

Question 16 (continued)

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

+ Using a heavier mass  
~~using a longer string~~  
 + increasing the rate of change in the length of string.  
 +

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

Kim's method is a better method for calculating the gravity although gravity was not found to be at the exact value of 9.8, it is a more accurate way of estimating. All the results are in a clear table so there is no change of any defaults.

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

given  $T = 2\pi\sqrt{\frac{L}{g}}$  last length 0.19 m  
 $T^2 = 2\pi^2 \frac{L}{g}$  last time measured = 0.89s  
 $0.89^2 = 2\pi^2 \times \frac{0.19}{g}$   
 $0.89^2 = 2\pi^2 \times 0.19 g^{-2} = 0.99^{-2} = \frac{0.89^2}{2\pi^2} = \frac{0.7921}{0.04012}$   
~~0.89^2 = 2\pi^2 \times 0.19 g^{-2}~~  
~~0.89^2 = 2\pi^2 \times 0.19 g^{-2}~~  
 $0.99^{-2} = \frac{0.04012}{0.09}$   
 $g^{-2} = 0.044$

End of Question 16

0.7921