Co-ordinate Geometry : Achieved Practice #1

1. Find the point mid way between A= (3, 4) and B= ($^-$6, 0).

2. The length of the line segment $\overline{PQ}$ if P = (3, 5) and Q = ($^-$2, 3).

3. Find the equation of the line that passes through both P = (3, 5) and Q = ($^-$2, 3).

4. Find a line parallel to $y = 2x - 4$, which passes through point P = ($^-$2, $^-$3).

5. Find the point where $y = 2x - 4$ and $y = {}^-\frac{1}{2}x + 1$ meet.

6. What is the nature of the lines $y = 6 + 4x$ and $y = 3 + 4x$?

Answers – Co-ordinate Geometry : Achieved Practice #1

1. Find the point mid way between A= (3, 4) and B= (⁻6, 0).

   $(\frac{3+-6}{2}, \frac{4+0}{2})$ — *mid point = (average x, average y)*

   = (⁻1.5, 2) — *check with sketch*

2. The length of the line segment $\overline{PQ}$ if P = (3, 5) and Q = (⁻2, 3).

   $\Delta x = (3 - {}^-2) = 5$, $\Delta y = (5 - 3) = 2$ — *Distance apart in x and y directions*

   Length = $\sqrt{5^2 + 2^2}$ — *Pythagoras*

   = 5.39 — *check with sketch*

3. Find the equation of the line that passes through both P = (3, 5) and Q = (⁻2, 3).

   $m = \frac{5-3}{3--2} = \frac{2}{5} = 0.4$ — *slope, $m = \frac{\Delta y}{\Delta x}$*

   $y - 5 = 0.4(x - 3)$ — *equations found using $y - y_1 = m(x - x_1)$*

   $y = 0.4x + 3.8$ — *check with "Table" in calculator*

4. Find a line parallel to $y = 2x - 4$, which passes through point P = (⁻2, ⁻3).

   $m = 2$ — *parallel lines have the same slope*

   $y - {}^-3 = 2(x - {}^-2)$ — *equations found using $y - y_1 = m(x - x_1)$*

   $y = 2x + 1$ — *check with "Table" in calculator*

5. Find the point where $y = 2x - 4$ and $y = {}^-\frac{1}{2}x + 1$ meet.

   $2x - 4 = {}^-\frac{1}{2}x + 1$, so $x = 2$ — *simultaneous equation*

   putting $x = 2$ into $y = 2x - 4$ gives $y = 0$

   (2, 0) — *check with "Graph" in calculator*

6. What is the nature of the lines $y = 6 + 4x$ and $y = 3 + 4x$?

   slope = 4 in both cases

   so they are **parallel** — *parallel lines have the same slope*