



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Amanda M. Madden	Project Number J0511
Project Title Sweet Surprise: A Study of How Sugar Grain Size Affects Baking Time of Cookies	
Abstract Objectives/Goals The purpose of my experiment was twofold. My first objective was to learn if the baking times of sugar cookies are affected by sugar grain size. Secondly, I wanted to learn if the appeal of the cookies is affected by color and familiarity. Methods/Materials In my project I tested eight sugars; granulated, evaporated cane, organic whole cane, powdered, baker's, caster, raw cane, and natural cane turbinado sugar. I used a standard sugar cookie recipe and varied the type of sugar. In the first section, I determined the baking time of the sugar cookies using the toothpick test. For the second section, I baked all the cookies at the same standard time and had test subjects complete a blind taste test survey. Results Out of 240 cookies, the cookie containing powdered sugar baked the fastest at 6 minutes and 44 seconds. The natural cane turbinado baked the slowest at 10 minutes and 33 seconds. Out of 240 cookies, the one that appealed the most to the test subjects was granulated sugar. The cookie that appealed the least to the test subjects was organic whole cane sugar. Conclusions/Discussion The finest grained sugar baked the fastest and the coarsest grained sugar baked the slowest. The most commonly used sugar was the most popular sugar, and the least common sugar with an unusual color was the least popular.	
Summary Statement My project was a study of how particle size affects the rate of a chemical reaction.	
Help Received Mother helped make the cookie dough and design board; Mr. Hobbs helped design my experiment.	