

## ASSIGNMENT CLASS XI STRAIGHT LINES

1. Find the ratio in which the line  $x - y - 2 = 0$  divides the line segment joining the points  $(3, -1)$  and  $(8, 9)$ . Find the coordinates of this point.
2. A quadrilateral has the vertices at the points  $(-4, 2)$ ,  $(2, 6)$ ,  $(8, 5)$  and  $(9, -7)$ . Show that the mid points of the sides of the quadrilateral are the vertices of a parallelogram.
3. The points A  $(0, 0)$ , B  $(1, 7)$ , C  $(5, 1)$  are the vertices of a triangle. Find the length of perpendicular from A to BC and hence the area of triangle ABC.
4. Find the equations of the sides of the triangle whose vertices are  $(-1, 8)$ ,  $(4, -2)$  and  $(-5, -3)$ .
5. Find the equations of the straight lines, which passes through the point  $(3, 4)$  and have intercepts on the axes such that their sum is 14.
6. Find point of intersection of the median of a triangle whose vertices are  $(-1, 0)$ ,  $(5, -2)$  and  $(8, 2)$ .
7. Find coordinates of the orthocenter of the triangle whose angular points are  $(1, 2)$ ,  $(2, 3)$  and  $(4, 3)$ .
8. Find coordinates of circumcentre of the triangle whose angular points are  $(4, -3)$ ,  $(-2, 1)$  and  $(2, 3)$ .
9. Show that the medians of the triangle with vertices  $(-1, 1)$ ,  $(3, 10)$  and  $(4, 2)$  are concurrent.
10. Show that the perpendicular bisectors of the sides of the triangle with vertices  $(-3, 2)$ ,  $(-1, 7)$  and  $(4, 3)$  are concurrent.
11. Show that the altitudes of the triangle with vertices  $(-4, -3)$ ,  $(1, 10)$  and  $(5, 5)$  are concurrent.
12. Find the angles between the lines  $x + 2y = 3$  and  $2x - 3y = 4$ .
13. Find the angles of a triangle whose sides are  $x + 2y - 8 = 0$ ;  $3x + y - 1 = 0$  and  $x - 3y + 7 = 0$ .
14. For what value of k, lines  $3x + y - 2 = 0$ ;  $kx + 2y - 3 = 0$  and  $2x - y - 3 = 0$  are concurrent?
15. Prove that line  $5x - 2y - 1 = 0$  is mid parallel to the lines  $5x - 2y - 9 = 0$  and  $5x - 2y + 7 = 0$ .
16. Find the image of the point  $(1, 2)$  in the line  $x - 3y + 4 = 0$ .
17. Find the image of the point  $(4, -3)$  in the line  $x + y + 1 = 0$ .
18. Find the distance of the line  $4x + 7y + 5 = 0$  from the point  $(1, 2)$  along the line  $2x - y = 0$ .
19. Find the equation of the line passing through the intersection of the lines  $x - 3y + 1 = 0$  and  $2x + 5y - 9 = 0$  and whose distance from the origin is  $\sqrt{5}$  units.
20. Find the equations of straight lines which are perpendicular to the line  $3x + 4y - 7 = 0$  and are at a distance of 3 units from  $(2, 3)$ .

**ANSWERS** 1. 2:3;  $(5, 3)$     3.  $\frac{17}{\sqrt{13}}$  units, 17 sq. units    4.  $2x + y - 6 = 0$ ;  $x - 9y - 22 = 0$ ;  $11x - 4y + 43 = 0$

5.  $x + y = 7$ ;  $4x + 3y = 24$     6.  $(4, 0)$     7.  $(1, 6)$     8.  $\left(\frac{9}{7}, \frac{-4}{7}\right)$     12.  $\tan^{-1}\left(\frac{7}{4}\right)$     13.  $45^\circ, 45^\circ, 90^\circ$     14.  $k = 5$

16.  $\left(\frac{6}{5}, \frac{7}{5}\right)$     17.  $(2, -5)$     18.  $\frac{23\sqrt{5}}{18}$  units    19.  $2x + y - 5 = 0$     20.  $4x - 3y + 16 = 0$ ,  $4x - 3y - 14 = 0$