



**CALIFORNIA STATE SCIENCE FAIR  
2002 PROJECT SUMMARY**

<b>Name(s)</b> Kevin Chiang	<b>Project Number</b>  22142
<b>Project Title</b> How Fast Does the Earth Rotate and How Large Is the Earth?	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of my experiment was to determine the speed at which the earth rotates, and the size of the earth. I have two hypotheses: the earth is round, and rotates one cycle per day from East to West.</p> <p><b>Methods/Materials</b> By placing two poles 13.5 and 35 miles apart at the same latitude, east and west to each other, I observed that the time the shadow of the east pole passed 0° north occurred before the west pole. From the distance between the two poles and the difference in time seeing the shadow pass 0° north, the speed at which earth rotates was calculated.</p> <p>The shadow pattern of a pole was also observed for three consecutive days. The time for the earth to rotate one cycle was when the shadow of the pole crossed 0° north twice.</p> <p>The size of the earth was calculated by the speed and rotation time. Since the experiment was conducted at 37.14° latitude, my results were converted to the equator so I could compare with references.</p> <p><b>Results</b> At the equator, the speed at which the earth rotates is 14.02 miles per minute; and the radius of the earth is 3213.65 miles.</p> <p><b>Conclusions/Discussion</b> My results are 81% of the values from the references. They also confirmed my hypothesis. My experiment can be improved by better compasses, more precise measuring instruments, and longer distances between the two poles.</p>	
<b>Summary Statement</b> I have devised a simple and low cost method that can measure the size of the earth and the speed of rotation to 81% accuracy.	
<b>Help Received</b> My father helped me brainstorm the idea and the method. My teacher Mr. Lee directed me through the science fair.	