + k(y + 1) = 0$ , find the value of  $k$ .

CBSE 2015, Foreign (30/2/1)

64. If the coordinates of points  $A$  and  $B$  are  $(-2, -2)$  and  $(2, -4)$  respectively, find the coordinates of  $P$  such that  $AP = \frac{3}{7}AB$ , where  $P$  lies on the line segment  $AB$ .

CBSE 2015, Outside Delhi (30/1)

65. If the point  $P(k - 1, 2)$  is equidistant from the points  $A(3, k)$  and  $B(k, 5)$ , find the values of  $k$ .

CBSE 2014, Outside Delhi (30/1)

66. Find the ratio in which the line segment joining the points  $A(3, -3)$  and  $B(-2, 7)$  is divided by  $x$ -axis. Also find the coordinates of the point of division.

CBSE 2014, Outside Delhi (30/1), (30/2), (30/3)

67. Prove that the diagonals of a rectangle  $ABCD$ , with vertices  $A(2, -1)$ ,  $B(5, -1)$ ,  $C(5, 6)$  and  $D(2, 6)$ , are equal and bisect each other.

CBSE 2014, Foreign (30/2)

68. Find a point  $P$  on the  $y$ -axis which is equidistant from the points  $A(4, 8)$  and  $B(-6, 6)$ . Also find the distance.  $AP$ .

**CBSE 2014, Foreign (30/3)**

69. A point  $P$  divides the line segment joining the points  $A(3, -5)$  and  $B(-4, 8)$  such that  $\frac{AP}{PB} = \frac{k}{1}$ . If  $P$  lies on the line  $x + y = 0$ , then find the value of  $k$ .  
**CBSE 2012, Delhi (30/1/1)**

70. If the vertices of a triangle are  $(1, -3)$ ,  $(4, p)$  and  $(-9, 7)$  and its area is 15 sq. Units, find the value(s) of  $p$ .  
**CBSE 2012, Delhi (30/1/1)**

71. If  $(3,3)$ ,  $(6, y)$ ,  $(x, 7)$  and  $(5,6)$  are the vertices of a parallelogram taken in order, find the values of  $x$  and  $y$ .  
**CBSE 2011, Delhi (30/1/1)**

72. If two vertices of an equilateral triangle are  $(3,0)$  and  $(6,0)$ , find the third vertex.  
**CBSE 2011, Delhi (30/1/1)**

73. Find the value of  $k$ , if the points  $P(5,4)$ ,  $Q(7, k)$  and  $R(9, -2)$  are collinear.  
**CBSE 2011, Delhi (30/1/1)**

74. Find the area of the quadrilateral  $ABCD$  whose vertices are  $A(3, -1)$ ,  $B(9, -5)$ ,  $C(14, 0)$  and  $D(9, 19)$ .  
**CBSE 2011, Foreign (30/2/1)**

75. Find the coordinates of the points which divide the line segment joining  $A(2, -3)$  and  $B(-4, -6)$  into three equal parts.  
**CBSE 2011, Foreign (30/2/1)**

76. Show that the points  $A(3, 5)$ ,  $B(6, 0)$ ,  $C(1, -3)$  and  $D(-2, 2)$  are the vertices of a square  $ABCD$ .  
**CBSE 2011, Foreign (30/2/1)**

77. Find a relation between  $x$  and  $y$  if the points  $(x, y)$ ;  $(1, 2)$  and  $(7, 0)$  are collinear.  
**CBSE 2009, Foreign (30/2/1)**

78. Find the ratio in which the line segment joining the points  $A(3, -6)$  and  $B(5, 3)$  is divided by  $x$ -axis. Also find the coordinates of the point of intersection.  
**CBSE Sample Paper III 2008**

