

LINE (Q 3, PAPER 2)

2005

- 3 (a) The line $L_1: 3x - 2y + 7 = 0$ and the line $L_2: 5x + y + 3 = 0$ intersect at the point p . Find the equation of the line through p perpendicular to L_2 .
- 3 (b) The line K passes through the point $(-4, 6)$ and has slope m , where $m > 0$.
- Write down the equation of K in terms of m .
 - Find, in terms of m , the co-ordinates of the points where K intersects the axes.
 - The area of the triangle formed by K , the x -axis and the y -axis is 54 square units. Find the possible values of m .
- 3 (c) f is the transformation $(x, y) \rightarrow (x', y')$, where $x' = 3x - y$ and $y' = x + 2y$.
- Prove that f maps every pair of parallel lines to a pair of parallel lines. You may assume that f maps every line to a line.
 - $oabc$ is a parallelogram, where $[ob]$ is a diagonal and o is the origin. Given that $f(c) = (-1, 9)$, find the slope of ab .

ANSWERS

3 (a) $x - 5y + 11 = 0$

3 (b) (i) $mx - y + 4m + 6 = 0$ (ii) $(0, 4m + 6), (\frac{-4m-6}{m}, 0)$ (iii) $\frac{3}{4}, 3$

3 (c) (i) 4