Question			Answer	Marks	Part Marks and Guidance	
1	(a)		Height of triangle = $h - e$ oe Tan a = $\frac{h-e}{d}$ or $h - e = d \times \tan a$	1 1	May be on diagram If **0** in question, allow **SC1** for clear attempt to use tan a = opp/adj with adj = d even if opp = h	eg y shown on diagram and $h = y + e$ used
	(b)		17.3(...) or 17	2	**M1** for $1.7 + 25 \times \tan 32$	
	(c)		$[a =] \tan^{-1}\left(\frac{h-e}{d}\right)$ oe	3	Accept invtan, arctan, condone lack of brackets **M1** for $h - e = d \times \tan a$ **M1** for $\tan a = \frac{h-e}{d}$ If **0**, allow **SC1** for $[a =] \tan^{-1}$(*their* expression for tan a)	eg after first step of $\tan a = \frac{h}{e+d}$ allow **SC1** for $a = \tan^{-1}\left(\frac{h}{e+d}\right)$

2			$12x^2 + 9x$	3	**M2** for $3x(4x + 3)$ or $6x(2x + 1½)$ Or **M1** for $6x \times (4x + 3)$ oe	Condone omission of brackets for **M2** or **M1**

3			Attempt to find BD first	M1	For strategy eg implied by use of 6.5 and cos35 Allow for stating/implying that they need to find BD if they can't do so	Allow for finding AD if go on to find BD next
			$[BD =]\frac{6.5}{\cos 35}$ [= 7.9...] oe	M2	**M1** for $\cos 35 = \frac{6.5}{BD}$ oe	**M2** for other correct explicit expressions for BD eg using sine or **M1** for implicit ones Or **M2** for complete correct method using tan to find AD then Pythag to find BD
			[CD=] $\frac{\textit{their}BD}{\sin 35}$ oe	M2	**M1** for sin35 = $\frac{\textit{their}BD}{CD}$ oe	Condone poor notation throughout eg 35cos
			13.7 to 13.9	A1	If **M** marks for triangle BCD not earned, allow **A1** for [BD =] 7.9 to 7.95	Allow letters used for sides, not numerical values, for M marks and similarly for correct angle notation

4	**(a)**	$[h^2 =] 2.8^2 \pm 2.5^2$ oe	**M1**		Allow correct use of trig if angle EAD or ADE found first – **M2** for correct explicit statement e.g. AE = 2.5 tan 26.7 or **M1** for correct implicit statement e.g. AE/2.5 = tan 26.7 (angle EAD = 63.2…) (angle ADE = 26.7…)
		$\sqrt{2.8^2 - 2.5^2}$	**M1**		
		1.26[...] or 1.3	**A1**	Implied by 3.36[...] or 3.4	
		3.36[...] or 3.4	**A1**	After **A0**, **SC1** for 2.1 + *their* 1.26[..]or 1.3 after the first **M1** earned Scale drawing alone scores 0 Allow **B4** for 3.36… or 3.4 www	Can earn **M1M0A0SC1** but not **M0M0A0SC1**
	(b)	cos [θ] = 2.5/2.8 oe	**M1**	correct cos statement or other trig fn used correctly with other side of triangle found in (a); condone poor notation	Could use longer methods finding other angle **and then** subtracting from 90 Could use a reverse method using 15° to show that the height is less than 1.3 **M2** for correct explicit trig statement e.g. *h* = 2.5 tan 15 or **M1** for *h* /2.5 = tan 15 and **A1** for correct answer **and** yes
		Inverse trig fn seen or used	**M1**	Independent of first **M1** Condone poor notation	Allow clear intent e.g. invcos, 2nd function cos, shift cos Check on calculator from first statement if not shown (acc to 2 sf)
		26.7 to 26.8 or 27 **and** yes oe	**A1**	Allow **B3** for 26.7 to 26.8 or 27 **and** yes www	