

Question Number	Answer	Mark																					
12(a)	<ul style="list-style-type: none">Length/height of wooden rod (1)Distance from the rod to the light gate (1)	2																					
12(b)	<ul style="list-style-type: none">$v = \frac{\text{length of rod}}{\text{time (to pass through light gate)}}$ (1)Repeat (at each height) and (calculate) an average (1)	2																					
12(c)	<ul style="list-style-type: none">Repeat at different (release) heights (above the light gate and calculate v for each height) (1)States an appropriate graph to draw (1)Corresponding description of how to obtain the acceleration from the gradient (1) <table border="1"><tr><td>Graph</td><td>$s - v^2$</td><td>$v^2 - s$</td><td>$2s - v^2$</td><td>$v^2 - 2s$</td><td>$v^2/2 - s$</td><td>$s - v^2/2$</td></tr><tr><td>a</td><td>$1/(2 \times \text{gradient})$</td><td>$\text{gradient}/2$</td><td>$1/\text{gradient}$</td><td>$\text{gradient}$</td><td>$\text{gradient}$</td><td>$1/\text{gradient}$</td></tr><tr><td>Gradient</td><td>$1/2a$</td><td>$2a$</td><td>$1/a$</td><td>a</td><td>a</td><td>$1/a$</td></tr></table>	Graph	$s - v^2$	$v^2 - s$	$2s - v^2$	$v^2 - 2s$	$v^2/2 - s$	$s - v^2/2$	a	$1/(2 \times \text{gradient})$	$\text{gradient}/2$	$1/\text{gradient}$	gradient	gradient	$1/\text{gradient}$	Gradient	$1/2a$	$2a$	$1/a$	a	a	$1/a$	3
Graph	$s - v^2$	$v^2 - s$	$2s - v^2$	$v^2 - 2s$	$v^2/2 - s$	$s - v^2/2$																	
a	$1/(2 \times \text{gradient})$	$\text{gradient}/2$	$1/\text{gradient}$	gradient	gradient	$1/\text{gradient}$																	
Gradient	$1/2a$	$2a$	$1/a$	a	a	$1/a$																	
Total for question 12		7																					