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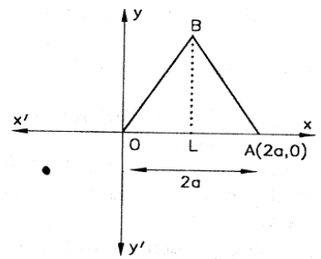
MATHEMATICS CLASS X (SA-2)

COORDINATE GEOMETRY

Q.1	Find the equation of perpendicular bisector of line joining the point (7 , 1) and (3 ,5) .
Q.2	The co-ordinates of A,B,C are (6,3), (-3,5) and (4,-2) respectively and P is any point on (x,y). show that the ratio of the areas of triangles PBC and ABC is $\left\|\frac{x+y-2}{7}\right\|$.
Q.3	The Points A(2, 9), B(a, 5), C(5, 5) are the vertices of a triangle ABC right angled at B. Find the value of 'a' and hence the area of ΔABC .
Q.4	Show that the point P(-4, 2) lies on the line segment joining the points A(-4, 6) and B(-4, -6).
Q.5	Find the value of a when the distance between the points (3, a) and (4, 1) is $\sqrt{10}$.
Q.6	Find a point on the x-axis which is equidistant from the points (7, 6) and (– 3, 4).
Q.7	For what value of k are the pints (1, 1), (3, k) and (-1, 4) collinear ?
Q.8	Coordinates of the vertices of ΔABC are A (– 4, –2), B (–3, 5) and C (K, –2). Find the positive integral value of K if area of triangle is 15 sq. units.
Q.9	Two vertices of a triangle are (1, 2), (3, 5) and its centroid is at the origin. Find the coordinates of the third vertex.
Q.10	If the points A(a, – 11), B (5, b), C (2, 15) and D (1, 1) are the vertices of a parallelogram ABCD, find the values of a and b.
Q.11	Find the coordinates of point on the line joining A(3, -4) and B(-2, 5) that is twice as far from A as from B.
Q.12	Prove that the coordinates of the pint which divided the line segment joining the pints (x_1, y_1) and (x_2, y_2) internally in the ratio **m : n** are given by $x=\frac{mx_2+nx_1}{m+n}, y=\frac{my_2+my_1}{m+n}$.
Q.13	Show that the points (a, a), (-a, -a) and $\left(-a\sqrt{3}, a\sqrt{3}\right)$ are the vertices of an equilateral triangle.
Q.14	A (1, 1) and B(2, -3) are two points and D is a point on AB produced such that AD = 3 AB. Find the coordinates of D.
Q.15	Find the coordinates of the vertices of an equilateral triangle of side 2a as shown in fig. 
Q.16	Find the center of circle of circle passing through the vertices of triangle whose sides are x + y = 2 ; 3x – 4 y – 6 = 0 , and x- y = 0 .
Q.17	Prove that the distance between two point (x_1, y_1) & (x_2, y_2) is equal to $\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$.
Q.18	Find the coordinates of the circumcentre of the triangle whose vertices are (3, 0), (– 1, – 6) and (4, – 1). Also, find its circumradius.
Q.19	The three vertices of a parallelogram are (3, 4), (3, 8) and (9, 8). Find the fourth vertex.
Q.20	Find the area of the triangle formed by joining the midpoints of the sides of the triangle whose vertices are (0, -1), (2, 1), and (0, 3). Find the ratio of this area to the area of the given triangle.
Q.21	Show that the points A (5, 6), B (1, 5), C (2,1) and D (6, 2) are the vertices of a square. Also find its area .
Q.22	A(3, 2) and B(-2, 1) are two vertices of a triangle ABC, whose centroid has coordinates (5/3, -1/3). Find the coordinates of the third vertex C of the triangle.
Q.23	Determine the ratio in which the points (6, a) divides the join of A(-3, -1) and B(-8, 9). Also find the value of a.
Q.24	The co-ordinates of the mid-point of the line joining the points (3p, 4) and (-2, 2q) are (5, p). Find the values of p and q.
Q.25	If 'a' is the length of one of the sides of an equilateral triangle ABC, base BC lies on x-axis and vertex B is at the origin, find the coordinates of the vertices of the triangle ABC.

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Q.26	Find the value of k for which the points with coordinates (3, 2), (4, K) and (5, 3) are collinear.
Q.27	If A(6,-1), B(1,3) and C(k,8) are three points such that AB = BC, find the value of k.
