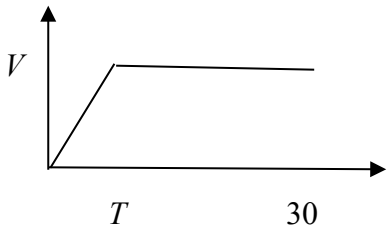
Question Number	Scheme	Marks
6(a)		B1 shape B1 V, T, 30 (2)
6(b)	$V = 0.8T$ or $V = \frac{400}{60-T}$ oe	B1 (1)
6(c)	$\frac{(30+30-T)V}{2} = 200$ (trapezium) or $V = \frac{400}{60-T}$	M1A1
	$\frac{(30+30-T)0.8T}{2} = 200$ or $0.8T = \frac{400}{60-T}$	M1
	$T^2 - 60T + 500 = 0$	A1 (4)
6(d)	$(T-10)(T-50) = 0$	M1
	$T = 10$ or 50	A1
	$T = 10$ since $T < 30$	A1 (3)
6(e)	Any two of:	B1 B1
	do not have an instantaneous change from acceleration to constant speed do not have constant velocity do not have constant acceleration reaction time at start stop watch error at end -1 for each incorrect extra	
	.	(2)
		(12)
	Notes for qu 6	
6(a)	First B1 for shape; B0 if there is a solid vertical line at the end but allow a dotted line.	
	Second B1 for V, T and 30 correctly placed. Allow appropriate delineators.	
6(b)	B1 for $V = 0.8T$ or $V = \frac{400}{60-T}$ oe but V must be in terms of T.	
6(c)	First M1 for, an equation in V and T only, with a clear attempt to use area = 200, with the correct structure (3 alternatives) (M0 if a single *suvat* equation is used or ½ is missing	
	OR: $\frac{1}{2}TV + V(30-T) = 200$ (triangle + rectangle) **OR**: $30V - \frac{1}{2}TV = 200$ (rectangle – triangle)	
	First A1 for a correct equation	

Question Number	Scheme	Marks
	Second independent M1 for substituting for V in terms of T, using their answer for (b) or using $V = 0.8T$ in the alternative, but must be using or have used 200, to earn this mark to give an equation in T only.	
	Second A1 for $T^2 - 60T + 500 = 0$	
6(d)	M1 for a clear attempt to solve their quadratic (must be a 3 term quadratic), with working N.B. This mark can be implied by two correct values for T	
	First A1 for two correct answers 10 or 50	
	Second A1 for 10 with correct justification	
6(e)	+1 for each correct answer (max of 2), -1 for each incorrect **extra** answer after two answer.	
	Incorrect answers:	
	Air resistance, friction at the ground, height or size of athlete	