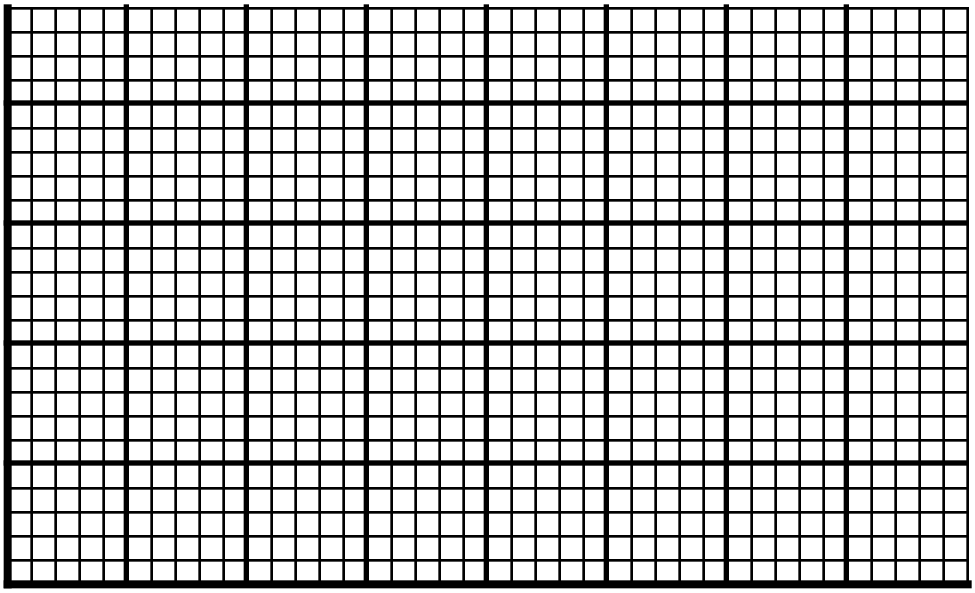
Precalc BC **Pendulum Lab** **Name:**

1) Collect data on the period of pendula of varying lengths (10 - 500cm), do at least 5 different lengths. I suggest finding the period of 10 or so oscillations (and dividing by 10), for the sake of accuracy. Complete the table below.

Trial #	**length** *cm*	**number of oscillations**	**total time**	**time per oscillation** *(aka. period)*
1				
2				
3				
4				
5				
6				
7				

2) Make a well labeled plot of your data. Sketch a smooth curve.
Include title, label axes, indicate scale and units



3) Assuming your data corresponds to a power function $y=ax^b$, estimate b. That is, based on the graph's curve, is $b < 0$, $0<b<1$, or $b > 1$? *Explain your reasoning!*

4) Find a suitable power regression for your data using your calculator's regression capabilities. Write the equation here, use at least 3 significant digits.

5) Based on your model, estimate the period of a pendulum suspended from the top of the Eifel Tower (324m).

6) Based on your model, find the length of a pendulum with a period of 18 seconds (this is the period of the pendulum in Cornell's clock tower).

Note: you DON'T need logs for this, so don't use them.

7) The formula for the period of a pendulum is $T = 2\pi\sqrt{\frac{l}{g}}$,

where T is the period, l is the length of the pendulum, and g is the constant for acceleration due to gravity. Find the value of g by plugging in one of your data points (use one of the longer penedulum lengths).

The units should be: cm/sec^2