



**CALIFORNIA STATE SCIENCE FAIR  
2008 PROJECT SUMMARY**

<b>Name(s)</b> <b>Carl P. Lejerskar</b>	<b>Project Number</b> <b>J1920</b>
<b>Project Title</b> <b>Fully Charged</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> I believe all of the batteries will all last at least 24 hours, but more popular brand-name batteries like Energizer and Duracell will provide longer, higher, and more continuous amperage than other batteries.</p> <p><b>Methods/Materials</b> Materials: Multimeter that is able to measure both amps and volts. 5 Brass Indoor Electric Candles; 2 Home Alkaline Batteries; 2 Duracell Batteries; 2 RadioShack Alkaline Batteries; 2 Alkaline Enercell Batteries; 2 Energizer Batteries; Timer; Ruler.</p> <p>Method: 1. Obtain two batteries from each brand. 2. Mark one battery of each brand with a black permanent marker. 3. Set the multimeter to AA voltage measurement. 4. Connect the red, positive wire, to the positive side of the battery. 5. Connect the black, negative wire, to the negative side of the battery. 6. Record the voltage. 7. Repeat steps 1 through 6 for each battery. 8. Unplug the red wire from the multimeter, and plug it into the first hole. 9. Set the multimeter to the amperage measurement. 10. Repeat steps 4-5. 11. Read the Amperage. 12. Place the batteries into the electric candles. 13. Repeat steps 3-13 for each candle. 14. Set the timer on for one hour. 15. Turn off all candles when timer goes off. 16. Repeat steps 3-14 regularly until the battery runs out of power.</p> <p><b>Results</b> All battery brands lasted past 24 hours, and even 33 hours, until they could not be tested further. Through the data I could collect, I predict that Energizer would last the longest, and Home Life Alkaline the shortest.</p> <p><b>Conclusions/Discussion</b> In support of my hypothesis, the brand name Energizer was the most successful battery and will likely be the longest lasting battery, whereas Home Life Alkaline was the least successful battery.</p>	
<b>Summary Statement</b> Which battery brand lasts the longest?	
<b>Help Received</b> Mother helped with the board. Brother helped with the format of report.	