1.

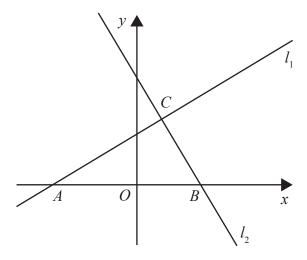


Figure 4

The line  $l_1$  has equation  $y = \frac{3}{5}x + 6$ 

The line  $l_2$  is perpendicular to  $l_1$  and passes through the point B(8,0), as shown in the sketch in Figure 4.

(a) Show that an equation for line  $l_2$  is

$$5x + 3y = 40 (3)$$

Given that

- lines  $l_1$  and  $l_2$  intersect at the point C
- line  $l_1$  crosses the x-axis at the point A
- (b) find the exact area of triangle *ABC*, giving your answer as a fully simplified fraction in the form  $\frac{p}{q}$

q	(5)

2.	Relative to a fixed origin O	
	• point A has position vector $10\mathbf{i} - 3\mathbf{j}$	
	• point B has position vector $-8 i + 9 j$	
	• point C has position vector $-2\mathbf{i} + p\mathbf{j}$ where p is a constant	
	(a) Find $\overrightarrow{AB}$	
	$\longrightarrow$ 1	(2)
	(b) Find $ \overrightarrow{AB} $ giving your answer as a fully simplified surd.	(2)
	Given that points A, B and C lie on a straight line,	(-)
	<ul><li>(c) (i) find the value of p,</li></ul>	
	(ii) state the ratio of the area of triangle AOC to the area of triangle AOB.	(3)

<ol><li>A circle has equation</li></ol>	3.	A ci	rcle	has	equatio
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$$x^2 + y^2 - 10x + 16y = 80$$

- (a) Find
  - (i) the coordinates of the centre of the circle,
  - (ii) the radius of the circle.

**(3)** 

Given that P is the point on the circle that is furthest away from the origin O,

	(	(b)	find	the	exact	length	OP
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**(2)** 
