

# Eratosthenes

The ancient Greek scholar Eratosthenes is commonly called the "father of geography" for he was the first to use the word *geography* and he had a small-scale notion of the planet that led him to be able to determine the circumference of the earth.

## Biography of Eratosthenes

Eratosthenes was born around 276 B.C.E. at a Greek colony in Cyrene, Libya. He was educated at the academies of Athens and was appointed to run the Great Library at Alexandria in 240. While serving as head librarian and scholar, Eratosthenes wrote a comprehensive treatise about the world, called *Geography*. This was the first use of the word, which literally means "writing about the earth" in Greek. *Geography* also introduced the climatic concepts of torrid, temperate, and frigid zones.

## Eratosthenes' Calculation of the Circumference of the Earth's Surface

Having observed as a young boy a deep well at Syene (near the Tropic of Cancer and modern Aswan) where sunlight only struck the bottom of the well on the summer solstice, Eratosthenes determined that he could discover the circumference of the earth. (Greek scholars knew that the earth was indeed a sphere). To calculate the circumference, Eratosthenes needed two things. He knew the approximate distance between Syene and Alexandria (about 500 miles using our current system of measurement) as measured by camel-powered trade caravans. He then measured the angle of the shadow in Alexandria on the solstice. By taking the angle of the shadow (7.2 degrees) and dividing it into the 360 degrees of a circle (360 divided by 7.2 yields 50), Eratosthenes could then multiply the distance between Alexandria and Syene by 50 to determine the circumference.

Remarkably, Eratosthenes determined the circumference to be 25,000 miles. The actual circumference at the equator is 24,901 miles.

