



CALIFORNIA SCIENCE & ENGINEERING FAIR 2018 PROJECT SUMMARY

Name(s) Luis F. Lupercio	Project Number 38310
Project Title The Gauss Rifle	
Objectives/Goals My project's goal is to study the following question: Does the number of neodymium magnet stages affect the projectile distance and velocity of the steel plated ball bearings? Abstract Methods/Materials Procedure to build Gauss Rifle Glue the two wooden dowels together. Wait until completely dry. Put finished Gauss rifle on table with ample space. Procedure to set up Gauss Rifle and test Place neodymium magnets first on the dowels. Place nickel plated steel balls before the neodymium magnets. Once set up, roll the steel ball down the surface so the magnets connect and launch. Once projectile stops take tape measure and measure distance. Track distance in lab book. Repeat process with a different number of magnetic stages. Results The results of my tests show that more magnetic stages do increase the projectile distance of a steel ball. One magnetic stage -Least Distance: 0.635 meters -Greatest Distance: 1.3208 meters -Average Distance: 1.04926 Three magnetic stages -Least Distance: 1.2192 meters -Greatest Distance: 1.7018 Average Distance: 1.50368 Conclusions/Discussion After completing my project on if more magnetic stages affect the travel distance of a nickel plated steel ball. I tested one to three magnetic stages for ten trials and in the end the more magnetic stages I had, the projectile distance would increase farther every time. In my hypothesis I had already knew that more magnetic stages would go farther than less, but I was wrong in how I thought the projectile would launch. Many times it would bounce back and I would have to retest because I wanted all my trials to be fair.	
Summary Statement In the end I learned that more magnetic stages do affect the travel distance of a little steel ball by making it go farther than with less.	
Help Received	