



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Hannah R. Nelson	Project Number J1621
Project Title Liquid Heat: How Does a Liquid's Density Affect Its Heat Retention?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this experiment is to test how the density of a liquid affects its heat retention. I hypothesized that if the density of a liquid is increased, then it will retain heat longer; the denser the liquid, the more molecules it contains, and since molecules absorb energy one by one, molecules of denser liquids should absorb more energy, move faster, create more kinetic energy, and create more heat. Therefore, denser liquids should retain heat longer because they are already much hotter.</p> <p>Methods/Materials The experiment testing my hypothesis was designed so that boiling water was the energy source to each of the test liquids, and I used a thermometer to measure how well the liquid retained the given energy and heat. After two minutes of sitting in boiling water, the liquid was transferred to a test tube stand, where I recorded its temperature every thirty seconds for five minutes. After four trials, I was able to see which liquids cooled down the least and most.</p> <p>Results My hypothesis was proved incorrect; syrup, the densest liquid, did not cool down the least, as I expected it to. Three of four trials, in addition to the averages, proved orange juice to cool down the least from its starting temperature, and to therefore retain heat the best.</p> <p>Conclusions/Discussion I concluded that the heat retention of a liquid does not necessarily depend upon its density, but upon the liquid itself. Intermolecular attraction, which depends upon the liquid, is responsible for how quickly molecules in the liquid slow down after being heated, determining the retention of heat within the liquid.</p>	
Summary Statement This experiment tests how a liquid's density affects its heat retention; results showed that heat retention depends upon the liquid itself and its intermolecular attraction.	
Help Received Mother purchased syrup and blank exhibit board.	