Question Number	Scheme	Marks
7.(i)	$P^2 = 8^2 + 6^2 - 2\times 8\times 6\cos 60^{\text{O}}$	M1A1
	$P = \sqrt{52} = 7.2$ (N) or better	A1
(ii)	$\dfrac{\sin\alpha}{6} = \dfrac{\sin 60^{\text{O}}}{\sqrt{52}}$ or $\dfrac{\sin\beta}{8} = \dfrac{\sin 60^{\text{O}}}{\sqrt{52}}$ $6^2 = 8^2 + P^2 - 2\times 8\times P\cos\alpha$ or $8^2 = 6^2 + P^2 - 2\times 6\times P\cos\beta$	M1A1 **ft**
	$\alpha = 46.(1..)^{\text{o}}$ $\beta = 73.(897..)$ or $106.(103..)$	A1
	Bearing is 74^{o} to nearest degree	A1 cso
		(7)
	Alternative using column vectors	
(i)	$P^2 = (8\cos 30^0)^2 + (6 - 8\sin 30^0)^2$	M1A1
	$P = \sqrt{52} = 7.2$ (N) or better	A1
(ii)	$\tan\beta = \dfrac{8\cos 30^0}{6 - 8\sin 30^0}$ or $\sin\beta = \dfrac{8\cos 30^0}{\sqrt{52}}$ or $\cos\beta = \dfrac{6 - 8\sin 30^0}{\sqrt{52}}$ or equivalents for $(90^0 - \beta)$	M1A1 **ft**
	$\beta = 73.(897..)^o$ or $(90^0 - \beta) = 16.103\ldots$	A1
	Bearing is 74^{o} to nearest degree	A1
	N.B. If 4 is consistently used instead of 8, max marks are:	
	(i) M1A0A0 (ii) M1A1ftA0A0 i.e. 3/7	
	Notes for qu 7	
7(i)	First M1 for use of the cosine rule (with P, 6, 8 and 60^{o} or their α or $(120^{\text{o}}$ – their α).	
	First A1 for a correct equation	
	Second A1 for a correct magnitude	
(ii)	Second M1 for a complete method to find a relevant angle – must be using their P, 60^{o} (or 120^{o}) and either 6 or 8 if using the sine rule or their P, 6, and 8 if using the cosine rule.	
	Third A1 ft for a correct equation, ft on their P	
	Fourth A1 for at least one correct angle, accurate to nearest degree	
	Fifth A1 cso for a correct bearing to nearest degree	
	Alternative using column vectors	
(i)	First M1 for use of Pythagoras with correct structure allowing for sin/cos confusion and sign errors	
	First A1 for a correct equation	
	Second A1 for a correct magnitude	
(ii)	Second M1 for a complete method to find a relevant angle – must be using their P components with correct structure allowing for cos/sin confusion and sign errors	

Question Number	Scheme	Marks
	Third A1 ft for a correct equation, ft on their P components	
	Fourth A1 for at least one correct angle, accurate to nearest degree	
	Fifth A1 cso for a correct bearing to nearest degree	