



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Sydney L. Flak	Project Number J1908
Project Title Freeze Frame	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Goal: By the use of strobe photography, the goal of this experiment was to determine whether objects of greater mass would fall through air at a faster acceleration rate than objects of a lesser mass.</p> <p>Methods/Materials Three balls of identical shape and size, but of varying mass were prepared for the experiment. The balls were dropped from the top of a ladder and photographed in a dark room against a dark background with a simple "party" strobe light pulsing at about 10 times per second. A digital camera was used to capture multiple images of the falling balls. By measuring the distance between successive images, acceleration was calculated and compared.</p> <p>Results It was determined that acceleration due to gravity was greater for heavier objects.</p> <p>Conclusions/Discussion The conclusion was contrary to the hypothesis. It was expected that all three balls would fall at the same rate, just as in a vacuum. In fact, it turns out that the force of air resistance is a function of mass, such that heavier objects fall faster in air than lighter ones.</p>	
Summary Statement This project is about measuring the effect of mass on the acceleration of objects falling through air.	
Help Received My father helped me design and conduct the experiment, and make calculations from the data.	