

Question 16 (continued)

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

• Use a heavier string so the tension is greater allowing for better results
 • Make sure the pivot in which it was swinging from was almost frictionless with a lubricant.

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

Kim has 12 function values which are all accounted for when doing the calculations while Ali's best fit line takes out some values that are significantly different from others.

Ali's method is better because it excludes values that are different from real values (it excludes the human error side of it and Kim's doesn't)

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

It passes through 6 points - and there are 3 on exact length lines at 0.08 cm

using $T = 2\pi \sqrt{\frac{L}{g}}$ $g = \left(\frac{T}{2\pi}\right)^2$ $\left(\frac{T}{2\pi}\right)^2 = \frac{L}{g}$

$g = \frac{0.08}{\left(\frac{0.57}{2 \times \pi}\right)^2}$ $g = 9.7$ $g = \frac{L}{\left(\frac{T}{2\pi}\right)^2}$

also at 0.16 $g = \frac{0.16}{\left(\frac{0.81}{2 \times \pi}\right)^2} = 9.6$

End of Question 16

$\frac{9.7 \times 9.6}{2} = 9.65 \text{ m/s}^2$