

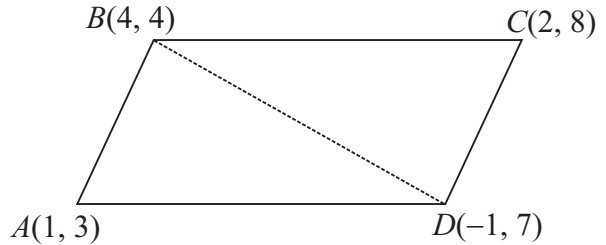
## SAMPLE PAPER 2: PAPER 2

### QUESTION 1 (25 MARKS)

#### Question 1 (a)

The diagonal bisects the area of a parallelogram. Find the area of triangle  $ABD$  and multiply the answer by 2.

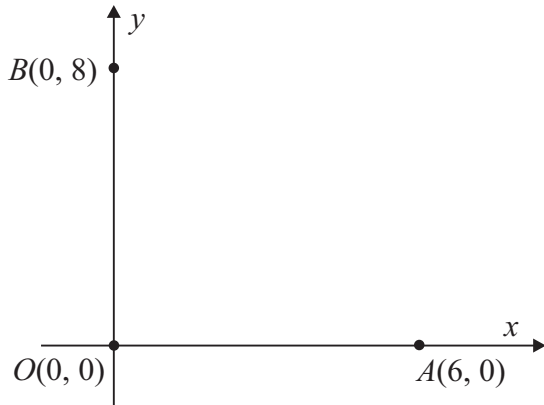
$$\begin{array}{l} A(1, 3) \rightarrow (0, 0) \\ B(4, 4) \rightarrow (3, 1) \\ D(-1, 7) \rightarrow (-2, 4) \end{array} \quad \left\| \begin{array}{l} A = \frac{1}{2}|x_1y_2 - x_2y_1| \\ = \frac{1}{2}|3(4) - (-2)(1)| \\ = \frac{1}{2}|12 + 2| \\ = 7 \end{array} \right.$$



Area of parallelogram  $ABCD = 14$

**NOTE:** The diagram in the question is a rough sketch showing the relative positions of the points. A grid is drawn whenever we wish to display the absolute positions of the points.

#### Question 1 (b)



Intercepts of  $2x + 3y = c$ :  $D(\frac{1}{2}c, 0)$ ,  $E(0, \frac{1}{3}c)$

$$O(0, 0), D(\frac{1}{2}c, 0), E(0, \frac{1}{3}c)$$

$$\text{Area } |\Delta ODE| = \frac{1}{2}|(0)(0) - (\frac{1}{2}c)(\frac{1}{3}c)| = \frac{1}{2}|\frac{1}{6}c^2|$$

$$O(0, 0), A(6, 0), B(0, 8)$$

$$\text{Area } |\Delta OAB| = \frac{1}{2}|(0)(0) - (6)(8)| = \frac{1}{2}|48|$$

$$\text{Area } |\Delta ODE| = \frac{1}{2} \text{Area } |\Delta OAB|$$

$$\therefore \frac{1}{2}|\frac{1}{6}c^2| = \frac{1}{2} \times \frac{1}{2}|48|$$

$$\frac{1}{6}c^2 = 24$$

$$c^2 = 144$$

$$\therefore c = \pm\sqrt{144} = \pm 12$$