



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Katherine A. Hudgens	Project Number J0213
Project Title Frenetic, Kinetic Coaster	
Abstract Objectives/Goals This experiment discovered if the density of a sphere had anything to do with the speed it traveled or if the height that a sphere was dropped from caused the sphere to go a farther distance and which combination converted the most potential energy into kinetic energy. The hypothesis stated if the most dense sphere was dropped from the highest height then it would go farthest, fastest and convert the most potential energy into kinetic energy. Methods/Materials A model roller coaster with a drop, loop, and two hills was constructed from foam tubing. Spheres of varying densities were dropped from 1m, 1.5m, and 2m several times. Distance traveled, time elapsed, speed, potential energy, and kinetic energy were recorded, calculated and compared. Results Spheres dropped from 2m traveled farther than the spheres dropped from lesser heights. From all three heights, the least dense sphere traveled farthest. The sphere with medium density traveled fastest and converted the most potential energy into kinetic energy. Conclusions/Discussion Parts of the hypothesis were correct and others were incorrect. The height a sphere was dropped from influenced the distance it traveled. Spheres dropped from 2m traveled the farthest distance as predicted in the hypothesis. However, the sphere dropped from 2m did not have the fastest speed or convert the most potential energy into kinetic energy disproving two parts of the hypothesis.	
Summary Statement Density, friction, speed, distance, starting heights and conversion of potential energy into kinetic energy all must be considered when designing a roller coaster.	
Help Received My parents bought supplies and helped with the construction of the roller coaster. My brother took pictures. My aunt and my grandpa proofread my final report.	