

7			$v = 3.5t - 0.5t^2 \Rightarrow \frac{dv}{dt} = 3.5 - t$ <p>When <math>t = 8</math>, <math>a = 3.5 - 8 = -4.5</math></p> <p>And <math>v = 3.5 \times 8 - 0.5 \times 8^2 = -4</math></p> <p>Either “Velocity is negative and decreasing, so the speed is increasing”.</p> <p>Or “As both the velocity and acceleration are negative, the speed is increasing” or similar</p>	<p><b>M1</b></p> <p><b>A1</b></p> <p><b>B1</b></p> <p><b>A1</b></p> <p><b>[4]</b></p>	<p><b>3.1b</b></p> <p><b>2.1</b></p> <p><b>3.1b</b></p> <p><b>3.2a</b></p>	<p>Attempt to differentiate to find <math>a</math></p> <p>Evaluating <math>a</math> when <math>t = 8</math></p> <p>Evaluating <math>v</math> when <math>t = 8</math></p> <p>Argued from negative <math>a</math> and <math>v</math></p>	<p>Allow A1 for establishing that <math>a &lt; 0</math> from correct expression without evaluating.</p> <p>Allow B1 for establishing <math>v &lt; 0</math> from correct expression without evaluating.</p>
			<p><b>Special case</b></p> <p>When <math>t = 8</math>, <math>v = 3.5 \times 8 - 0.5 \times 8^2 = -4</math></p> <p>Evaluating <math>v</math> either side of <math>t = 8</math></p> <p>Statement referring to correct values</p>	<p><b>B1</b></p> <p><b>B1</b></p> <p><b>B1</b></p>		<p>Evaluating <math>v</math> when <math>t = 8</math></p> <p>Two correct values</p> <p>Argued from correct working</p>	<p>Method is not a full argument so max 3/4 marks.</p>

$t$	7	7.5	7.9	8	8.1	8.5	9
$v$	0	-1.875	-3.555	-4	-4.455	-5.88	-9