



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Dennis B. Wassem	Project Number J0735
Project Title How Does Coil Shape and Magnet Placement Affect the Rotations of a Simple Motor?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This experiment investigates how electromagnet coil shape and stator magnet placement affects the rotations per fifteen seconds of a simple motor.</p> <p>Methods/Materials I built a simple motor using a six-volt battery, two thick wires, a magnet and five electromagnetic coils of different shapes. I tested a circle, square, rectangle, diamond, and triangle coil. In a second experiment, I used the circle coil to test the affect of stator magnet placement directly below the coil, one cm away from the coil, and two cm away from the coil. I measured my results by filming the spinning coil and a stopwatch with a DVD camera and played back the disc at a slower speed so I could accurately count the rotations.</p> <p>Results Through experiment one, I learned that in a fifteen second period, the motor's electromagnetic coil rotated the most times with these shapes in the following order: circle, square, rectangle, diamond, and triangle. Through experiment two, I have learned that as the distance from the coil to the stator magnet increased, the number of roations per fifteen seconds decreased.</p> <p>Conclusions/Discussion I believe that coil shapes with greater surface area are more exposed to the stator magnet and so rotate faster. I also believe that the stator magnet's effect was weakened as it was moved further away from the electromagnetic coil.</p>	
Summary Statement I investigated how electromagnet coil shape and stator magnet placement affects the rotations of a simple motor.	
Help Received Jeff Wassem helped me bend the thick wires.	