

Question 16 (continued)

- (a) Outline TWO changes that could be made to the experimental procedure that would improve its accuracy. 2

Repeat the experiment a few times at each length to gain an average, makes it more accurate.  
 Instead of only for one period, perhaps measuring for a few, and then dividing the result at the end by the measured period would give a more accurate result.

- (b) Compare Kim's and Ali's methods of calculating  $g$  and identify the better approach. 3

Kim's approach is more reliable as solving the value for  $g$  mathematically is more accurate. Ali's method of line of best fit can prove to be inaccurate and difficult. It is quicker to solve the problem mathematically as graphs are time consuming and can be inaccurate due to inaccurate measurement and drawing.

- (c) Calculate the value of  $g$  from the line of best fit on Ali's graph. 3

$$g = \frac{T^2 (s^2)}{L (m)}$$

$$= \frac{(0.57)^2}{0.08} = 4.06 \quad \frac{(0.65)^2}{0.1} = 4.22 \quad \frac{(0.7)^2}{0.12} = 4.08$$

Average = 4.12  $\therefore$  Ali's line of best fit value for  $g$  = 4.12

End of Question 16