

SECTION - 3

Co-ordinate Geometry

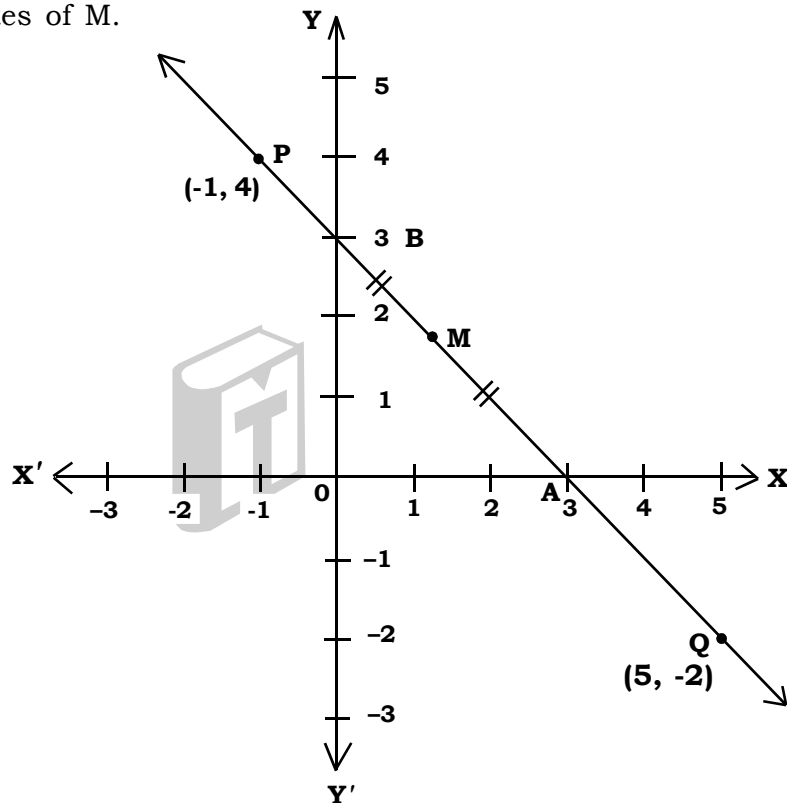
1. Reflection
2. Section and Midpoint formula
3. Equation of a Line

Submission Date : / /

Co-ordinate Geometry Assignment Sheet

2003

1. 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 segment AB . Find :
- The equation of the line.
 - The co-ordinates of A and B .
 - The co-ordinates of M .



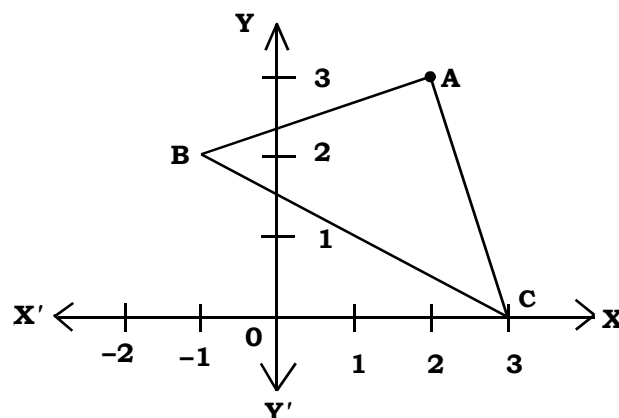
- Find the value of k for which the lines $kx - 5y + 4 = 0$ and $4x - 2y + 5 = 0$ are perpendicular to each other.
- Use a graph paper for this question. (Take 10 small divisions = 1 unit on both axes).
Plot the points $P(3, -2)$ and $Q(-3, -2)$ from P and Q , draw perpendiculars PM and QN on the x -axis.
 - Name the image of P on reflection in the origin.
 - Assign the special name to geometrical figure $PMQN$ and find its area.
 - Write the co-ordinates of the point to which M is mapped on reflection in
 - X -axis.
 - Y -axis.
 - origin.

2004

- Use a graph paper for this question. A(1, 1), B(5,1), C(4, 2) and D(2, 2) are the vertices of a quadrilateral. Name the quadrilateral ABCD. A, B, C and D are reflected in the origin on to A', B', C', and D', respectively. Locate A', B', C', and D', on the graph sheet and write their co-ordinates. Are D, A, A' and D' collinear?
- P(3, 4), Q(7, -2) and R(-2, -1) are the vertices of ΔPQR . Write down the equation of the median of the triangle, through R.
- The line joining P(-4, 5) and Q(3, 2) intersects the Y axis at R. PM and QN are perpendiculars from P and Q on the X axis. Find.
 - the ratio PR : RQ.
 - the co-ordinates of R.
 - the area of quadrilateral PMNQ.

