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**Group 1**

**Experiment 3: Pendulums**

**March 31, 2015**

**Introduction:** In this experiment, we attempt to discern the properties of pendulums. We use a physical pendulum at various locations from the center, with varying masses on the end that allow us to find and the period of the pendulum swinging at different degrees. Using the data gathered from our fancy Science Workshop™ machine, we can learn the period of our pendulum. After gathering data, we should also be able to find other things about the pendulum. This experiment on the physical machinations of pendulums will allow us to recreate and understand how they work in physics.

Data: See excel sheet

Conclusion: In this experiment, we observed various properties of pendulums. We observed that the period of a pendulum with the same mass distribution and pivot point stays the same, regardless of the amplitude of the oscillation. We also observed the varying effects of adding different masses on the top and/or bottom of the rod, and of choosing different pivot points for the system. Throughout these experiments, amplitude had a negligible effect on the period of each individual system. Adding mass to both sides of the rod resulted in a much larger period. This experiment helped us affirm our understanding of pendulum systems. There are some problems with our experiment though, with error entering our system in various places. Our pendulum is not a perfect system, so friction did in fact play a part in changing the period of the pendulum over time, giving us an inexact answer. Also, lifting the pendulum to very specific angles is difficult, and doing so by hand perfectly nearly impossible. These are minor issues but likely contribute to the percent error in our final solution. Despite this, our experiments are still close enough to the predicted values that we believe our data is correct and that our experiment was a success.