Q.28	In what ratio is the line segment joining the points (-2,-3) and (3,7) divided by the y-axis . Also. find the coordinates of the points of division.
Q.29	Show that the points (a, b + c), (b, c + a), (c, a + b), are collinear .
Q.30	Find the area of quadrilateral ABCD whose vertices are A (-5,7),B (-4,-5),C (-1,-6) and D(4,5).
Q.31	The centre of the circle is (-1, 6) and one end of a diameter is (5, 9), find the coordinates of the other end.
Q.32	If (3, 0), (2, a) and (b, 6) are the vertices of a triangle ABC whose centroid is (2, 5). Find the values of a and b.
Q.33	If A(-1, 3), B(1, -1) and C(5, 1) are the three vertices of a triangle ABC, find the length of median through B.
Q.34	If the coordinates of the mid-points of the sides of a triangle are (1, 2), (0, -1) and (2, -1), find the coordinates of its vertices.
Q.35	Using section formula show that (4, -11), (5, 3), (2, 15) and (1, 1) are the vertices of a parallelogram.
Q.36	Find the point which represents the three-fourths of the distance from (3, 2) to (-5, 6).
Q.37	Find the coordinates of the centre of circle, the coordinates of the end points of whose diameters are (-5, -2) and (7, -6). Also find the radius of the circle.
Q.38	Find the coordinates of the points of trisection of the line segment joining the points (4, -8) and (7, 4).
Q.39	The area of a triangle is 5. Two of its vertices area (2, 1) and (3, -2). The third vertex lies on y = x + 3. Find the third vertex.
Q.40	Find the coordinates of a point whose distance from (3, 5) is 5 units and that from (0, 1) is 10 units.
Q.41	Find the ratio in which the line-segment joining the points (6, 4) and (1, -7) is divided by x-axis.
Q.42	Find the value of m for which the points with co-ordinates (3, 5), (m, 6) and (1/2, 15/2) are collinear.
Q.43	The coordinates of one end of a diameter of a circle arc (4, -1) and the coordinates of the centre of the circle are (1, -3). Find the coordinates of the other end of diameter.
Q.44	Find the value of x such that PQ = QR where the coordinates of P, Q and R are (6, -1), (1, 3) and (x, 8) respectively.
Q.45	Find the third vertex of a triangle, if two of its vertices are at (-3, 1), (0, -2) and the centroid is at the origin.
Q.46	Show that the points (7, 10), (-2, 5) and (3, -4) are the vertices of an isosceles right triangle. Also find its area .
Q.47	Determine the ratio in which the line 3x + y -9 = 0 divides the segment joining the points (1, 3) and (2, 7).
Q.48	Find the coordinates of the point R which divides the line segment joining the points P (-2, 3) and Q (4, 7) internally in the ratio $\frac{4}{7}$.
Q.49	Find the value of x, if the distance between the points (x, -1) and (3, 2) is 5.
Q.50	Find the distance of the point (6, -6) from the origin.
Q.51	In what ratio does the point C$\left(\frac{3}{5},\frac{11}{5}\right)$ divide the line segment joining the points A(3, 5) and (-3, -2)?
Q.52	Find the distance of the point (6, 5) from the x axis .
Q.53	If the point C(-1,2) divides internally the line segment joining A(2,5) and B in the ratio 3:4, find the coordinates of B.
Q.54	If the point P (x, y) is equidistant from the points A(5, 1) and B(-1, 5), prove that 3x = 2y.
Q.55	Find the distance between the points (a, b) and (-a, -b).
Q.56	Find the area of a rhombus if its vertices are (3, 0), (4, 5), (-1, 4) and (-2, -1) taken in order.
Q.57	If the point (x, y) is equidistant from the points (a+b, b-a) and (a-b, a+b), prove that bx=ay.
Q.58	The line segment joining the points (3, -4) and (1, 2) is trisected at the points P and Q. If the coordinates of P and Q are (p, -2) and $\left(\frac{5}{3},q\right)$ respectively, find the values of p and q.

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Q.59	Find the coordinates of the points which divide the line segment joining the points (-2, 0) and (0, 8) in four equal parts.
Q.60	The line joining the points (2, 1) and (5, -8) is trisected at the points P and Q. If point P lies on the line 2x-y+k=0, find the value of k.
Q.61	Find the coordinates of the points which divide the line segment joining the points (5, 7) and (8, 10) in three equal parts.
