



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Ashley R. Paulus	Project Number 22122
Project Title Magnets	
Objectives/Goals The objective is to determine if decreased temperature increases magnetic strength. Abstract Methods/Materials Five groups with five magnets in each group were tested at varying temperatures (-161 degrees C, -9 degrees C, 4 degrees C, 16 degrees C and 161 degrees C) to determine if decreased temperature increases magnetic strength. Each magnet was set to its specific and placed on the anvil. The spring scale was attached to the magnet and was pulled until the magnet was released from the anvil. The number read on the spring scale when the magnet was released from the anvil was recorded as the magnetic strength in grams. Results Results show that magnetic strength decreases as temperature increases. This is shown in the overall decline of the magnetic strength in grams as temperature increases. Conclusions/Discussion Decreased temperature increases magnetic strength. According to the chi-squared statistic, there was no difference in magnetic strength between the room temperature and the decreased temperature of the magnet. However, the chi-square statistic shows that there was a difference in magnetic strength between the room temperature and the increased temperature of the magnets. This shows that increased temperature reduces magnetic strength but the decreased temperature barely affected the magnetic strength, according to the statistical analysis. A predetermined probability of 5% or smaller was said to be reasonable before computing the chi-squared statistic.	
Summary Statement The project was designed to determine the strength of magnets at varying temperatures	
Help Received Richard Bartel perfected the methods, provided spring scale and 100g weight; Jennifer Rusco provided oven thermometer; my parents bought magnets and helped with the board; dad taught me chi-squared statistical analysis; Dominic Buzzelli provided anvil; the Erbstoessers provided the liquid nitrogen	