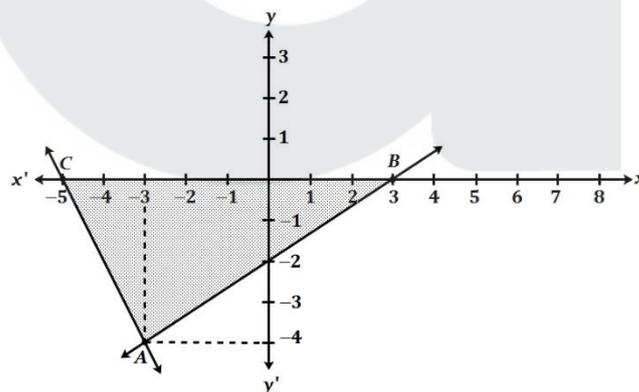
79. Find the relation between  $x$  and  $y$  such that the point  $P(x, y)$  is equidistant from the points  $A(2, 5)$  and  $B(-3, 7)$   
**CBSE Sample Paper III 2008**

80. Prove that the points  $A(-3, 0)$ ,  $B(1, -3)$  and  $C(4, 1)$  are the vertices of an isosceles right triangle.  
**CBSE Sample Paper II 2008**

81. For what value of ' $k$ ' the points  $A(1, 5)$ ,  $B(k, 1)$  and  $C(4, 11)$  are collinear?  
**CBSE Sample Paper II 2008**

82. In what ratio does the point  $P(2, -5)$  divide the line segment joining  $A(-3, 5)$  and  $B(4, -9)$ ?  
**CBSE Sample Paper II 2008**

83. Observe the graph given below and state whether triangle  $ABC$  is scalene, isosceles or equilateral. Justify your answer. Also find its area.



**CBSE Sample Paper I 2008**

84. Find the area of the quadrilateral whose vertices taken in order are  $A(-5, -3)$ ,  $B(-4, -6)$ ,  $C(2, -1)$  and  $D(1, 2)$ .  
**CBSE Sample Paper I 2008**

85. Prove that the points  $(7, 10)$ ,  $(-2, 5)$  and  $(3, -4)$  are the vertices of an isosceles right triangle.  
**CBSE 2013, Delhi (30/1/1)**

86. Find the ratio in which the  $y$ -axis divides the line segment joining the points  $(-4, -6)$  and  $(10, 12)$ . Also, find the coordinates of the point of division.  
**CBSE 2013, Delhi (30/1/1)**

