



## MATHS

### Coordinate geometry

All Questions

1. What is co-ordinate geometry ?



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## 2. Regular coordinate axes



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## 3. Cartesian coordinate of a point



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## 4. Quadrant



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## 5. Some Important points



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6. Theorem: The distance between two points

$P(x_1; y_1)$  and  $Q(x_2; y_2)$  is given by  $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$



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7. If the point  $(x; y)$  is equidistant from the points  $(a + b; b - a)$  and  $(a - b; a + b)$

prove that  $bx = ay$



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**8.** The coordinates of the point which divides the line segment joining the points  $(x_1; y_1)$  and  $(x_2; y_2)$  internally in the ratio  $m:n$  are given by

$$\left( x = \frac{mx_2 + nx_1}{m + n}; y = \frac{my_2 + ny_1}{m + n} \right)$$



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9. (i) 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



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10. (iv) The three vertices of a parallelogram are taken in order  $(-1;0)$ ;  $(3;1)$  and  $(2;2)$  respectively. Find the coordinates of 4th vertex.



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**11. Theorem:** Prove that the coordinates of centroid of the triangle whose coordinates are

$(x_1; y_1); (x_2; y_2)$  and  $(x_3; y_3)$  are

$$\left( \frac{x_1 + x_2 + x_3}{3}; \frac{y_1 + y_2 + y_3}{3} \right)$$



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**12.** If the coordinates of the midpoints of the sides of a triangle are  $(1;1);(2;-3)$  and  $(3;4)$ . Find its centroid.



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**13. Theorem :** The area of a triangle the coordinates of whose vertices are  $(x_1; y_1)$ ;  $(x_2; y_2)$  and  $(x_3; y_3)$  is  $\frac{1}{2}|(x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2))|$



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**14. Find the Area of polygon**



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**15.** Find area of triangle formed by the points

$A(5;2); B(4;7)$  and  $C(7;-4)$



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**16.** Find area of quadrilateral ABCD whose

vertices are respectively

$A(1; 1); B(7; - 3); C(12; 2)$  and  $D(7;21)$



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**17.** Prove that  $(a; b + c); (b; a + c); (c; a + b)$  are collinear.



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**18.** Some Useful Points



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**19.** (ii) In what ratio does the x axis divide the line segment joining the points

$(2; -3)$  and  $(5; 6)$ . Find the coordinate of a point of intersection



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20. (iii) Prove that the points  $(-2; -1)$  ;  $(1; 0)$ ;  $(4; 3)$  and  $(1; 2)$  are the vertices of the parallelogram .

Is this a rectangle ?



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21. For what value of  $x$  will the points  $(x;-1);(2;1)$  and  $(4;5)$  lie on a line ?



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22. If the vertices of a triangle having integral coordinates . Prove that triangle can't be equilateral .



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