



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

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Project Title The Squeaky Wheel Gets Which Grease?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Every mechanical device a person uses has been lubricated to increase its efficiency. Our project focuses on identifying the lubricants that are best at reducing friction. In machinery the better the lubricant, the less energy needed to spin the wheel or gear. Tests like ours can help reduce energy consumption, thus lessening our pollution output.</p> <p>Methods/Materials Materials: String, 5 lubricants, Nut and bolt, Stopwatch, Clamp Methods: The results will be based on the total time in which the nut spins, as well as the number of ridges on the bolt (distance) traveled by the nut, before friction pulls the nut to a stop. A stop watch will accurately measure the amount of time in which the nut spins, and we can count the number of ridges that the nut moves along the bolt. To ensure that no residue from separate lubricants interferes with the other types, the nut and bolt must be thoroughly washed and dried between tests. There will be five different lubricants as well as a control group using no lubricant at all. We will repeat the test 5 times to ensure accurate results. Procedure:(1) Collect materials (2)Clamp the bolt (3) Put the nut on the bolt, lubricate well (4) Wrap string around nut (5) Stand on 20 foot mark and pull string and begin timing (6) When nut comes to a complete stop, stop timer, record (7) Repeat Steps 3 thru 6 five times.(8) Wash nut and bolt (9)Repeat steps 3 through 8 for each lubricant.</p> <p>Results The results of this experiment are quite clear. Using the amount of ridges traveled by the bolt, the magnetic aerosol turned out to be the most efficient, with graphite 2nd, and white lithium a close 3rd. In comparing the two types of data we collected # total spin time and number of ridges on the bolt traveled by the nut # we found some unexpected results. We thought that these two data items would directly correlate with each other. However, the WD-40 finished 4th in the category of ridges, but had the second longest spin time. Lubricants are used for different purposes # some are used for maximum endurance and others for maximum travel. Our results can help a person chose the right lubricant for their needs.</p> <p>Conclusions/Discussion This data does not support our hypothesis, which stated that graphite would be most effective lubricant. Magnetic aerosol moved the nut the farthest up the bolt. We have proven that some lubricants are more effective than others.</p>	
Summary Statement Our project tries to determine which type of commercial lubricant is the most efficient at friction reduction.	
Help Received Our mothers took us shopping for supplies - and paid for them	