Question	Scheme	Marks	AOs
8 (a)	Deduces that the radius of the circle is 6	B1	2.2a
	$(x-9)^2 + (y+6)^2 = 36$	M1	1.1b
		A1	1.1b
		(3)	
(b)	Let d be the distance from $(9, -6)$ to l		
	$d^2 + 4^2 = 6^2 \Rightarrow d^2 = ...$	M1	3.1a
	$d = \sqrt{20}$ or $2\sqrt{5}$	A1	1.1b
	$\{l:\}$ $y = -6 + 2\sqrt{5},\ y = -6 - 2\sqrt{5}$	dM1	2.2a
		A1	1.1b
		(4)	
(b) Alt 1	**Either** $\left\{x = 9 + \frac{8}{2} = 13 \Rightarrow\right\}$ $(13-9)^2 + (y+6)^2 = 36 \Rightarrow y = ...$ **or** $\left\{x = 9 - \frac{8}{2} = 5 \Rightarrow\right\}$ $(5-9)^2 + (y+6)^2 = 36 \Rightarrow y = ...$	M1	3.1a
	$\{l:\}$ $y = -6 + 2\sqrt{5}$	A1	1.1b
	$\{l:\}$ $y = -6 - 2\sqrt{5}$	dM1	2.2a
		A1	1.1b
		(4)	
			(7 marks)

Question 8 Notes:	
(a)	
B1:	Deduces that the radius of the circle is 6. This can be achieved by either • Stating that $r = 6$ or radius = 6 or $r^2 = 36$ • Writing $(x \pm \alpha)^2 + (y \pm \beta)^2 = 36$ or 6^2; $\alpha, \beta \neq 0$
M1	$(x \pm 9)^2 + (y \pm 6)^2 = k$; $k > 0$
A1:	$(x-9)^2 + (y+6)^2 = 36$ or $(x-9)^2 + (y+6)^2 = 6^2$ o.e.
(b)	
M1:	Uses the circle property "the perpendicular from the centre to a chord bisects the chord" in a complete strategy of writing an equation of the form $d^2 + \left(\frac{8}{2}\right)^2 = (\text{their } r)^2$ and progresses as far as $d^2 = ...$
A1:	$d = \sqrt{20}$ or $2\sqrt{5}$
dM1:	**depends on the previous M mark** Deduces the horizontal line l is d units from the line $y = -6$ and so writes both • $y = -6 + (\text{their } d)$ **and** $y = -6 - (\text{their } d)$
A1:	For either: • $y = -6 + 2\sqrt{5}$ and $y = -6 - 2\sqrt{5}$ • $y = -6 + \sqrt{20}$ and $y = -6 - \sqrt{20}$
(b) **Alt 1**	
M1:	Uses the circle property "the perpendicular from the centre to a chord bisects the chord" in a complete strategy of substituting either $x = 13$ or $x = 5$ into their circle equation and progresses as far as $y = ...$
A1:	For $y = -6 + 2\sqrt{5}$ or $y = -6 + \sqrt{20}$
dM1:	**depends on the previous M mark** Finds y in the form $y = -6 + (\text{their } d)$, deduces the other horizontal line l is d units below the line $y = -6$ and so writes $y = -6 - (\text{their } d)$
A1:	For either: • $y = -6 + 2\sqrt{5}$ and $y = -6 - 2\sqrt{5}$ • $y = -6 + \sqrt{20}$ and $y = -6 - \sqrt{20}$