



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Jalahn I. Travis	Project Number 31661
Project Title The Physics of Roller Coaster Friction	
Abstract Objectives/Goals I love roller coasters and I have always wanted to learn more about how they work. My goal for the experiment was to create a model of a roller coaster track and drop a car from certain heights to see if the loss of friction stayed the same. Also, I wanted to see how high I had to drop a car to determine the effects of friction on potential energy. Methods/Materials My co-authors and I built a roller coaster from a "K-Nex" roller coaster set. We duct-taped two sides of the track to shelves and used a stopwatch to determine the average time for the car to descend and ascend the track. We also used a meter stick to determine the height the car was dropped from. We used a calculator to check our work. Results I used the following formula: $P.E. = M.G.H.$ (Potential Energy equals Mass x Gravity x Height) for my experiment. The car was dropped ten times and we recorded the results. We found out that the car went $\frac{2}{3}$ of the distance back up the track after descending from one meter. We discovered that friction takes away from potential energy by 36 percent. Conclusions/Discussion We noticed that the height that the car returned to was fairly consistent during the ten times we performed the experiment. I would like to know if a 36 percent loss of friction will stay the same regardless of how high we drop the car, so we hope to continue this experiment with more trials from different heights.	
Summary Statement My project used a model roller coaster to investigate how much friction affects potential energy.	
Help Received Two classmates assisted with the project but were too young to participate in this fair. Teacher helped with grammar on display. Parent helped with design of display.	