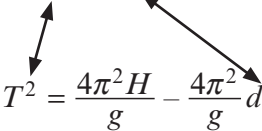


DATA ANALYSIS TASK – Mark Scheme

Question		Marking details	Marks Available																						
(a)		<p>Re-arrange the equation as $T^2 = \frac{4\pi^2 H}{g} - \frac{4\pi^2 d}{g}$ (1)</p> <p>The re-arrangement should be explicit, i.e. the initial squaring step shown, e.g.</p> $T^2 = (2\pi)^2 \frac{H - d}{g} \text{ or } T^2 = 4\pi^2 \frac{H - d}{g}$ <p>Explicit comparison with $y = mx + c$ (1), e.g.</p> <div>$T^2 = \frac{4\pi^2 H}{g} - \frac{4\pi^2 d}{g}$</div>	2																						
(b)		<p>Unit for T^2 given as s^2. (1)</p> <p>Third column correct with all values to 3 sig figs (1) [see below].</p> <p>Fourth column correct with all values to 2 (or 3) sig figs (1) [see below].</p> <table><tr><th>Period of one oscillation (T) (s)</th><th>Period of oscillation squared (T^2) (s^2)</th></tr><tr><td>3.11</td><td>9.67 ± 0.10</td></tr><tr><td>3.04</td><td>9.24 ± 0.10</td></tr><tr><td>2.97</td><td>8.82 ± 0.10</td></tr><tr><td>2.91</td><td>8.47 ± 0.10</td></tr><tr><td>2.83</td><td>8.01 ± 0.10</td></tr><tr><td>2.77</td><td>7.67 ± 0.10</td></tr><tr><td>2.69</td><td>7.24 ± 0.10</td></tr><tr><td>2.62</td><td>6.86 ± 0.10</td></tr><tr><td>2.53</td><td>6.40 ± 0.10</td></tr><tr><td>2.46</td><td>6.05 ± 0.10</td></tr></table>	Period of one oscillation (T) (s)	Period of oscillation squared (T^2) (s^2)	3.11	9.67 ± 0.10	3.04	9.24 ± 0.10	2.97	8.82 ± 0.10	2.91	8.47 ± 0.10	2.83	8.01 ± 0.10	2.77	7.67 ± 0.10	2.69	7.24 ± 0.10	2.62	6.86 ± 0.10	2.53	6.40 ± 0.10	2.46	6.05 ± 0.10	3
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(c)		<p>Axes labelled with units – correct orientation [ecf on incorrect units in table – if no units are given in the table there is no ecf here]. (1)</p> <p>Suitable scales (not involving awkward factors, e.g. 3 / over $\frac{1}{2}$ each axis used). (1)</p> <p>All points plotted correctly to within $\frac{1}{2}$ small square division. (1)</p> <p>All error bars plotted correctly. (1)</p> <p>Correct steepest and least steep lines consistent with the error bars. (1)</p> <p>See exemplification on pages 6-11 for additional guidance on marking this section.</p>	5																						