Question Number	Scheme	Marks
5(a)	Gradient $PR = \dfrac{6}{-6} = -1$, Gradient $QS = \dfrac{8}{8} = 1$	M1A1
	Product $= -1 \Rightarrow$ perpendicular	A1 (3)
(b)	(i) $PR = \sqrt{6^2+6^2} = 6\sqrt{2}\ \left(=\sqrt{72}\right)$	M1
	(ii) $QS = \sqrt{8^2+8^2} = 8\sqrt{2}\ \left(=\sqrt{128}\right)$	A1 (2)
(c)	Area $= \dfrac{1}{2}\text{"}6\sqrt{2}\text{"}\times\text{"}8\sqrt{2}\text{"} = 48\ \left(\text{units}^2\right)$	M1A1 (2)
		[7]

Part	Mark	Notes
(a)	M1	Finds the gradient of PR and QS using a correct method. This may be on a diagram. Gradient $PR = \dfrac{7-1}{4-10} = \dfrac{6}{-6} = -1$, Gradient $QS = \dfrac{8-0}{11-3} = \dfrac{8}{8} = 1$
	A1	Both gradients correct Gradient $PR = -1$, Gradient $QS = 1$
	A1	Finds the product of the two gradients with a statements that as the product = –1 then the lines are perpendicular.
(b)	M1	For **either** $PR = \sqrt{6^2+6^2} = \sqrt{72}$ or $6\sqrt{2}$ **OR** $QS = \sqrt{8^2+8^2} = \sqrt{218}$ or $8\sqrt{2}$ correct
	A1	For **both** $PR = \sqrt{6^2+6^2} = \sqrt{72}$ or $6\sqrt{2}$ **AND** $QS = \sqrt{8^2+8^2} = \sqrt{218}$ or $8\sqrt{2}$ correct
(c)	M1	$PQRS$ is a kite so $= \dfrac{1}{2}\text{"}6\sqrt{2}\text{"}\times\text{"}8\sqrt{2}\text{"} = \ldots$
	A1	Area = $48\ \left(\text{units}^2\right)$
	ALT Uses determinants	
	M1	Area $= \dfrac{1}{2}\begin{pmatrix} 4 & 3 & 10 & 11 & 4 \\ 7 & 0 & 1 & 8 & 7 \end{pmatrix}$ $= \dfrac{1}{2}\left([4\times0+3\times1+10\times8+11\times7]-[3\times7+10\times0+11\times1+4\times8]\right)$ $= \ldots.$ Allow one slip in a product.
	A1	Area = $48\ \left(\text{units}^2\right)$

USEFUL SKETCH