Co-ordinate Geometry : Achieved Practice #3

1. Find the point mid way between A = (⁻7, ⁻5) and B = (⁻3, 2).

2. Find the distance from point R = (1, 6) to point Q = (⁻5, 8).

3. Find the equation of the line that passes through both R = (1, 6) to Q = (⁻5, 8).

4. Find a line parallel to $y - 2x + 5 = 0$, which passes through point P = (2, 3).

5. Find the line perpendicular to $y + 4x = 3$ which passes through (1, 5).

6. What is k so that $(k, 5)$ is on the line $2x + y + 8 = 0$

Answers – Co-ordinate Geometry : Achieved Practice #3

1. Find the point mid way between A = (⁻7, ⁻5) and B = (⁻3, 2).

$$(\frac{-7 + -3}{2}, \frac{-5 + 2}{2})$$ *mid point = (average x, average y)*

    = (⁻5, ⁻1.5)   *check with sketch*

2. Find the distance from point R = (1, 6) to point Q = (–5, 8).

    Δx = (1 − ⁻5) = 6, Δy = (6 − 8) = ⁻2   *distance apart in x and y directions*

    Length = $\sqrt{6^2 + (-2)^2}$ *Pythagoras. Note (⁻2)² = 4, **not** ⁻4*

    = 6.32   *check with sketch*

3. Find the equation of the line that passes through both R = (1, 6) to Q = (⁻5, 8).

    $m = \frac{6 - 8}{1 - -5} = \frac{-2}{6} = \frac{-1}{3}$ *slope, $m = \frac{\Delta y}{\Delta x}$*

    $y - 6 = \frac{-1}{3}(x - 1)$ *equations found using $y - y_1 = m(x - x_1)$*

    $\mathbf{y = \frac{-1}{3}x + 6\frac{1}{3}}$ *check with "Table" in calculator*

4. Find a line parallel to $y - 2x + 5 = 0$, which passes through point P = (2, 3).

    $y - 2x + 5 = 0$ rearranges to give the more useful form: $y = 2x - 5$

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

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

    $\mathbf{y = 2x - 1}$ *check with "Table" in calculator*

5. Find the line perpendicular to $y + 4x = 3$ which passes through (1, 5).

    $m = $ ⁻4 so $m^{\perp} = \frac{-1}{-4}$ = 0.25   *perpendicular lines have $m^{\perp} = \frac{-1}{m}$*

    $y - 5 = 0.25(x - 1)$ *equations found using $y - y_1 = m(x - x_1)$*

    $\mathbf{y = 0.25x + 4.75}$ *check with sketch and "Table"*

6. What is k so that $(k, 5)$ is on the line $2x + y + 8 = 0$

    We substitute our given values into the equation, so $2k + 5 + 8 = 0$

    Solving gives $k = $ ⁻6.5