

*How does the period of a pendulum depend on its length? It is your job to find out!*

Desired Outcome: equation relating period and length

Application: use the equation to calculate the length that gives a period of 3.00 seconds

1. Design a procedure for accomplishing this goal. Some things to consider:
  - how many repetitions for a given trial?
  - what other variables need to be controlled?
  - how many different pendulum lengths should be tested?
  - by how much should the length be *changed* each time?
  - does it matter which units are used?
2. Make a blank data table that will accommodate the planned measurements.  
(*spreadsheet recommended*)
3. Calculate the average period for each length of pendulum tested. These values should be listed in a table (an added column in the data table or a second table).
4. Make a graph of period (y-axis) vs. length (x-axis). If linear, determine the equation using the slope-intercept formula ( $y=mx+b$ ) and write the equation in the space after #5 below. If curved, see if a power regression fits the data well.
5. (If first graph is curved.) Make a second graph, using the power(s) suggested in the best fit to the T vs. L graph. If linear, determine the equation. Write the equation here (don't forget units):

EQUATION: \_\_\_\_\_

6. Use the equation to calculate the pendulum length whose period is 3.00 seconds. Show work below and enter answer in the blank. *Don't forget units!*

LENGTH FOR 3.00 s PERIOD: \_\_\_\_\_

7. Staple tables and graphs to the back of this page.

8. COMMENTS: