Name(s)	Project Number
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Project Title

How Fast Does the Earth Rotate and How Large Is the Earth?

Abstract

Objectives/Goals
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.

Methods/Materials
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 0º north occurred before the west pole. From the distance between the two poles and the difference in time seeing the shadow pass 0º north, the speed at which earth rotates was calculated.

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 0º north twice.

The size of the earth was calculated by the speed and rotation time. Since the experiment was conducted at 37.14º latitude, my results were converted to the equator so I could compare with references.

Results
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.

Conclusions/Discussion
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.

Summary Statement

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.

Help Received

My father helped me brainstorm the idea and the method. My teacher Mr. Lee directed me through the science fair.