Question Number	Scheme	Marks
3(a)		B1 $0 < t < 50$ B1 $50 < t$ B1 (V,8,15, 20,30) (3)
(b)	Use area under graph or *suvat* to form an equation in V only. $140 = \dfrac{1}{2} \times 20 \times V$ $V = 14$	M1 A1 (2)
(c)	$8 = V - \dfrac{1}{2}t_1$ (and /or $0 = 8 - \dfrac{1}{3}t_2$) $t_1 = 12$, (and/or $t_2 = 24$) Total time $= 20 + 30 + t_1 + 15 + t_2 = 101$ (seconds)	M1 A1 **DM**1 A1 (4)
(d)	Total distance $= 140 + 30V + \dfrac{V+8}{2}t_1 + 15 \times 8 + \dfrac{1}{2} \times 8 \times t_2$ $\qquad = 140 + 30 \times 14 + 11 \times 12 + 15 \times 8 + 24 \times 4$ $\qquad = 908$ (m)	M1A2 **ft** A1 (4)
		[13]
Notes for Question 3	

Question 3(a)
First B1 for shape of graph for $0 \le t \le 50$
Second B1 for shape of graph for $t > 50$
Third B1 for V, 8, 15, 20, 30 appropriately used

Question 3(b)
M1 for use of area under graph (must have '1/2') or *suvat* to obtain an equation in V only.
A1 for $V = 14$

Question 3(c)
First M1 for use of either $8 = V - \frac{1}{2}t_1$ or $0 = 8 - \frac{1}{3}t_2$
First A1 for either $t_1 = 12$ or $t_2 = 24$
Second M1, **dependent on the first M1**, for $20 + 30 + t_1 + 15 + t_2$ (must include all 5 times)
Second A1 for 101 (s)

Question 3(d)
First M1 for an expression for the total area (distance) **including all parts of the motion**. Where a triangle or trapezium is used , a '1/2' must be seen.
Second A2 **ft** on their V, t_1 and t_2 , -1 each error.
Fourth A1 for 908 (m).