



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

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| Name(s) Ayisha M. Aziz | Project Number 34587 |
| Project Title Temperature Effect on Magnets and Electromagnets | |
| Abstract Objectives/Goals The objective of my project is to provide an insight into the workings of magnets and explore the relationship between temperature changes and the workings of magnets and electromagnets. It was hypothesized based on the research, that magnets and electromagnets would work better in cooler temperatures than in warmer temperatures. Methods/Materials The experiment was tested using three permanent magnets: ferrite, samarium cobalt, and neodymium. Additionally, an iron core electromagnet powered by two nine volt batteries, was used. The strength of each magnet was tested in five different temperatures and averages were taken based on three trials in each temperature. To see the strength of magnets, the number of nails attracted in each trial were counted. Results The hypothesis was proven correct. Electromagnets and magnets do have a correlation. All of the magnets showed a decrease in magnetic strength at higher temperatures. The magnets strength increased in lower temperatures. In the end mathematical equations were created based on the strengths of each magnet. | |
| Summary Statement My project explores magnets and electromagnets in different temperatures to see if there is a correlation between the two magnetic fields. | |
| Help Received Mother helped with experiment; Cousin guided through research; Teacher gave alot of time | |