SECTION AND MIDPOINT FORMULA AND EQUATION OF LINE

1) In what ratio does the point M(p,-1) divide the line segment joining the points A(1,-3) and B(6,2) ?Hence find the value of p.

2) A(-4,4) ,B(X,-1) and C(6,Y) are the vertices of triangle ABC.If the centroid of this triangle ABC is at the origin, find the values of X and Y.

3) A(2,5),B(-1,2),andC(5,8)) are the vertices of triangle ABC.P andQ are points on AB and AC respectively such that AP:PB =AQ:QC=1:2.

(a)Find the co-ordinates of points P

and Q (b)show that BC=3*PQ

4) show that the points (a,b),(a+3,b+4),(a-1,b+7) and (a-4,b+3) are the vertices of a parallelogram.

5) what point on x-axis is equidistant from the points (6,7) and (4,-3)?

6) In general point on y-axis is represented as ----------

7) In general point on x-axis is represented as ----------

8)**E**QUATION parallel to x-axis is ----------

9) Equation parallel to y-axis is ----------

10) Find the ratio in which the line 2x+3y-5=0 divides the line segment joining the points (8,-9) and (2,1).Also, find the co-ordinates of the point of division.

11) if the mid point of the line segment joining the points A(3,4),(k,6) is P(x,y) and x+y-10=0, find the value of k.

12) Find the co-ordinates of the point Q on x-axis which lies on the perpendicular bisector of the line segment joining the points A(-5,-2) and B(4,2).Name the type of the triangleQAB.

13) Find the co-ordinates of the circumcenter of the triangle whose vertices are (3,0) ,(-1,-6) and (4,-1).Also find its circumradius.

14)Find the ratio in which the two co-ordinate axex divide the line segment joining the points (-2,5)and (1,-9).

15)the point P divides the join of (2,1) and (-3,6) in the ratio 2:3. Does P lie on the line x-5y+15=0?

16)if P(9a-2,-b) divide the line segment joining the points A(3a+1,-3) and B(8a,5) In the ratio 3:1.find the values of a and b.

17)P(1,-2) is a point on the line segment A(3,-6)and B(x,y) such that AP:PB is equal to 2:3. Find the co-ordinates of B.

18) Prove that the points A(-5,4) B(-1,-2) and C(5,2) are the vertices of an isosceles right angled triangle. Find the co-ordintates of D so that ABCD is a square.

19) The line joining the points (2,-1) and (5,-8) is trisected at the points P and Q. if point P Lie on the line 2x-y+k=0, find the value of k. Also find the co- ordinates of point Q.

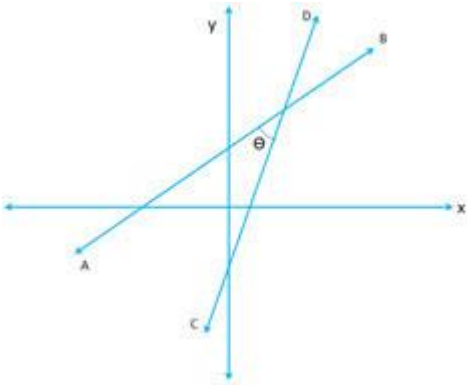
20) A(20,0) and B(10,-20) are two fixed points. Find the co-ordinates of the point P in AB such that 3PB=AB. Also , find the co-ordinates of some other point Q in AB such that AB=6AQ.

Equation of Line:

Question 1: A line intersects $x-axis$ at point $(-2,0)$ and cuts off an intercept of 3 units from the positive side of $y-axis$. Find the equation of the line.

Question 2: Find the equation of a line passing through the point $(2,3)$ and having the $x-intercept$ of 4 units.

Question 3: The given figure (not drawn to scale) shows two straight lines $AB\ and\ CD$. If equation of the line $ABisy=x+1$ and equation of CD is $y=\sqrt{3}x-1$. Write down the inclination of lines $AB\ and\ CD$; also, find the angle between $AB\ and\ CD$



Question 4: Write down the equation of the line whose gradian is $\frac{2}{3}$ and which passes through P , where P divides the line segment joining $A(-2, 6)\ and\ B(3, -4)$ in the ratio $2 : 3$

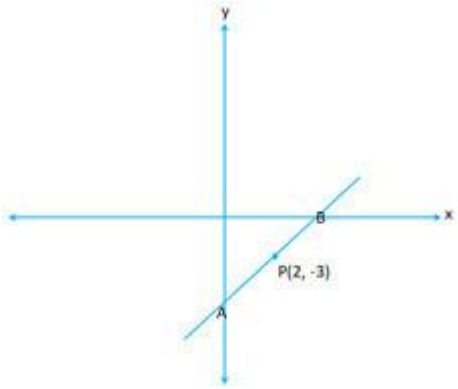
Question 5: Point $A\ and\ B$ have co-ordinates $(7, 3)\ and\ (1, 9)$ respectively. Find:

