

LINE (Q 3, PAPER 2)

2007

- 3 (a) Find the area of the triangle with vertices $(1, 1)$, $(8, -5)$ and $(5, -2)$.
- (b) f is the transformation $(x, y) \rightarrow (x', y')$, where $x' = 4x + 2y$ and $y' = -3x - y$.
 K is the line $x + y = 0$.
- (i) Show that K is its own image under f .
- (ii) $p(1, -1)$ and $q(3, -3)$ are two points.
Find the ratio $|pq| : |f(p)f(q)|$, giving your answer in its simplest form.
- (c) Consider the equation $k(3x - 5y + 6) + l(5x - 7y + 4) = 0$, where $k, l \in \mathbf{R}$.
- (i) Show that for all k and l , the given equation represents a line passing through the point of intersection of $3x - 5y + 6 = 0$ and $5x - 7y + 4 = 0$.
- (ii) Find the relationship between k and l for which the given equation represents a line of slope 2.
- (iii) If $k = 1$, what line through the point of intersection cannot be represented by the given equation? Justify your answer.

ANSWERS

- 3 (a) $\frac{3}{2}$
(b) (ii) 1:2
(c) (ii) $7k + 9l = 0$ (iii) $5x - 7y + 4 = 0$