Question 2

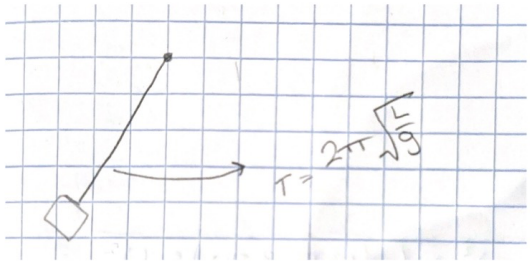
Given:

a) $L = 0.75 \pm 0.011m$
b) $T = 1.75 \pm 0.010s$

Find:

a) What is the predicted value of T?
b) Is a measured value of $T = 1.75 \pm 0.010s$ is consistent with the theoretical prediction from part a.

Diagram:



Theory:

- the period T of a simple pendulum is $T = 2\pi\sqrt{\frac{L}{g}}$

Assumptions:

We can assume we will need to get the L_{max} and L_{min} values to compare to the theoretical prediction.

Solution:

Compute max and min values of the lengths

$L_{max} = (0.75 + 0.011)m = 0.761m$
$L_{min} = (0.75 - 0.011)m = 0.739m$

$T = 2\pi\sqrt{\frac{0.75}{9.81}} = 1.738$; $T_{maximum} = 2\pi\sqrt{\frac{0.761}{9.81}} = 1.751$; $T_{minimum} = 2\pi\sqrt{\frac{0.739}{9.81}} = 1.725$

$T = 1.75 \pm 0.010s$ -> Max = 1.76, Min = 1.74

Since $1.725 \leq T \leq 1.751$, only the minimum value would fit here and the max value is not consistent.