IP3 (Mathematics)

Full marks will not be awarded for a correct answer with no working. Answers must be supported by working and/or explanation.

1 Answer the following questions.

(1) There is a trapezoid where one of the interior angles is 40 degrees. Find the sum of the other three angles.

(2) Simplify: $\sqrt{8} + \sqrt{12} + \sqrt{18} + \sqrt{27}$

(3) Simplify: $\dfrac{100}{8}\left(\dfrac{1}{5} \times \dfrac{2x}{y}\right)^2$

(4) Factor fully each of the following:
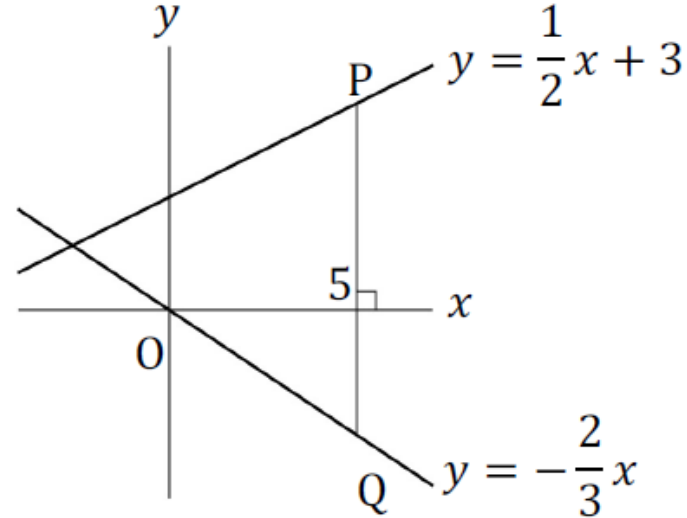$$27x^2 - 3y^2$$

(5) Expand and Simplify:
$$(3 - 2x)(3x + 2) + (2x - 5)^2$$

2 Solve each of the following. For these a minimum of three lines of working should be shown with your final answer.

(1) $12(x - 2) - 3x = 6x - 5$

(2) $\begin{cases} x + 2y = 2 \\ 3x + 4y = 1 \end{cases}$

3 Find the length of segment PQ in the following figure.

$$y = \frac{1}{2}x + 3$$
$$y = -\frac{2}{3}x$$

4 A man drove a truck 250km from Town A to Town B, using an ordinary road for 2 hours and then an expressway for 3 hours. If his speed on the expressway was 40km per hour faster than that on the ordinary road, then how fast did he drive on expressway?