THE LINE (Q 2, PAPER 2)

2009



2 (a) (v) Slope of K: $3x + 2y - 9 = 0 \implies m = -\frac{3}{2}$ Slope of *ab*: $m = \frac{3}{2}$ $-\frac{3}{2} \times \frac{2}{3} = -1$ [Therefore, *K* is perpendicular to *ab*.]

$m = -\left(\frac{\text{Number in front of } x}{\text{Number in front of } y}\right)$ Two lines are perpendicular if the product of their slopes is -1. $K \perp L \Rightarrow m_1 \times m_2 = -1$

2 (b) (i)

Sketch the diagram. You have 2 right-angled triangles so you can apply Pythagoras.



As you see the points are t(0, 4) and s(0, -4).



2 (b) (ii)

There are 2 right-angled triangles that have the same area. The area of each triangle is half the base by the height.

Area of $tsp = 2 \times \frac{1}{2} \times 3 \times 4 = 12$

2 (b) (iii)

The fourth point is found by passing the point *p* through the origin by a central symmetry. $p(3, 0) \rightarrow (0, 0) \rightarrow u(-3, 0)$



4

(0, 0)

3