2005

- Use a graph paper for this question. (Take 10 small division = 1 unit on both axes). P and Q have co-ordinates (0, 5) and (-2, 4).
 - P is invariant when reflected in an axis. Name the axis.
 - Find the image of Q on reflection in the axis found in (i).
 - (0, k) on reflection in the origin is invariant, Write the value of k.
 - Write the co-ordinates of the image of Q, obtained by reflecting it in the origin followed by reflection in x - axis.
- In the given figure, write
 - the co-ordinates of A, B and C.
 - the equation of the line through A and // to BC.



- Use a graph paper for this question.
The graph of a linear equation in x and y , passes through A(-1, -1) and B(2, 5). From your graph, find the values of h and k , if the line passes through $(h, 4)$ and $(\frac{1}{2}, k)$.

2006

- Use graph paper for this question.
The points A(2, 3), B(4, 5) and C(7, 2) are the vertices of $\triangle ABC$.
 - Write down the coordinates of A', B', C' if $\triangle A'B'C'$ is the image of $\triangle ABC$, when reflected in the origin.
 - Write down the coordinates of A'', B'', C'' if $\triangle A''B''C''$ is the image of $\triangle ABC$, when reflected in the x -axis.
 - Mention the special name of quadrilateral BCC''B'' and find its area.
- If the lines $y = 3x + 7$ and $2y + px = 3$ are perpendicular to each other, find the value of p .
- The line segment joining A(2, 3) and B(6, -5) is intercepted by the X-axis at the point K. Write the ordinate of the point K. Hence find the ratio in which K divides AB.
- Find the coordinates of the centroid of a triangle whose vertices are: A(-1, 3), B(1, -1) and C(5, 1)

2007

- If the line joining the points the points A(4, -5) and B(4, 5) is divided by the point P such that $\frac{AP}{AB} = \frac{2}{5}$, find the co-ordinates of P.
- Find the equation of the line parallel to the line $3x + 2y = 8$ and passing through the point (0, 1)
- The mid point of the line segment joining (2a, 4) and (-2, 2b) is (1, 2a + 1). Find the values of a and b.
- Use a graph paper for this question.
 - The point P(2, -4) is reflected about the line $x = 0$ to get the image Q. Find the co-ordinates of Q.
 - Point Q is reflected about the line $y = 0$ to get the image R. Find the co-ordinates of R
 - Name the figure PQR.
 - Find the area of figure PQR.

2008

- Point A and B have co-ordinates (7, -3) and (1, 9) respectively. Find
 - the slope of AB.
 - the equation of the perpendicular bisector of the line segment AB.
 - the value of 'p' if (-2, p) lies on it.

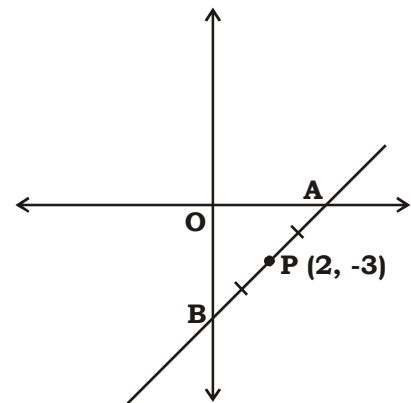
2. If $A = (-4, 3)$, $B = (8, -6)$
- Find the length of AB
 - In what ratio is the line joining AB, divided by the x -axis ?

2009

- Find the value of p for which the lines $2x + 3y - 7 = 0$ and $4y - px - 12 = 0$ are perpendicular to each other.
- Find the equation of a line with x intercept = 5 and passing through the point $(4, -7)$.

2010

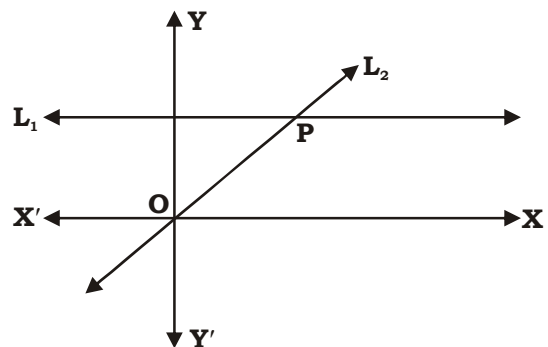
- A and B are two points on the X-axis and Y-axis respectively. $P(2, -3)$ is the mid point of AB. Find the
 - Co-ordinates of A and B.
 - Slope of line AB.
 - equation of line AB.



