



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Jeff W. Clyne	Project Number J0705
Project Title Can Light Energy Accurately Measure Surface Area?	
Abstract Objectives/Goals The objective was to construct a machine that could harness light energy to measure surface area. The hypothesis was that it could be accurately and dependably measured. Methods/Materials The first step was to construct the machine that could harness the light energy into a tool of measurement. After thinking it through, the researcher generated some designs and began construction of the machine. The machine was constructed. The principle was simple. At the top, there was a light; in the middle, a glass shelf; and at the bottom, a photocell. The light would be turned on, and the photocell would generate a voltage output. If an object was placed on the glass, the voltage would be less, as some of the light would be blocked. The researcher had several two-dimensional surfaces of known surface area, that were used to calibrate the machines accuracy. A conversion graph was constructed that would convert the voltage output to surface area. Then, random objects such as a triangle or a rhombus of known surface area were placed on the glass shelf, and the researcher took note of whether there was correspondence between the voltage and the surface area based on the graph. Results The data proved to vary only slightly, and measured the surface area accurately and dependably Conclusions/Discussion The data proved to vary only slightly, and measured the surface area very accurately. From the data, the researcher concluded that his hypothesis was right, and the variance of the data could be decreased even further if the socket in which the machine was plugged into gave out a steady current, as the voltage may vary, perhaps very much so, depending on the load on the socket.	
Summary Statement Can I construct a machine that will measure surface area using light energy?	
Help Received Mr. Resovsky and Father helped with proofreading; Father helped with construction of machine	