FLINN SCIENTIFIC

Name_____

Investigating Pendulums

Data Table

Experiment 1

		Number of complete oscillations in 30 seconds		
Plumb Bob Size	**Release Angle**	**Trial 1**	**Trial 2**	**Trial 3**
Small	5 degrees			
Small	15 degrees			
Large	5 degrees			
Large	15 degrees			

Experiment 2

	Number of complete oscillations in 30 seconds		
Pendulum length (m)	**Trial 1**	**Trial 2**	**Trial 3**
0.20			
0.30			
0.40			
0.50			

Analysis, Calculations, and Post-Lab Questions

Results Table — Experiment 1

Plumb bob size	Release Angle	Average number of complete oscillations in 30 seconds	Oscillation Period (s)
Small	5 degrees		
Small	15 degrees		
Large	5 degrees		
Large	15 degrees		

Results Table — Experiment 2

Pendulum length (m)	Average number of oscillations in 30 seconds	Oscillation Period (s)	Oscillation Period Squared (s^2)
0.20			
0.30			
0.40			
0.50			

Post-Lab Questions and Calculations

1. Calculate the average (mean) number of oscillations in 30 seconds for each test in Experiment 1 and 2. Then, calculate the oscillation period for each test by dividing 30 seconds by the average number of complete oscillations in 30 seconds from each test. (Optional) For Experiment 2, calculate the oscillation period squared [(oscillation period)^2]. Record the calculations in the Results Table.
2. Compare the oscillation periods in Experiment 1. How do the different release angles affect the oscillation period? How do the different masses affect the oscillation period?

3. Compare the oscillation periods in Experiment 2. How does the length of the pendulum affect the oscillation period?

4. Based upon the data from this experiment:

   T F The period of a pendulum is not affected by the mass of the plumb bob on the end of the pendulum.

   T F The period of a pendulum is affected by how high the pendulum is raised before it is released.

   T F The period of a pendulum increases as the pendulum length decreases.

   T F A grandfather clock will "tick-tock" faster when the pendulum is released with a large swing arc compared to a small swing arc.

5. *(Optional)* On a separate sheet of paper, make a graph with the oscillation period squared on the y-axis versus the pendulum length on the x-axis. Plot the data and draw a best-fit line through the data points starting from the origin (0,0). Is the best-fit line a straight line? If so, what does this say about the relationship between the period of the oscillation and the length of the pendulum?