



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Arun K. Jandaur	Project Number J1519
Project Title How Do Metals Compare in Conducting Heat?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My experiment is to study how metals will compare in conducting heat. By knowing how metals compare in conducting heat will help in designs, where it is required for metals to conduct more or less heat. Based on my research, I predicted that among the metals (Copper, Aluminum, Brass, Lead, and Stainless Steel) that are being studied in this experiment, Copper would conduct heat the best, Aluminum the 2nd, Brass the 3rd, Lead the 4th, and Stainless Steel the worst.</p> <p>Methods/Materials I conducted two experiments to verify my hypothesis. In expt.# 1, one end of each metal was heated and a wax blob was mounted on the other end. The time was recorded when the wax blob fell off from the end of the metal. The materials used in this experiment were: Metals (Aluminum, Brass, Copper, Lead and Stainless Steel), candles, wax blobs, a Stopwatch and a Clamp stand. In expt.# 2, one end of each metal rod was put in boiling water and the thermocouple was mounted on the other end. Time vs. Temp. was recorded using a stopwatch and a Multimeter. The materials used were Metals (Aluminum, Brass, Copper, Lead and Stainless Steel), Temp. probe, Multimeter, Beaker of water, Clamp stand, and a stove.</p> <p>Results The results of expt.# 1 state that in case of Copper, the wax blob melted the 1st(time 3:30minutes). The wax on Aluminum melted 2nd(time 4:41minutes), Brass the 3rd(time 5:21minutes), Lead the 4th(time 6:05minutes), and Stainless Steel the last (time 8:15minutes). This data suggests that Copper had conducted heat the best and Stainless Steel the worst. The results of expt# 2 state that Copper attained the highest temperature in a short period of time (180sec. 93C), Aluminum the 2nd highest (180sec. 81C), Brass (180sec. 76C) the 3rd highest, Lead (180sec. 74C) the 4th highest, and Stainless Steel is the lowest (180sec. 73C). The data suggests that Copper is the best conductor of heat and Stainless Steel the worst.</p> <p>Conclusions/Discussion Based on the data I collected from my experiments, Copper was the best conductor, Aluminum the 2nd, Brass the 3rd, Lead the 4th and Stainless Steel the worst. The best conductivity in case of Copper may be because Copper is a univalent metal with a pure atom structure and probably has very few defects. However, Stainless Steel is a poor conductor because it has an alloy structure. Further experiment could be studying how impurities in different metals affect the conductivity.</p>	
Summary Statement My project is about knowing which metals (Copper, Aluminum, Brass, Lead, and Stainless Steel) would conduct heat the best.	
Help Received My parents took me to library for research, ordered the metals, supervise during experimentation and helped typing. My uncle helped cut the metals. Michelle C. and Viviane N. helped assemble the poster board. Mrs. Flora and my Dad helped in answering technical questions.	