Q.62	If A (5, -1), B(-3, -2) and C (-1, 8) are the vertices of ΔABC, find the length of median through A and the coordinates of the centroid.
Q.63	Determine the ratio in which the point P (m, 6) divides the join of A(-4, 3) and B(2, 8). Also find the value of m.
Q.64	Find the area of the quadrilateral whose vertices, taken in order are (2, 1), (6, 2), (5, 6) and (1, 5).
Q.65	For ΔABC whose vertices are A (1, -1), B(5, 1) and C(-1, 3), verify that a median divides it into two triangles of equal areas.
Q.66	Find the coordinates of the point equidistant from the points A(1, 2), B(3, -4) and C(5, -6).
Q.67	If two vertices of a parallelogram are (3,2) , (-1 , 0) and the diagonal cut at (2, -5) . Find the other vertices of a parallelogram.
Q.68	Find the area of the quadrilateral ABCD whose vertices are respectively A(1,1) , B(7 , - 3) , C (12 , 2) & D (7 , 21) .
Q.69	Find the point P on the x-axis which is equidistant from the points A(5, 4) and B(–2, 3). Also find the area of ΔPAB.
Q.70	If the mid-point of the line joining the points (3, 4) and (k, 7) is (x, y) and satisfy the equation 2x + 2y + 1 = 0, find the value of k.
Q.71	Find the value (s) of k for which the distance between the points (k,-5) and (2,7) is 13 units.
Q.72	The coordinates of a point which divides the join of A(3, 6) and B internally in the ratio 2 : 3 is $C\left(\frac{1}{5},\frac{34}{5}\right)$. Find the coordinates of B.
Q.73	The coordinates of the mid-point of the line joining the points (2p + 2, 3) and (4, 2q + 1) are (2p, 2q). Find the value of p and q.
Q.74	If (-2, 2), (x, 8), (6, y) are three concylic points whose centre is (2, 5). Find the values of x and y.
Q.75	Find the coordinates of the center of a circle which passes through the point A(1, 2), B(3, -4) and C(5, -6). Also, find the radius of the circle.
Q.76	Find the coordinates of the point which is at a distance of 2 units from (5,4) and 10 units from(11,-2) .
Q.77	Find the point on the y-axis which is equidistant from A (-5,-2) and B(3,2).
Q.78	The co-ordinates of two points A and B are (3 , 4) and (5, -2) respectively. Find the coordinates of any point P if PA = PB and A $(\Delta PAB) = 10$.
Q.79	The ordinate of a point is twice its abscissa. Find the coordinates of the point if its distance from (4,3) is $\sqrt{10}$.
Q.80	Find the value of x for which the distance between the point P(2,-3) and Q (x,5) is 10 units.
Q.81	The distance between A (x,7) and B (1,3) is 5. calculate x.
Q.82	If the points (2,1) and (1,-2) are equidistant from the point (x,y) show that x + 3y = 0
Q.83	Determine the ratio in which 2x + 3y - 30 = 0 divides the line segment joining A (3,4) and B (7,8) and at what point ?
Q.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).
Q.85	If centre of circle passing through (a,–8), (b,–9) and (2,1) is (2,–4), find the value of a and b.
Q.86	Prove that the point (a, 0), (0, b) and (1, 1) are collinear if $\frac{1}{a}+\frac{1}{b}=1$.
Q.87	Determine the ratio in which the line 2x + y – 4 = 0 divide the line segment joining the points (2, –2) and (3, 7). Also find the coordinates of the point of division.
Q.88	The line segment joining the points (3, -4) and (1, 2) is trisected at the pints P and Q. if the coordinates of P and Q are (p, -2) and (5/3, q) respectively. Finds the value of p and q.
Q.89	If a vertex of a triangle be (1, 1) and the middle points of the sides through it be (– 2, 3) and (5, 2), find the other vertices.
Q.90	The coordinates of the vertices of ΔABC are A (4,1), B (-3, 2) and C (0, *k).* Given that the area of ΔABC is 12 units^2, find the value of *k.*
Q.91	Find the coordinates of the circumcentre of the triangle whose vertices are (8, 6), (8, – 2) and (2, – 2). Also, find its circum-radius.
Q.92	Find the coordinates of the centre of the circle passing through the points (0, 0), (– 2, 1) and (– 3, 2). Also, find its radius.
