Question number	Scheme	Marks
6 (a)	$\frac{\text{Change in } y}{\text{Change in } x} = \frac{2-0}{2-3} = -2$	M1 A1
	$2 = 1 + c$	M1
	$c = 1$	A1 ft
	$x - 2y + 2 = 0$	A1
		(5)
(b)	$2y - 2 = 7y + 3$	M1
	$-5y = 5$	
	$y = -1$	A1
	When $y = -1$	
	$x = 2 \times -1 - 2 = -4$ So $C = (-4, -1)$	A1
	$\left(\frac{3-4}{2}, \frac{0-1}{2}\right) = \left(-\frac{1}{2}, -\frac{1}{2}\right)$	M1A1
		(5)
(c)	$AB = \sqrt{5}$	M1
	$BC = \sqrt{45}$	A1
	Area $= \frac{1}{2} \times \sqrt{5} \times \sqrt{45} \times \frac{1}{2}$	M1
	3.75	A1
		(4)
	Alternative c	**(14)**
	$\pm\frac{1}{2}\begin{vmatrix} 3 & 0 & 1 \\ 2 & 2 & 1 \\ -4 & -1 & 1 \end{vmatrix}$	M1
	$\pm\frac{1}{2}\left[3\begin{vmatrix} 2 & 1 \\ -1 & 1 \end{vmatrix} + 1\begin{vmatrix} 2 & 2 \\ -4 & -1 \end{vmatrix}\right]$	A1
	$\pm\frac{1}{2}[3(2 + 1) + (-2 + 8)] \times \frac{1}{2}$	M1
	3.75	A1

Part	Mark	Additional Guidance
(a)	M1	For an attempt to find the gradient using the given coordinates **and** a correct attempt to find the perpendicular gradient. Accept either $\frac{2-0}{2-3} = (-2)$ or $\frac{0-2}{3-2} = (-2) \Rightarrow m_p = -\frac{1}{'-2'}$
	A1	For $m = \frac{1}{2}$
	dM1	For a correct method to find the equation of a line $y - 2 = '\frac{1}{2}'(x - 2)$ or $y - 0 = '\frac{1}{2}'(x - 3)$ **The gradient must come from a correct attempt to find the gradient and the gradient of the perpendicular** If $y = mx + c$ is used, then they must use the correct values of x and y and a value for c must be reached before this mark is awarded.
	A1	For the correct equation in any form $y - 2 = \frac{1}{2}(x - 2)$ or $y - 0 = \frac{1}{2}(x - 3)$ or $y = \frac{1}{2}x + 1$ oe

	A1	For the correct equation in the required form $x-2y+2=0$ **oe** arranged in any order but all one side (e.g. accept even $\frac{x}{2}-y+1=0$)	
(b)	M1	Sets $L_1=L_2$ **and** attempts to solve for *y* or *x*	
		$2y-2=7y+3$ $-5y=5\Rightarrow y=...$	$\frac{x+2}{2}=\frac{x-3}{7}\Rightarrow 7x+14=2x-6$ $5x=-20\Rightarrow x=...$
	A1	$y=-1$	$x=-4$
	A1	$x=-4$	$y=-1$
	M1	For any **correct** method to find the coords of *M* using **their** values for C of *x* and *y* and the given coordinates of *A* (3, 0) $\left(\frac{3+['-4']}{2},\frac{0+['-1']}{2}\right)$ **This is a B mark in Epen**	
	A1	$\left(-\frac{1}{2},-\frac{1}{2}\right)$ **This is a B mark in Epen**	
(c)	M1	For attempting to find the length *AB* **and** *BC* $AB=\sqrt{(3-2)^2+(0-2)^2}$ and $BC=\sqrt{(2--4)^2+(2--1)^2}$ **This is a B mark in Epen**	
	A1	For both $AB=\sqrt{5}$ and $BC=\sqrt{45}$ **This is a B mark in Epen**	
	M1	$\frac{1}{2}\left('\sqrt{5}'\times'\sqrt{45}'\right)\times\frac{1}{2}$	For using a correct method to find the area of the triangle using correct lengths. i.e. they must be using *BC* and *AB*
	A1	For *A* = 3.75	
	ALT – using determinants		
	M1	For using a correct method with their coordinates for *C* in any order (it is a triangle), but they must start and finish with the same coordinates $A=\frac{1}{2}\begin{pmatrix}3 & 2 & '-\frac{1}{2}' & 3\\ 0 & 2 & '-\frac{1}{2}' & 0\end{pmatrix}$ **This is a B mark in Epen**	
	A1	For using the correct coordinates $A=\frac{1}{2}\begin{pmatrix}3 & 2 & -\frac{1}{2} & 3\\ 0 & 2 & -\frac{1}{2} & 0\end{pmatrix}$ **This is a B mark in Epen**	
	M1	For a correct evaluation using their coordinates $A=\frac{1}{2}\left(\left[3\times 2+2\times'-\frac{1}{2}'+'-\frac{1}{2}'\times 0\right]-\left[2\times 0+'-\frac{1}{2}'\times 2+3\times'-\frac{1}{2}'\right]\right)=...$	

	A1	For $A = 3.75$
	ALT	
	M1	For finding the length $AB = \sqrt{(3-2)^2 + (0-2)^2}$ **and** $MX = \frac{1}{2}\sqrt{3^2 + \left(\frac{3}{2}\right)^2}$ (Let X be midpoint of AB so MX is height of triangle ABM)
	A1	$AB = \sqrt{5}$ $\quad MX = \frac{3\sqrt{5}}{2}$
	M1	Area of $\Delta ABM = \frac{1}{2} \times AB \times MX = \frac{1}{2} \times '\sqrt{5}' \times '\frac{3\sqrt{5}}{2}' = \left(\frac{15}{4}\right)$
	A1	Area of $\Delta ABM = \frac{15}{4} = 3.75$
If they use trigonometry, please send to review		

USEFUL SKETCH