



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Andrew P. Ho	Project Number J1616
Project Title Measurement of Gravity by Applying Newton's Laws of Motion to Moving Objects	
Abstract Objectives/Goals This study performed a simple experiment to determine the magnitude of the earth's gravitational acceleration. Methods/Materials The motions of a basketball, a tennis ball, and a marble along a slightly tilted table were observed and the time of travel over a specific distance was recorded. The effect of friction along the surface of the table was calibrated out by rolling the objects both downward and upward. Results This approach invokes only a small fraction of the gravity, resulting in a relatively longer time of travel and better accuracy than that of a free falling object at comparable distance. By applying Newton's laws of motion to the data, the averaged gravitational acceleration was calculated to be 9.43 m/s ² . Conclusions/Discussion The gravitational acceleration measured by the experiment is in fairly good agreement (3.8% error) with the true value of 9.8 m/s ² . A simple idea and associated experiment can produce reasonably accurate results by utilizing the relevant theory and selecting the appropriate approach.	
Summary Statement Fairly accurate measurement of gravitational acceleration by application of theory and experimental design.	
Help Received Dr. Shu Ho explained to me the theory basis of Newton's laws of motion.	