



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

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Project Title Experimenting with Surface Tension	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Although many do not know about it, surface tension has many important impacts on life. For example, it is essential for the transfer of energy from wind to water to create waves, as well as creating a habitat for some insects to walk on water. In this experiment, the question that was tested is whether the surface tension of a liquid will increase due to cold or hot water. The objective was to prove my hypothesis correct, which was that the surface tension would increase as the liquid's temperature decreased.</p> <p>Methods/Materials A single-beam balance made of wood was built with a hanging needle on one end, and a small rectangular piece of foil suspended at the other end. The needle was placed extremely carefully on the surface of the water, and water drops on the foil acted as weights on the other end to pull the needle off. By using a thermometer, seven different temperatures ranging from 10 to 49 degrees Celsius were used, and various amounts of water drops were required to break the surface tension. There were two different liquids tested, including water and water with detergent.</p> <p>Results The results remained similar for both liquids used. When the temperature of the liquid increased, the surface tension decreased. Even though detergent greatly decreases the surface tension of water, the change in temperature still had a measureable effect.</p> <p>Conclusions/Discussion While executing the procedures, there were a few questions that came up. For example, what is the maximum surface tension before water freezes, and what is the highest temperature in which surface tension could be measured. Due to limits of study, certain temperatures could not be reached, and the counterweights were not completely accurate. However, the overall experiment was definitely a success, and there were many significant and fascinating concepts learned throughout the process.</p>	
Summary Statement In my experiment, different temperatures were used as independent variables in order to increase and decrease the surface tension of water.	
Help Received Dad helped perform the experiment	