



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Denise Lum; Michelle Tan	Project Number J1525
Project Title Conductivity with Density	
Abstract Objectives/Goals We investigated if the density of wood affects the conductivity of the wood. Methods/Materials We used 30 Cedar Wood blocks (2in x 2in x 2in), 30 Oak Wood blocks (2in x 2in x 2in), 30 Pine Wood blocks (2in x 2in x 2in), a Saw, 30 Thermocouple wires, a Thermocouple meter, a Drill, Epoxy, an Oven, a Stopwatch, and a Triple beam balance. We drilled a hole in the center of each of the cubes that we cut. We massed each of the blocks to determine their densities. We then placed the thermocouple wire into each hole and poured the epoxy into the hole to make it permanent. We preheated the oven for 15 minutes at 200oF. We measured the temperature of the wood outside the oven, and then every minute for thirty minutes within the oven. This was repeated for each type of block with ten trials each. Results Cedar was the least conductive, next was pine, with oak being the most conductive. In the beginning oak, pine, and cedar#s temperatures went up very fast at 5-10 degrees per minute. In the end though, they slowed down and only went up about 2-4 degrees each minute or sometimes didn#t change at all. Also cedar always had the lowest density, then pine, and then oak. Conclusions/Discussion Our hypothesis was that materials with lower densities would have lower conductivity. Our hypothesis was found to be correct because cedar had the lowest conductivity and the lowest density, followed by pine, and then last of all oak. So if we were to remodel our oak cabinets in the kitchen, we should use cedar instead of the oak.	
Summary Statement In this project we investigated if the density of wood affected its conductivity and found out that lower density materials have lower conductivity.	
Help Received Mother bought materials, Advisor helped us get started on project	