Question Number	Scheme	Marks
2(a)	$40 = \frac{1}{2} g t_1^{\,2}$	M1
	$t_1 = \sqrt{\frac{80}{g}} (= \frac{20}{7} = 2.857..)$	A1
	$v_1 = \sqrt{2g \times 40}$ or $g \times \frac{20}{7}$ (= 28)	B1
	$t_2 = \frac{\frac{1}{2} \times \sqrt{2g \times 40}}{g}$ $(= \frac{10}{7})$ (1.42857..) **or** $\frac{\sqrt{2g \times 40}}{g}$ $(= \frac{20}{7})$ (2.857..)	M1
	Total time = 5.7 s or 5.71 s	A1 (5)
	N.B. Allow 5.72 then rounded to 5.7 or 5.71	
2(b)		
	$v_2 = 14$; $v_3 = 7$; $v_4 = 3.5$	M1
	$0 = 3.5^2 - 2gh$	M1A1
	$h = 0.625$ or 0.63 (m) or 5/8 (m)	A1 cso (4)
		(9)
	Notes for qu 2	
2(a)	First M1 for a complete method to obtain an equation in t_1 only	
	First A1 for a correct unsimplified t_1 (correct to at least 2SF as a decimal)	
	B1 for a correct unsimplified v_1 value, allow a negative answer	
	Second M1 for $\frac{\frac{1}{2} v_1}{g}$ or $\frac{v_1}{g}$ with their v_1 value substituted (correct to at least 2SF as a decimal if no working)	
	Second A1 for either 5.7 or 5.71 (A0 for $\frac{40}{7}$)	
2(b)	First M1 for $v_4 = (\frac{1}{2})^3 v_1$ oe N.B. their v_1.	
	Second M1 for a complete method to obtain an equation in *h* only e.g. $0 = (v_4)^2 - 2gh$	
	First A1 for a correct equation	
	Second A1 for 0.63 or 0.625 cso (A0 for 40.625)	
	N.B. If they go as far as $v_3 (= 7)$ or $v_5 (= 1.75)$ then use $0 = (v_3)^2 - 2gh$ or $0 = (v_5)^2 - 2gh$, can score max M0M1A0A0	