



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Constance Wu	Project Number J1541
Project Title How Does the Period of Motion of a Pendulum Depend on Its Mass, Amplitude, or Length?	
Abstract Objectives/Goals The purpose of my project was to find out how a pendulum worked and what variables affected it, because there are many pendulums that exist in everyday life (in grandfather clocks, swings, and more). Finding out how a pendulum works and what affects it helps us understand how some everyday objects work, as well as build those objects. Methods/Materials I built a pendulum frame and constructed a pendulum that consisted of fishing wire, which I could change for length, and a plastic cup with weights I could change for mass. For amplitude, I adjusted the angle at which the pendulum was released using a protractor attached to the pendulum frame. Using a stopwatch, I would record the amount of time the pendulum took to complete one full period of motion. I controlled the environment the pendulum was in so that there were no outside effects acting on the pendulum. Results My results for my experiment showed that the period of motion did not change when the variables of mass and amplitude were changed, but increased when the length of the pendulum was increased. (However, the data was not exact enough to find the exact relationship between the length and the period of motion). Conclusions/Discussion The results for the experiment are important because they show that a pendulum's period of motion is only affected by length and not by mass or amplitude. Learning that the mass and amplitude do not affect a pendulum's period of motion is important because the explanation of it can be tied to physics and ideas like inertia. Knowing that the length of a pendulum affects its period of motion can impact us because we can better understand everyday pendulums in our lives and so could, for example, understand how to fix a grandfather clock if it were running too slow. Further experimentation could be done to find the exact relationship between the length of a pendulum and its period of motion so our understanding would increase.	
Summary Statement My project was finding out how the variables of length, mass, and amplitude affect the period of motion of a pendulum.	
Help Received My father helped me build the pendulum frame (but I ran the experimentation.)	