- (Use graph paper for this question)
 $A(0, 3)$, $B(3, -2)$ and $O(0, 0)$ are the vertices of triangle ABO.
 - Plot the triangle on a graph sheet taking 2 cm = 1 unit on both the axes.
 - Plot D the reflection of B in the Y axis, and write its co-ordinates.
 - Give the geometrical name of the figure ABOD.
- The equation of a line is $3x + 4y - 7 = 0$. Find
 - the slope of the line.
 - the equation of a line perpendicular to the given line and passing through the intersection of the lines $x - y + 2 = 0$ and $3x + y - 10 = 0$.

2011

- Given equation of line L_1 is $y = 4$
 - Write the slope of line L_2 if L_2 is the bisector of angle O.
 - Write the co-ordinates of point P.
 - Find the equation of L_2 .



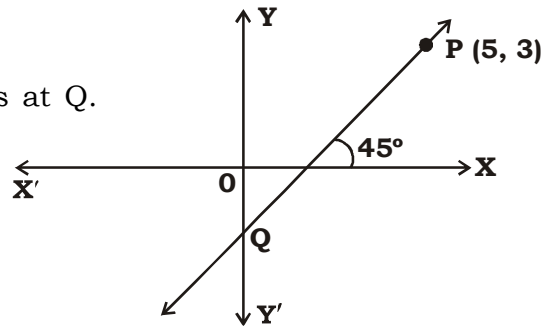
2. Use a graph paper to answer the following questions. (Take 1 cm = 1 unit on both axes)
 - (i) Plot $A(4, 4)$, $B(4, -6)$ and $C(8, 0)$, the vertices of a $\triangle ABC$.
 - (ii) Reflect ABC on the y -axis and name it as $A'B'C'$.
 - (iii) Write the co-ordinates of the images A' , B' and C' .
 - (iv) Give a geometrical name for the figure $AA'C'B'BC$

3. ABC is a triangle and $G(4, 3)$ is the centroid of the triangle. If $A = (1, 3)$, $B = (4, b)$, $C = (a, 1)$, find 'a' and 'b'. Find the length of side BC .

4. $ABCD$ 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 .

2012

1. 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 .



2. Given a line segment AB joining the points $A(-4, 6)$ and $B(8, -3)$. Find :
 - (i) the ratio in which AB is divided by the Y -axis.
 - (ii) find the co-ordinates of the point of intersection.
 - (iii) the length of AB

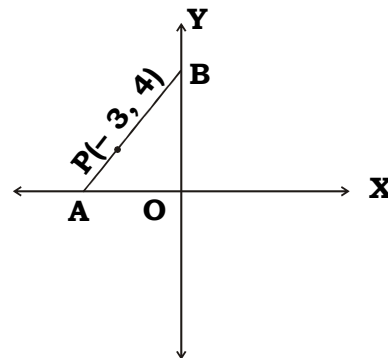
3. Using graph paper and taking 1 cm = 1 unit along both X -axis and Y -axis.
 - (i) Plot the points $A(-4, 4)$ and $B(2, 2)$.
 - (ii) Reflect A and B in the origin to get the image A' and B' respectively.
 - (iii) Write down the co-ordinates of A' and B' .
 - (iv) Give the geometrical name for the figure $ABA'B'$.

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

2013

1. AB is a diameter of a circle with centre $C = (-2, 5)$. If $A = (3, -7)$, find :
 - (i) the length of radius AC
 - (ii) The co-ordinates of B .

2. Using a graph paper, plot the points $A(6, 4)$ and $B(0, 4)$.
 (i) Reflect A and B in the origin to get the images A' and B' .
 (ii) Write the co-ordinates of A' and B' .
 (iii) State the geometrical name for the fig. $ABA'B'$.
 (iv) Find its perimeter.
3. In $\triangle ABC$, $A(3, 5)$, $B(7, 8)$ and $C(1, -10)$. Find the equation of the median through A .
4. In the figure given below, the line segment AB meets X -axis at A and Y -axis at B . The point $P(-3, 4)$ on AB divides it in the ratio $2 : 3$. Find the co-ordinates of A and B .



