Q	Marking instructions	AO	Marks	Typical solution
9(a)(i)	Obtains $(3,17)$ Condone position vectors, missing brackets or $x = 3$ and $y = 17$	1.1b	B1	$(3,17)$
	Subtotal		**1**	

Q	Marking instructions	AO	Marks	Typical solution
9(a)(ii)	Obtains gradient of PQ PI correct gradient used in equation of perpendicular bisector.	1.1b	B1	$m_{PQ} = \frac{19-15}{12--6} = \frac{4}{18}$
	Forms an equation of a line Either using the negative reciprocal of their gradient **or** their midpoint	3.1a	M1	$y-17 = -\frac{9}{2}(x-3)$ $2y-34 = -9x+27$ $9x+2y = 61$
	Forms an equation of a line using the negative reciprocal of their gradient **and** their midpoint	1.1a	M1	
	Obtains $9x+2y=61$ OE in the required form.	2.1	A1	
	Subtotal		**4**	

Q	Marking instructions	AO	Marks	Typical solution
9(b)(i)	Solves simultaneously using their $9x+2y=61$ from (a)(ii) with $2x-5y=-30$ to obtain the centre of the circle PI by $(5,8)$ or $x = 5$, $y = 8$	3.1a	M1	Centre $(5,8)$ $(x-5)^2+(y-8)^2 = r^2$ $(12-5)^2+(19-8)^2 = 170$ $(x-5)^2+(y-8)^2 = 170$
	Uses *P* or *Q* and their centre to find the radius or radius^2	3.1a	M1	
	Obtains $(x-5)^2+(y-8)^2=170$ ACF Eg $x^2-10x+y^2-16y=81$	1.1b	A1	
	Subtotal		**3**	

Q	Marking instructions	AO	Marks	Typical solution
9(b)(ii)	States 4 Must have the correct centre and correct radius or radius^2	2.2a	R1	4
	Subtotal		**1**	

	Question 9 Total		**9**	