

Co-ordinate Geometry

1 Basic Formulas

1. Plot the following points on the Co-ordinate Plane;
 - (a) $(3, 2)$
 - (b) $(2, 4)$
 - (c) $(4, -2)$
 - (d) $(5, 0)$
 - (e) $(0, -2)$
 - (f) $(-2, 3)$
 - (g) $(-4, -1)$

2. On what axis do the following points lie?
 - (a) $(3, 0)$
 - (b) $(0, -2)$
 - (c) $(0, -5)$
 - (d) $(-4, 0)$

3. Find the distance between each of the following pairs of points;
 - i. $(2, 3)$ and $(5, 7)$
 - ii. $(5, -3)$ and $(-1, 5)$
 - iii. $(2, 1)$ and $(3, 4)$
 - iv. $(-5, 3)$ and $(-1, -3)$
 - v. $(-2, 6)$ and $(-4, 6)$

4. Find the midpoint of each of the following pairs of points;
 - i. $(3, 1)$ and $(5, 5)$
 - ii. $(2, 0)$ and $(-4, -6)$
 - iii. $(-3, 5)$ and $(-5, 1)$
 - iv. $(-2, 4)$ and $(2, -2)$
 - v. $(1, 3)$ and $(2, -2)$
 - vi. $(-4, 6)$ and $(-1, 0)$

5. Plot the points $A(1, 1)$, $B(3, 6)$ and $C(5, 1)$ on a co-ordinate plane. Show that the triangle ABC is isosceles (that two sides are the same length)
6.
 - i. Plot the points $A(2, 2)$, $B(2, -4)$ and $C(-4, -1)$
 - ii. Find D , the midpoint of AB . Plot the point D .
 - iii. Draw the triangle BCD . Using Pythagoras Theorem, show that the triangle BCD is right angled.
7. Find C , the midpoint of $A(-3, 4)$ and $B(5, 2)$. Verify that $|AC| = |CB|$.
8. $P(3, 2)$, $Q(0, -4)$, $R(-3, -3)$ and $S(0, 3)$ are the vertices of a parallelogram.
 - i. Draw the parallelogram on the co-ordinate plane.
 - ii. Show that the diagonals bisect each other (that the midpoint of PR is the midpoint of QS).
 - iii. Show that opposite sides of the parallelogram are equal in length.