



CALIFORNIA STATE SCIENCE FAIR 2012 PROJECT SUMMARY

Name(s) Riley S. Coger	Project Number J2113
Project Title Snowboard Science	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals How does snowboard wax vs. candle wax vs. no wax effect the sliding friction of a snowboard? My hypothesis is that snowboard wax will have the least amount of sliding friction.</p> <p>Methods/Materials Three lanes were created on the base of a snowboard, one with snowboard wax, one with candle wax, and another with no wax. Fifteen ice cubes were tested in each of the three lanes by lifting the end of the board (using a home-made lift) and measuring the height at which the ice began to slide.</p> <p>Results When the results were averaged, the candle wax proved to be slightly faster than the snowboard wax. Both waxes were faster than no wax.</p> <p>Conclusions/Discussion I was not able to fully support the hypothesis. Candle wax allowed the ice to slide with the least friction on the snowboard. Further research from science books show that atoms between two smooth surfaces form weak bonds. These bonds are easier to break with a smaller amount of force. When the inclined plane (snowboard) was raised, the force of gravity caused the ice to slide. The smooth wax surface kept the ice and board atoms from making a strong bond so they broke easily when gravity pulled. The no wax lane had a rougher surface. Atoms on rougher surfaces form stonger bonds and a stronger frictional force. It took more force to break these bonds.</p> <p>Candle wax made the ice slide faster than snowboard wax. Both waxes contain paraffin, which is made out of petroleum. However, snow wax companies have added secret ingredients that are not identified on the label. They are meant to keep the snowboard wax from wearing off in wet places and in dirt. It does work better and longer in more conditions than candle wax, but did not reduce the friction as much. Candle wax feels more slippery to the touch (may have more paraffin in it). This is probably what made it a better layer to reduce friction than snowboard wax. However, results show that both types of wax were close in their ability to reduce friction.</p> <p>In future experiments, one could test other lubricants, like cooking oil, or test different shaped and sized ice cubes to see if the varying faces of the ice would slide more quickly, and if so, how much. Finally, one could test different types of snowboard wax brands to find which one creates the smoothest surface and least amount of friction.</p>	
Summary Statement I tested the friction of a snowboard and ice using snowboard wax, candle wax, and no wax to see which one would help create less friction between the board and an ice cube.	
Help Received Dad worked with me to build the ramp; mom helped find age appropriate library books	