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**CBSE Class 10 Mathematics**  
**Revision Notes**  
**CHAPTER 07**  
**COORDINATE GEOMETRY**

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1. **Distance Formula**
  2. **Section Formula**
  3. **Area of a Triangle**
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1. **Distance Formula:** The length of a line segment joining A and B is the distance between two points  $A(x_1, y_1)$  and  $(x_2, y_2)$  is  $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
  2. The distance of a point  $(x, y)$  from the origin is  $\sqrt{(x^2 + y^2)}$ . The distance of P from x-axis is y units and from y-axis is x-units.
  3. **Section Formula:** The co-ordinates of the points p(x, y) which divides the line segment joining the points  $A(x_1, y_1)$  and  $B(x_2, y_2)$  in the ratio  $m_1 : m_2$  are  $\left( \frac{m_1 x_2 + m_2 x_1}{m_1 + m_2}, \frac{m_1 y_2 + m_2 y_1}{m_1 + m_2} \right)$  we can take ratio as  $k : 1$ ,  $k = \frac{m_1}{m_2}$
  4. **Mid-point Formula:** The mid-points of the line segment joining the points  $P(x_1, y_1)$  and  $Q(x_2, y_2)$  is  $\left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$
  5. **Area of a Triangle:** The area of the triangle formed by the points  $(x_1, y_1)$ ,  $(x_2, y_2)$  and  $(x_3, y_3)$  is the numeric value of the expressions  $\frac{1}{2} |x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)|$ .
  6. If three points are collinear then we cannot draw a triangle, so the area will be zero i.e.  $|x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)| = 0$
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