Question Number	Scheme	Marks
5. (a)	$x-2y+25=0$ $y=\frac{1}{2}x+\frac{25}{2}\Rightarrow y=-2x+...$ $y=-2x$	M1 A1 **(2)**
(b)	Substitutes $y=-2x$ into $x-2y+25=0\Rightarrow x+4x+25=0$ $\Rightarrow x=-5,\ y=10$	M1 A1, A1 **(3)**
(c)	Shortest distance = $\sqrt{5^2+10^2}=5\sqrt{5}$	M1, A1cso **(2)** **(7 marks)**

(a)

M1: Attempts the normal gradient. E.g. writes $x-2y+25=0$ in the form $y=px+q$ AND changes the gradient (need not be correctly changed). Alternatively, may switch the x and y coordinates and change a sign – e.g. perpendicular line is $2x+y+k=0$. Another approach is to find the gradient of l_1 by identifying two points on the line and attempting the gradient (must be change in y over change in x) between these two points.
May be implied by the correct answer.

A1: $y=-2x$ o.e. Score for the correct answer even if an incorrect "q" was seen.

(b)

M1: Attempts to solve their $y=-2x$ (must be of form kx) with $x-2y+25=0$ (or their rearrangement of this).
Score for setting up an equation in a single variable.

A1: $x=-5$ OR $y=10$ from correct work.

A1: Both $x=-5,\ y=10$ from correct work

(c)

M1: Attempts to use Pythagoras theorem to find the distance or distance squared between (0, 0) and their $(-5,10)$ or other full method to find the shortest distance.

A1cso: $5\sqrt{5}$ Must be simplified surd form. Must have come from correct coordinates in (b).

Question Number	Scheme	Marks
6 (a)	$\frac{\sin CAO}{17} = \frac{\sin 0.6}{15} \Rightarrow CAO = 0.6944...$	M1
	Angle $COA = \pi - 0.6 - "0.6944" = 1.847$ *	dM1, A1*
		(3)
(b)	Attempts $\frac{1}{2}r^2\theta = \frac{1}{2}\times 15^2 \times \theta$ where $\theta = \left(2\pi - 1.847\right)$ or just 1.847 OR attempts $\frac{1}{2}ab\sin C = \frac{1}{2}\times 15\times 17\sin\left(1.847\right)$	M1
	Attempts $\frac{1}{2}r^2\theta = \frac{1}{2}\times 15^2 \times \left(2\pi - 1.847\right)\left(\approx 499\right)$ AND $\frac{1}{2}ab\sin C = \frac{1}{2}\times 15\times 17\sin\left(1.847\right)\left(\approx 122.7\right)$ AND adds	dM1
	(awrt) 622 m^2	A1
		(3)
(c)	$r\theta = 15\times\theta$ where $\theta = \left(2\pi - 1.847\right)$ or just 1.847 OR $\left(AC^2 =\right) 15^2 + 17^2 - 2\times 15\times 17\cos\left(1.847\right)\left(\approx 653\right)$	M1
	Attempts $r\theta = 15\times\left(2\pi - 1.847\right)\left(= 66.54\right)$ AND $\left\{AC =\right\}\sqrt{15^2 + 17^2 - 2\times 15\times 17\cos\left(1.847\right)}$	dM1
	92.1 + 2 = (awrt) 94.1 m	A1
		(3)
		(9 marks)

Note: Work must be completed in the appropriate parts to gain credit, but if no labelling is given, apply benefit of doubt that area work is for (b) and perimeter work is for (c).