



**CALIFORNIA STATE SCIENCE FAIR  
2005 PROJECT SUMMARY**

<b>Name(s)</b> Derick L. Olson	<b>Project Number</b> <b>J1528</b>
<b>Project Title</b> <b>Are You Hot and Attractive or Cold and Repelling?</b>	
<b>Objectives/Goals</b> My goal for this project was to find out if the temperature of a magnet affected its magnetic pull. Also, I wanted to know in what ways and rates the magnetic pull would be affected by temperature change and how the rates would return to normal.	
<b>Abstract</b> <b>Methods/Materials</b> First, I heated or cooled each magnet to its appropriate temperature: -108°F, 32°F, 212°F, and 400°F, which were compared to my NORM temperature of 65°F. I tested each magnetic attraction by placing each magnet, with non-magnetic tongs, in a bowl of steel plated BB's. I immediately removed the magnet and BB's from the magnet and placed them (the BB's) in a seperate bowl. I repeated the procedure after one, five, and thirty minutes. Afterwards I counted the BB's and then weighed them in grams. The main materials I used were: ten ceramic bar magnets, three thousand (two packages) of steal plated BB's, a triple beam balance scale, two slabs of dry ice, five porcelain bowls, a stove and glass pot, and towels to handle dry ice.	
<b>Results</b> The results of my experments were as follows: The colder the magnet became, the stronger its pull and the hotter it became the weaker its pull. When the cooled magnets were returning to room temperature, their magnetic pull would lower very rapidly for the first minute. After five minutes, the pull would lower more gradually. The magnetic pull continued at a gradual rate until it stopped falling after thirty minutes. The heated magnet's pull strength would rise in the same way as the cooled magnets pull strength fell when they were left out in room temperature (65°F). There was no permanent damage done to the magnets; they all returned to (within a few grams)their original strengths when returned to their original temperatures.	
<b>Conclusions/Discussion</b> I concluded that my hypothesis was correct, but there were some points that were off a bit. I hypothesized that there would be permanent damage done to the magnet heated to 400°F, but there wasn't. Another experiment that I could do with my data is this: To determine what temperature the magnet is at by counting how many grams of BB's it picks up. I could use my data and find out that a magnet that picked up 271 grams is -108°F and that a manget that picked up 177 grams is 212°F. With that information i could make a formula to find that a magnet that picked up 236 BB's, would be about 40-50°F.	
<b>Summary Statement</b> How magnetic attraction is altered by temperature.	
<b>Help Received</b> Father edited Introduction which was too long. Teacher edited question and lowned triple beam balance to weigh BB's. Mother bought supplies.	