Q.93	The length of a line segment is of 10 units and the coordinates of one end-point are (2, –3). If the abscissa of the other end is 10, find the ordinate of the other end.

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Q.94	Prove that (2, – 2), (– 2, 1) and (5, 2) are the vertices of right angled triangle. Find the area of the triangle and the length of the hypotenuse.
Q.95	Prove that the points (2a, 4a), (2a, 6a) and (2a $+\sqrt{3}$ a, 5a) are the vertices of an equilateral triangle.
Q.96	Find the coordinates of the circum-centre of the triangle whose vertices are (3, 0), (– 1, – 6) and (4, – 1). Also, find its circum-radius.
Q.97	Three vertices of a parallelogram are (a + b, a – b), (2a + b, 2a – b), (a – b, a + b). Find the fourth vertex.
Q.98	Find the lengths of the median as of a ΔABC having vertices at A(0, – 1), B(2, 1) and C(0, 3).
Q.99	If the coordinates of the mid-points of the sides of a triangle are (1, 1), (2, – 3) and (3, 4), find its vertices.
Q.100	Find the coordinates of the points which divide the lien segment joining the points (– 4, 0) and (0, 6) in four equal parts.
Q.101	Prove analytically that the line segment joining the middle points of two sides of a triangle is equal to half of the third side.
Q.102	Prove that coordinates of the centroid of a triangle ABC, with vertices $(x_1\ y_1)$, (x_2, y_2) and (x_3, y_3) are given by $\left(\frac{x_1+x_2+x_3}{3}, \frac{y_1+y_2+y_3}{3}\right)$.
Q.103	If A and B are (1, 4) and (5, 2) respectively, find the coordinates of P when $\frac{AP}{BP}=\frac{3}{4}$.
Q.104	Find the ratio in which the point (-3, k) divides the line segment joining the points (-5, -4) and (-2, 3). Hence find the value of k.
Q.105	Four points A(6, 3), B(-3, 5) C(4, -2) and D(x, 3x) are given in such a way that $\frac{\text{Area }(\Delta DBC)}{\text{Area }(\Delta ABC)}=\frac{1}{2}$ find x.
Q.106	If the point P(x,y) is equidistant from the points A(3,6) and B(-3,4) prove that 3x + y - 5 = 0.
Q.107	If A(4 -8), B(3,6) and C(5,- 4) are the vertices of a ΔABC, D is the mid-point of BC and is P is point on AD joined such that $\frac{AP}{PD}=2$ find the coordinates of P.
Q.108	Find the coordinates of the circum centre of the triangle whose vertices are P(5, 1), Q (–3, –7) and R (7, –1). Also find the area of circle.
Q.109	Find the area of quadrilateral whose vertices, taken in order, are (-3, 2), B(5, 4), (7, -6) and D(-5, -4).
Q.110	Find the coordinates of the points which divide the line segment joining the points (– 8, 0) and (4,–8) in four equal parts.
Q.111	If the point C(-1,2) divides line segment AB in the ratio 3:4, where the co-ordinates of A are (2,5), find the co-ordinates of B. .
Q.112	Prove that the points A(4, 3), B(6, 4), C(5, -6) and D(3, -7) in that order are the vertices of a parallelogram. Also prove that diagonal of parallelogram divides the triangle of equal area.
Q.113	Point P(5,- 3) is one of the two points of trisection of the line segment joining the points A (7, -2) and B(1, -5) near to A. Find the coordinates of the other point of trisection.
Q.114	If the points A(1,-2), B(2,3), C (a,2) and D(-4,-3) from a parallelogram, find the value of a and height of the parallelogram taking AB as base.
Q.115	The co-ordinates of the vertices of ΔABC are A (4,1),B (-3,2) and C (0 , k).Given that the area of ABC is $12 unit^2$, find the value of k.
Q.116	The vertices of a ΔPQR are P (4, 6), Q (1, 5) and R (7, 2). A line is drawn to intersect sides PQ and PR at S and T respectively, such that $\frac{PS}{PQ}=\frac{PT}{PR}=\frac{1}{4}$. Calculate the area of the ΔPST and compare it with the area of ΔPQR .
Q.117	Find the coordinates of the point which divides the line segment joining the points (6, 3) and (-4, 5) in the ratio 3:2 internally.
Q.118	Find the ratio in which the join of points (1, 3), (2, 7) is divided by the line 3x + y = 9. Also find the point of division .
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