(i) The slope of AB

(ii) The equation of perpendicular bisector of the line segment AB

(iii) The value of $p\ of\ (-2, p)$ lies on it

Question 6: $A\ and\ B$ are two points on the $x - axis\ and\ y - axis$ respectively. $P(2, -3)$ is the mid-point of AB . Find the



(i) Co-ordinates of $A \ and \ B$

(ii) Slope of line AB

(iii) Equation of line AB

Question 7: The equation of a line is $3x + 4y - 7 = 0$. Find:

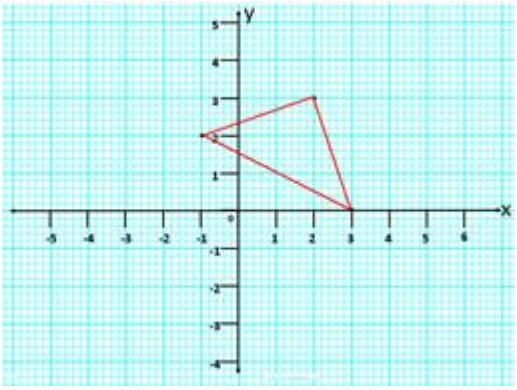
(i) Slope of the line.

(ii) The equation of a line perpendicular to the given line and passing through the intersection of the lines $x - y + 2 = 0$ and $3x + y - 10 = 0$

Question 8: $ABCD$ is a parallelogram
where $A(x, y), B(5, 8), C(4, 7) \ and \ D(2, -4)$. Find:

(i) Co-ordinates of A

(ii) Equation of diagonal BD



Question 9: From the given figure, find:

(i) The co-ordinates of $A, B, \ and \ C$.

(ii) The equation of the line through $A$and parallel to BC.

Question 10: $P(3,4), Q(7,-2) \ and \ R(-2,-1)$ are the vertices of triangle PQR. Write down the equation of the median of the triangle through R.

Question 11: Find the value of k for which the lines $kx - 5y + 4 = 0$ and $5x - 2y + 5 = 0$ are perpendicular to each other.

Question 12: A straight line passes through the points $P(-1,4) \ and \ Q(5,-2)$. It intersects the co-ordinate axes at points $A \ and \ B$. M is the mid-point of the line segment AB . Find:

- The equation of line
- The co-ordinates of $A \ and \ B$
- The co-ordinates of M

Question 13: If the lines $y = 3x + 7 \ and \ 2y + px = 3$ are perpendicular to each other, find the value of p.

Question 14: The line through $A(-2,3) \ and \ B(4,b)$ is perpendicular to the line $2x - 4y = 5$. Find the value of b

Question 15: i) Find the equation of the line passing through $(5,-3)$ and

parallel to $x - 3y = 4$.

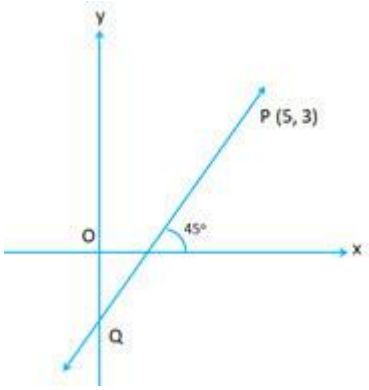
ii) Find the equation of the line parallel to the line $3x + 2y = 8$ and passing through the point $(0, 1)$

Question 16: i) Write down the equation of the line AB , through $(3, 2)$ and perpendicular to the line $2y = 3x + 5$.

ii) AB meets the $x - axis\ at\ A$ and the $y - axis$ at B . write down the co-ordinates of $A\ and\ B$. Calculate the area of triangle OAB , where O is origin.

Question 17: Find the value of a for the points $A(a, 3), B(2, 1)\ and\ C(5, a)$ are collinear. Hence, find the equation of the line.

Question 18: In, $A = (3, 5), B = (7, 8)\ and\ C = (1, -10)$. Find the equation of the median through A.



Question 19: The line through $P(5, 3)$ intersects $y - axis\ at\ Q$.

i) Write the slope of the line.

ii) Write the equation of the line.

iii) Find the co-ordinates of Q

Question 20: $A(1,4), B(3,2)\ and\ C(7,5)$ are vertices of a triangle ABC . Find:

i) The co-ordinates of the centroid of a triangle ABC .

ii) The equation of a line through the centroid and parallel to AB.