

16	(i)	$C = 2$ $A = 62$ $B = 10$	B1 B1 B1 [3]	3.3 3.3 1.1	since max when $t = 2$ since max when $(t - 2)^2 = 0$ from substitution of 22, 62 and 2	
16	(ii)	substitution of 0.75 in $p = 62 - 10(t - 2)^2$ 46	M1 A1 [2]	3.4 1.1	FT <i>their</i> 2, 62, 10 allow 46.375 rounded to 2 or more sf	

Question		Answer	Marks	AOs	Guidance	
16	(iii)	$their\ 62 - 10(t - 2)^2 = 0$ [$t =$] 4 hours 29 minutes or 4 hours 30 minutes	M1 A1 [2]	3.4 2.4	or ≥ 0 or > 0 for M1 NB $t = 2 + \sqrt{6.2}$ allow 4.49 or 4.5 [hours]	
16	(iv)	substitution of $t = 1, 3$ and 5 awrt $59.4 \approx 59$ awrt $83.8 \approx 84$ awrt $88.8 \approx 89$	M1 A1 [2]	3.4 3.5a	or awrt 59.4, 83.8 and 88.8 found and supporting comment made eg they are approximately the same as the values in the table	if M0 allow SC1 for two values correctly found and shown to be consistent or supporting comment made
16	(v)	$p \rightarrow 90$ as $t \rightarrow$ large or when $t = 12$ $p = 89.99539\dots$ rounded to 2 or more sf comparison with value of p for $t = 5$ eg model predicts $p = 89$ for $t = 5$ and $p = 90$ for $t = 12$ so not good advice	B1 B1 [2]	3.5a 3.5a	or model predicts $p = 90$ for (any) $t \geq 7$ so not good advice	allow equivalent comment on 7 hours work for one extra mark