

Question Number	Answer	Mark
2(a)	<p>Uses $T = 2\pi\sqrt{\frac{l}{g}}$ with $l = H - h$ (1)</p> <p>Clear algebra leading to formula (1)</p> <p><u>Example of derivation</u></p> <p>$T = 2\pi\sqrt{\frac{l}{g}}$ where $l = H - h$</p> <p>So $T = 2\pi\sqrt{\frac{H-h}{g}}$</p> <p>$\therefore T^2 = 4\pi^2\left(\frac{H-h}{g}\right) = \frac{4\pi^2 H - 4\pi^2 h}{g} = \frac{4\pi^2 H}{g} - \frac{4\pi^2 h}{g}$</p>	2
2(b)	<p>1. Use a metre rule to measure h (1)</p> <p>2. Ensure metre rule is vertical using a set square Or Use a set square to read off the scale Or Measure to the bottom of the bob and add the radius of the bob (1)</p> <p>3. Use a (timing) marker (at the centre of the oscillation) (1)</p> <p>4. Measure (time for) multiple oscillations and divide by the number of oscillations Or Repeat the measurement of T and calculate the mean Or Start timing the oscillations once the oscillations have settled (1)</p> <p>5. Determine T for (at least) 5 different values of h (1)</p> <p>6. Plot a graph of T^2 against h and determine the intercept (to calculate H) (1)</p> <p>[ANNOTATE WITH MPs AWARDED]</p>	6
2(c)	<p>The recording can be viewed in slow motion (1)</p> <p>Judging when an oscillation is complete will be more accurate (1)</p>	2
	Total for question 2	10