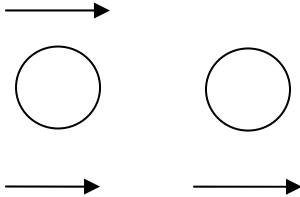


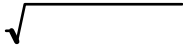
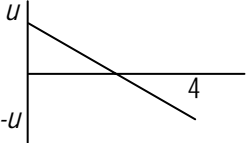
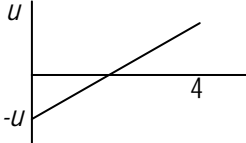
January 2008  
6677 Mechanics M1  
Mark Scheme

Question Number	Scheme	Marks
2.(a)	$27 = 0 + \frac{1}{2}a \cdot 3^2 \Rightarrow a = \underline{6}$	M1 A1 (2)
(b)	$v = 6 \times 3 = \underline{18 \text{ m s}^{-1}}$	M1 A1 f.t. (2)
(c)	<p>From <math>t = 3</math> to <math>t = 5</math>, <math>s = 18 \times 2 - \frac{1}{2} \times 9.8 \times 2^2</math></p> <p>Total ht. = <math>s + 27 = \underline{43.4 \text{ m}, 43 \text{ m}}</math></p>	M1 A1 f.t. M1 A1 (4)
		<b>8</b>

June 2008  
6677 Mechanics M1  
Final Mark Scheme

Question Number	Scheme	Marks
		
2.	<p>(a) <math>v^2 = u^2 + 2as \Rightarrow 17.5^2 = u^2 + 2 \times 9.8 \times 10</math> Leading to <math>u = 10.5</math></p> <p>(b) <math>v = u + at \Rightarrow 17.5 = -10.5 + 9.8T</math> <math>T = 2\frac{6}{7}</math> (s)</p> <p>Alternatives for (b)</p> $s = \left(\frac{u+v}{2}\right)T \Rightarrow 10 = \left(\frac{17.5 + -10.5}{2}\right)T$ $\frac{20}{7} = T$ <p>OR <math>s = ut + \frac{1}{2}at^2 \Rightarrow -10 = 10.5t - 4.9t^2</math> Leading to <math>T = 2\frac{6}{7}, \left(-\frac{5}{7}\right)</math>      Rejecting negative</p> <p>(b) can be done independently of (a)</p> $s = vt - \frac{1}{2}at^2 \Rightarrow -10 = -17.5t + 4.9t^2$ <p>Leading to <math>T = 2\frac{6}{7}, \frac{5}{7}</math></p> <p>For final A1, second solution has to be rejected. <math>\frac{5}{7}</math> leads to a negative <math>u</math>.</p>	<p>M1 A1 A1      (3)</p> <p>M1 A1 f.t. DM1 A1   (4)</p> <p>[7]</p> <p>M1A1 f.t. DM1A1   (4)</p> <p>M1 A1 f.t. DM1 A1   (4)</p> <p>M1 A1 DM1</p> <p>A1      (4)</p>

January 2009  
6677 Mechanics M1  
Mark Scheme

Question Number	Scheme	Marks
		
2	<p>(a)</p> <div style="display: flex; align-items: center; justify-content: center;">  <span style="margin: 0 10px;"><u>or</u></span>  </div> <p style="margin-left: 100px;">shape</p> <p style="margin-left: 100px;">values</p> <p>(b)</p> $19.6 = \frac{1}{2} \times 2 \times u$ $u = 19.6$	<p>B1</p> <p>B1 (2)</p> <p>M1 A1</p> <p>A1 (3) [5]</p>

Question Number	Scheme	Marks	
Q6 (a)	$(\uparrow)v^2 = u^2 + 2as$ $0 = 14.7^2 - 2 \times 9.8 \times s$ $s = 11.025 \text{ (or 11 or 11.0 or 11.03) m}$ Height is 60 m or 60.0 m <b>ft</b>	M1A1 A1 A1ft (4)	
	(b) $(\downarrow)v^2 = u^2 + 2as$ $v^2 = (-14.7)^2 + 2 \times 9.8 \times 49$ $v = 34.3 \text{ or } 34 \text{ m s}^{-1}$	M1 A1 A1 (3)	
	(c) $(\downarrow)v = u + at$ $34.3 = -14.7 + 9.8t$ $t = 5$	<b>OR</b> $(\downarrow)s = ut + \frac{1}{2}at^2$ $49 = -14.7t + 4.9t^2$ $t = 5$	M1 A1 A1 (3) <b>[10]</b>