87. For what type of  $k$ , ( $k > 0$ ), is the area of the triangle with vertices  $(-2, 5)$ ,  $(k, -4)$  and  $(2k + 1, 10)$  to 53 sq. units?  
**CBSE 2012, Foreign (30/2/1)**
88. Find the ratio in which the  $y$ -axis divides the line segment joining the points  $(5, -6)$  and  $(-1, -4)$ . Also, find the coordinates of the point of intersection.  
**CBSE 2012, Foreign (30/2/1)**
89. Find the coordinates of a point  $P$ , which lies on the line segment joining the point  $A(-2, -2)$  and  $B(2, -4)$  such that  $AP = \frac{3}{7}AB$ .  
**CBSE 2012, Outside Delhi (30/1)**
90. Find the area of the quadrilateral  $ABCD$  whose vertices are  $A(-3, -1)$ ,  $B(-2, -4)$ ,  $C(4, -1)$  and  $D(3, 4)$ .  
**CBSE 2012, Outside Delhi (30/1)**
91. If the points  $A(x, y)$ ,  $B(3, 6)$  and  $C(-3, 4)$  are collinear show that  $x - 3y + 15 = 0$ . **CBSE 2012, Outside Delhi (30/1)**
92. Point  $P(x, 4)$  lies on the line segment joining the points  $A(-5, 8)$  and  $B(4, -10)$ . Find the ratio in which point  $P$  divides the line segment  $AB$ . Also, find the value of  $x$ .  
**CBSE 2011, Outside Delhi (30/1)**
93. Find the area of the quadrilateral  $ABCD$ , whose vertices are  $A(-3, -1)$ ,  $B(-2, -4)$ ,  $C(4, -1)$  and  $D(3, 4)$ .  
**CBSE 2011, Outside Delhi (30/1)**
94. Find the area of the triangle formed by joining the mid-points of the sides of the triangle whose vertices are  $A(2, 1)$ ,  $B(4, 3)$  and  $C(2, 5)$ .  
**CBSE 2011, Outside Delhi (30/1)**
95. Point  $P$  divides the line segment joining the points  $A(2, 1)$  and  $B(5, -8)$  such that  $\frac{AP}{PB} = \frac{1}{3}$ . If  $P$  lies on the line  $2x - y + k = 0$ , find the value of  $k$ .  
**CBSE 2010, Delhi (30/1/1)**
96. If  $R(x, y)$  is a point on the line segment joining the points  $P(a, b)$  and  $Q(b, a)$ , then prove that  $x + y = a + b$ .  
**CBSE 2010, Delhi (30/1/1)**
97. If point  $P\left(\frac{1}{2}, y\right)$  lies on the line segment joining the points  $A(3, -5)$  and  $B(-7, 9)$ , then find the ratio in which  $P$  divides  $AB$ . Also find the value of  $y$ .  
**CBSE 2010, Foreign (30/2/1)**
98. Find the value of  $k$  for which the point  $A(9, k)$ ,  $B(4, -2)$  and  $C(3, -3)$  are collinear.  
**CBSE 2010, Foreign (30/2/1)**
99. Find the point on  $y$ -axis which is equidistant from the points  $(5, -2)$  and  $(-3, 2)$ .  
**CBSE 2009, Delhi (30/1/1)**
100. The line segment joining the points  $A(2, 1)$  and  $B(5, -8)$  is trisected at the point  $P$  and  $Q$  such that  $P$  is nearer to  $A$ . If  $P$  also lies on the line given by  $2x - y + k = 0$ , find the value of  $k$ .  
**CBSE 2009, Delhi (30/1/1)**
101. If  $P(x, y)$  is any point on the line joining the points  $A(a, 0)$  and  $B(0, b)$ , then show that  $\frac{x}{a} + \frac{y}{b} = 1$ .  
**CBSE 2009, Delhi (30/1/1)**
102. Find the ratio in which the point  $(2, y)$  divides the line segment joining the points  $A(-2, 2)$  and  $B(3, 7)$ . Also find the value of  $y$ .  
**CBSE 2009, Outside Delhi (30/1)**
103. Find the area of the quadrilateral  $ABCD$  whose vertices are  $A(-4, -2)$ ,  $B(-3, -5)$ ,  $C(3, -2)$  and  $D(2, 3)$ .  
**CBSE 2009, Outside Delhi (30/1)**
104. If  $P$  divides the join of  $A(-2, -2)$  and  $B(2, -4)$  such that  $\frac{AP}{PB} = \frac{3}{7}$ , find the coordinates of  $P$ .  
**CBSE 2008, Foreign (30/2/1)**
105. The mid-points of the sides of triangle are  $(3, 4)$ ,  $(4, 6)$  and  $(5, 7)$ . Find the coordinates of the vertices of the triangle.  
**CBSE 2008, Foreign (30/2/1), (30/2/2), (30/2/3)**
106. Show that  $A(-3, 2)$ ,  $B(-5, -5)$ ,  $C(2, -3)$  and  $D(4, 4)$  are the vertices of a rhombus.  
**CBSE 2008, Foreign (30/2/2)**
107. Find the ratio in which the line  $3x + y - 9 = 0$  divides the line-segment joining the points  $(1, 3)$  and  $(2, 7)$   
**CBSE 2008, Foreign (30/2/3)**

#### 4 Marks:

108. The points  $A(1, -2)$ ,  $B(2, 3)$ ,  $C(k, -2)$  and  $D(-4, -3)$  are the vertices of a parallelogram. Find the value of  $k$  and the altitude of the parallelogram corresponding to the base  $AB$ . **CBSE Sample Paper 2017**

109. If  $a \neq b \neq 0$ , prove that the points  $(a, a^2)$ ,  $(b, b^2)$ ,  $(0, 0)$  will not be collinear. **CBSE 2017, Delhi (30/1/1)**

