



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Sara Anis	Project Number J0901
Project Title Series and Parallel Circuits: Comparing Various Parameters	
Abstract Objectives/Goals The purpose of this experiment is to compare different parameters (Current, Voltage, Power) of the series and parallel circuit by comparing the actual measurement using the Analog Multimeter against the calculated values using Ohm's Law ($V=IR$) and also to compare the power in series and parallel circuit. Methods/Materials Materials: Plywood, plastic straps, L-shaped metal, alligator clips, 4 bulbs & bulb holders, 2 batteries-6 volts each, screws, Wires, Analog Multimeter, 2 Slide Switch Method: Using the Multimeter device, I measured the voltage of each individual resistor and the total voltage of both, series & parallel circuit. The values obtained from this measurement, were used to calculate the voltage, current, total resistance using Ohm's Law and the individual & total power of both the circuits. Results The voltage drop across each resistor in the series circuit was verified by taking actual measurement against the calculated ones. The percentage error for voltage was only 1.82% (could be due to loose connection or fluctuation in the Multimeter). Also the current was same in both resistors. I noted that the total current in the parallel circuit was only off by 4.55% from calculated, due to fluctuation in the probes when measuring voltage. Both series & parallel circuit behaved per my hypothesis & parallel circuit had more power than series circuit as expected. The power in parallel circuit was almost more than double in the series circuit as one could expect because of twice the voltage of the resistor in parallel circuit compared to series circuit. This result of mine is already helping the world. Conclusions/Discussion In series circuit, when I unscrewed one of the two bulbs, the entire circuit went dark, because in the series circuit the current flows in one path only. Also, that each bulb in series circuit was not glowing brightly compared to the parallel circuit which was expected in the series circuit because of the voltage drop across each resistor. In parallel circuit, when I unscrewed one of the two bulbs, the flow of electricity was not broken to other branches. The other bulb was still glowing because in parallel circuit, each bulb has its own path of flow of current, & a break in one pathway does not interrupt the flow in the other paths. I also noticed that in	
Summary Statement My project is about comparing the various parameters of series and parallel circuits.	
Help Received Dad helped in cutting the sheets for the display board.	