

Question 16 (continued)

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

Test with even more lengths. More tests gets a better overall result.

Do it with a heavier mass so that wind or other factors do not affect the movement of the pendulum.

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

Kim's method is easier as the data is already recorded and just has to be put in the formula.

However, Ali is able to view the graph to see if the data is correct (a straight line). Both will get very similar results, because they use the same results. Kim's is better as there is a smaller chance of making a mistake. Ali might draw the graph wrong.

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

$$\frac{0.17 - 0.02}{0.37 - 0.57} = 0.2354$$

$$T^2 = 4\pi^2 \frac{L}{g}$$

$$\frac{L}{T^2} = \frac{g}{4\pi^2}$$

$$\frac{L}{T^2} = 0.2354 \quad 0.2354 \times 4\pi^2 = g$$

$$g = 9.295$$

End of Question 16