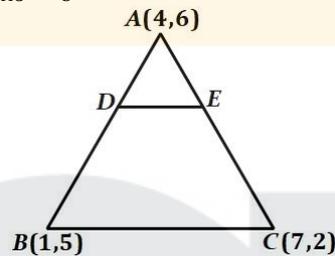
110. If  $P(9a - 2, -b)$  divides the line segment joining  $A(3a + 1, -3)$  and  $B(8a, 5)$  in the ratio  $3 : 1$ . Find the values of  $a$  &  $b$ . **CBSE Sample Paper 2016**

111. Find the coordinates of the points which divide the line segment joining  $A(2, -3)$  and  $B(-4, -6)$  into three equal parts. **CBSE Sample Paper 2016**

112. The co-ordinates of the points  $A, B$  and  $C$  are  $(6, 3)$ ,  $(-3, 5)$  and  $(4, -2)$  respectively.  $P(x, y)$  is any point in the plane. Show that  $\frac{\text{ar}(\triangle PBC)}{\text{ar}(\triangle ABC)} = \left| \frac{x+y-2}{7} \right|$  **CBSE 2016, Foreign (30/2/1)**

113. Prove that the area of a triangle with vertices  $(t, t - 2)$ ,  $(t + 2, t + 2)$  and  $(t + 3, t)$  is independent of  $t$ . **CBSE 2016, Delhi (30/1/1)**

114. In figure, the vertices of  $\triangle ABC$  are  $A(4, 6)$ ,  $B(1, 5)$  and  $C(7, 2)$ . A line-segment  $DE$  is drawn to intersect the sides  $AB$  and  $AC$  at  $D$  and  $E$  respectively such that  $\frac{AD}{AB} = \frac{AE}{AC} = \frac{1}{3}$ . Calculate the area of  $\triangle ADE$  and compare it with area of  $\triangle ABC$ .



**CBSE 2016, Outside Delhi (30/1)**

115. If  $A(-4, 8)$ ,  $B(-3, -4)$ ,  $C(0, -5)$  and  $D(5, 6)$  are the vertices of a quadrilateral  $ABCD$ , find its area.

**CBSE 2015, Delhi (30/1/1)**

116. The base  $BC$  of an equilateral triangle  $ABC$  lies on  $y$ -axis. The coordinates of point  $C$  are  $(0, -3)$ . The origin is the mid-point of the base. Find the coordinates of the points  $A$  and  $B$ . Also find the coordinates of another point  $D$  such that  $BACD$  is a rhombus. **CBSE 2015, Foreign (30/2/1)**

117. Find the values of  $k$  so that the area of the triangle with vertices  $(1, -1)$ ,  $(-4, 2k)$  and  $(-k, -5)$  is 24 sq. Units.

**CBSE 2015, Outside Delhi (30/1)**

118. If  $A(-3, 5)$ ,  $B(-2, -7)$ ,  $C(1, -8)$  and  $D(6, 3)$  are the vertices of a quadrilateral  $ABCD$ , find its area.

**CBSE 2014, Outside Delhi (30/1)**

119.  $A(4, -6)$ ,  $B(3, -2)$  and  $C(5, 2)$  are the vertices of a  $\triangle ABC$  and  $AD$  is its median. Prove that the median  $AD$  divides  $\triangle ABC$  into two triangles of equal areas. **CBSE 2014, Outside Delhi (30/2)**

120. If  $A(4, 2)$ ,  $B(7, 6)$  and  $C(1, 4)$  are the vertices of a  $\triangle ABC$  and  $AD$  is its median, prove that the median  $AD$  divides  $\triangle ABC$  into two triangles of equal areas. **CBSE 2014, Outside Delhi (30/3)**

121. The three vertices of a parallelogram  $ABCD$  are  $A(3, -4)$ ,  $B(-1, -3)$  and  $C(-6, 2)$ . Find the coordinates of vertex  $D$  and find the area of  $ABCD$ . **CBSE 2013, Delhi (30/1/1)**