Question number	Scheme	Marks
9 (a)	$\cos\alpha = \dfrac{3}{\sqrt{13}}$	B1 (1)
(b)	$h = \sqrt{17^2 - \left(9^2 + 12^2\right)} = 8$	M1 M1 A1 (3)
(c)	Let M be the midpoint of BC $\tan\theta^\circ = \dfrac{h}{OM} = \dfrac{8}{12} = \dfrac{2}{3}$ *	M1 A1 (2)
(d)	Let N be the midpoint of EM	
	$EM = \sqrt{8^2 + 12^2} = 4\sqrt{13}$	M1
	$NO = \sqrt{12^2 + \left(2\sqrt{13}\right)^2 - 2(12)\left(2\sqrt{13}\right)\left(\dfrac{3}{\sqrt{13}}\right)} \Rightarrow NO = 2\sqrt{13}$	M1
	Hence triangle ONM is isosceles $180 - 2\times 33.7 = 112.6^\circ$	M1 A1 (4)
		Total 10 marks

Part	Mark	Notes
(a)	**B1**	For $\cos\alpha = \dfrac{3}{\sqrt{13}}$
(b)	**M1**	For use of Pythagoras to OC find e.g. $\sqrt{\left(9^2 + 12^2\right)}$ oe
	M1	For use of Pythagoras to find h e.g. $\sqrt{17^2 - \left(9^2 + 12^2\right)}$
	A1	For 8
(c)	**M1**	For $\tan\theta^\circ = \dfrac{h}{OM} = \dfrac{8}{12}$ (condone the omission of the degree sign)
	A1 cso	For obtaining the given result
(d)	**M1**	For use of Pythagoras to find EM e.g. $\sqrt{8^2 + 12^2}$
	M1	For use of the cosine rule to find NO e.g. $\sqrt{12^2 + \left(2\sqrt{13}\right)^2 - 2(12)\left(2\sqrt{13}\right)\left(\dfrac{3}{\sqrt{13}}\right)}$
	M1	For $180 - 2\times 33.7$
	A1	For 112.6°