The Greek mathematician Eratosthenes measured the circumference of the earth from the following observations. He noticed that on a certain day the sun shone directly down a deep well in Syene. At the same time in Alexandria, 500 miles directly north, the rays of the sun shone at an angle of $7.2^{\circ}$ to the zenith. Use this information and the figure to find the radius and circumference of the earth.

