



Ancient Fanfiction: Eratosthenes By Hannah Neves

Eratosthenes stared at the audience before him in excitement. They were silent, waiting for him to start speaking.

"Welcome, my friends! Thank you for coming. Today, I have an exciting discovery to share!"

He took a deep breath, and mentally ran through what he would say. Though he had been a scholar in mathematics and astronomy since his youth, it had taken him practice to get comfortable with public speaking. However, when he became chief librarian of the Library of Alexandria, he realized how important it was to be able to share his discoveries. Now, he actually enjoyed sharing his insights with anyone who cared to hear them.

They were in the gardens of the library, his favorite place to give lectures. Before him, there was a large group of people. Some stood, others sat upon the soft grass. They were men and women, young and old, Greek and Egyptian. They were joined together by their relentless pursuit of greater understanding of the natural world.

"For centuries, great philosophers and mathematicians have debated the nature of Earth's shape." Eratosthenes began. "Most agree that the Earth is a sphere. We can observe that here, in the port of Alexandria. When a ship sails away from the port, less and less of the hull is visible, until only the mast remains over the horizon line. Gradually, the mast also disappears into the horizon. This shows that the ships are not sailing over a flat plane, but rather over a sloping surface."

"Naturally, this observation implies that the Earth is a sphere. Even so, some refuse to believe such an easily observable phenomenon."

"In order to put the debate to rest, I decided to run an experiment that would definitively prove that the Earth is a sphere. Not only was I able to achieve that," he paused for a moment and looked at his audience in delight, "I was able to calculate just how large the Earth's circumference *is*."

Murmurs arose from the crowd, but Eratosthenes continued before anyone could interrupt him. "There is a very curious well in Syene, Egypt. At noon the summer solstice, the sun is directly above it, so only the bottom is illuminated. I decided to compare the position of the sun on that same day in Syene and another city. So, I



erected a pole here, in Alexandria. At noon on the summer solstice, this pole did cast a shadow, which means the sun was not directly overhead. This conclusively proves that the Earth's surface is curved."

He continued without a pause.

"From there, calculating the Earth's circumference was just a matter of proportions. Using the length of the pole and the shadow, I was able to determine that the sun's rays against the earth were at 7.12 degrees. A complete circle has 360 degrees. If 7.2 degrees is proportionate to the distance between Syene and Alexandria, then the circumference of the Earth is proportionate to 360 degrees."

"Syene is 5,000 stadia away. Using the method I just described, I have concluded that the circumference of the Earth is 250,000 stadia."

Eratosthenes smiled, pleased with himself. It was exciting to share this amazing discovery, and he almost chuckled at the gobsmacked expressions on the faces of his students.

"Any questions?"

Context:

Eratosthenes of Cyrene was a Greek scholar that lived in Alexandria during the Hellenistic period, when Greek kings ruled Egypt. He became the chief librarian of the Library of Alexandria, and is well known for his contributions in the fields of math, geography, and astronomy. Remarkably, he was able to pretty accurately calculate the circumference of the Earth and the tilt of the Earth's axis.

Sources:

[https://www.khanacademy.org/humanities/big-history-project/solar-system-and-earth/nowing-solar-system-earth/a/eratosthenes-of-cyrene](https://www.khanacademy.org/humanities/big-history-project/solar-system-and-earth/knowing-solar-system-earth/a/eratosthenes-of-cyrene)

<https://www.britannica.com/biography/Eratosthenes>