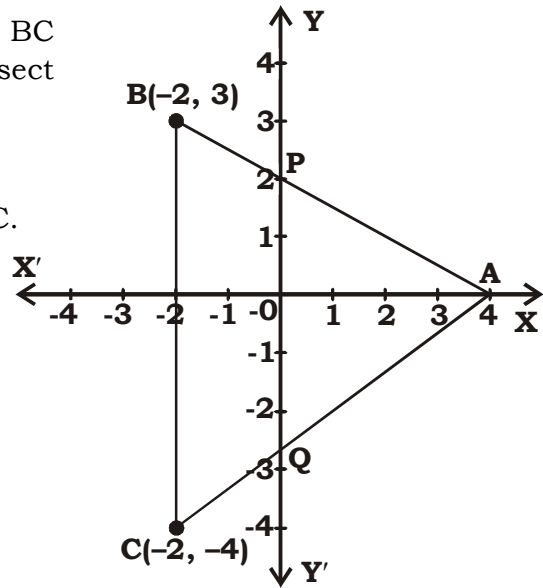
2014

1. Calculate the ratio in which the line joining $A(-4, 2)$ and $B(3, 6)$ is divided by the point $P(x, 3)$. Also, find : (i) x
 (ii) Length of AP .
2. Use graph paper to answer the following questions. (Take $2 \text{ cm} = 1 \text{ unit}$ on both axes)
 (i) Plot the points $A(-4, 2)$ and $B(2, 4)$.
 (ii) A' is the image of A when reflected in the Y -axis. Plot it on the graph paper and write the coordinates of A' .
 (iii) B' is the image of B when reflected in the line AA' . Write the co-ordinates of B' .
 (iv) Write the geometric name of the figure $ABA'B'$.
3. Find the value of 'a' for which the following points $A(a, 3)$, $B(2, 1)$ and $C(5, a)$ are collinear. Hence find the equation of the line.

2015

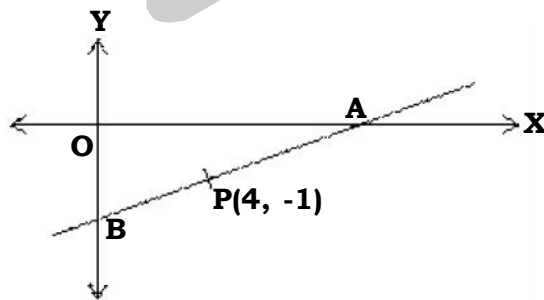
1. Three vertices of parallelogram $ABCD$ taken in order are $A(3, 6)$, $B(5, 10)$ and $C(3, 2)$. Find :
 (i) the co-ordinates of the fourth vertex D
 (ii) length of diagonal BD
 (iii) equation of the side AD of the parallelogram $ABCD$
2. Use a graph paper for this question taking $1 \text{ cm} = 1 \text{ unit}$ along both the X and Y axis:
 (i) Plot the points $A(0, 5)$, $B(2, 5)$, $C(5, 2)$, $D(5, -2)$, $E(2, -5)$ and $F(0, -5)$.
 (ii) Reflect the points B , C , D and E on the Y -axis and name them respectively as B' , C' , D' , and E' .
 (iii) Write the co-ordinates of B' , C' , D' , and E' .
 (iv) Name the figure formed by $BCDEE'D'C'B'$.

3. In the given figure ABC is a triangle and BC is parallel to the Y-axis. AB and AC intersect the Y-axis at P and Q respectively.
- Write the co-ordinates of A.
 - Find the length of AB and AC.
 - Find the ratio in which Q divides AC.
 - Find the equation of the line BC.



2016

- The slope of a line joining P (6, k) and Q (1 - 3k, 3) is $\frac{1}{2}$. Find :
 - k
 - Midpoint of PQ, using the value of 'k' found in (i).
- A line AB meets X - axis at A and Y -axis at B. P (4, -1) divides AB in the ratio 1:2.
 - Find the coordinates of A and B.
 - Find the equation of the line through P and perpendicular to AB.



- Use graph paper for this question.
(Take 2cm = 1 unit along both x and y axis)
Plot the points O(0, 0), A(-4, 4), B(-3, 0) and C(0, -3)
 - Reflect points A and B on the y axis and name the A' and B' respectively. Write down their coordinates.
 - Name the figure $OABCB'A'A'$

2017

- 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.

2. Use a graph paper for this question (Take 2 cms = 1 unit on both x and y axis)
- Plot the following points :
A(0, 4), B(2, 3), C(1, 1) and D(2, 0).
 - Reflect points B, C, D on the y -axis and write down their co-ordinates.
Name the images as B', C', D' respectively.
 - Join the points A, B, C, D, D', C', B' and A in order, so as to form a closed figure.
3. A(-1, 3), B(4, 2) and C(3, -2) are the vertices of a triangle.
- Find the co-ordinates of the centroid G of the triangle.
 - Find the equation of the line through G and parallel to AC.

