Eratosthène

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This greek astronomer and mathematician is remembered for his ingenious determination of the circumference of the earth, by determinating the radius of the earth.

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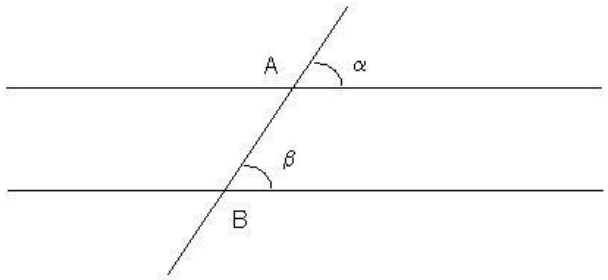
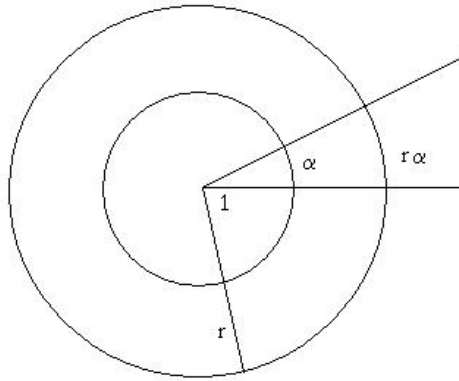


The Eratosthenes method

Result 2 : Radian (or circular) measure of angles is based on an arc of a circle of radius 1 with centre at the vertex of the angle: the measure of the angle is the length of the arc. If r is the radius of the circle and l the length of arc subtending the angle, then the angle is $\frac{l}{r}$ radians.



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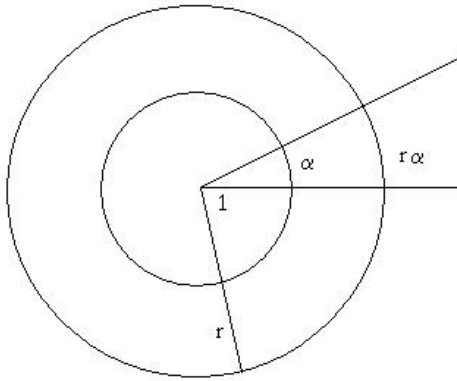

Result 3 : In a right angle triangle, the tangent is the ratio of the opposite side by the adjacent side.

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1. The earth is a perfect sphere (which is not actually true).
2. The sun rays are parallel.
3. It's possible to determine exactly the shortest distance between two points on the surface of the earth.
4. Locally, the earth is flat.

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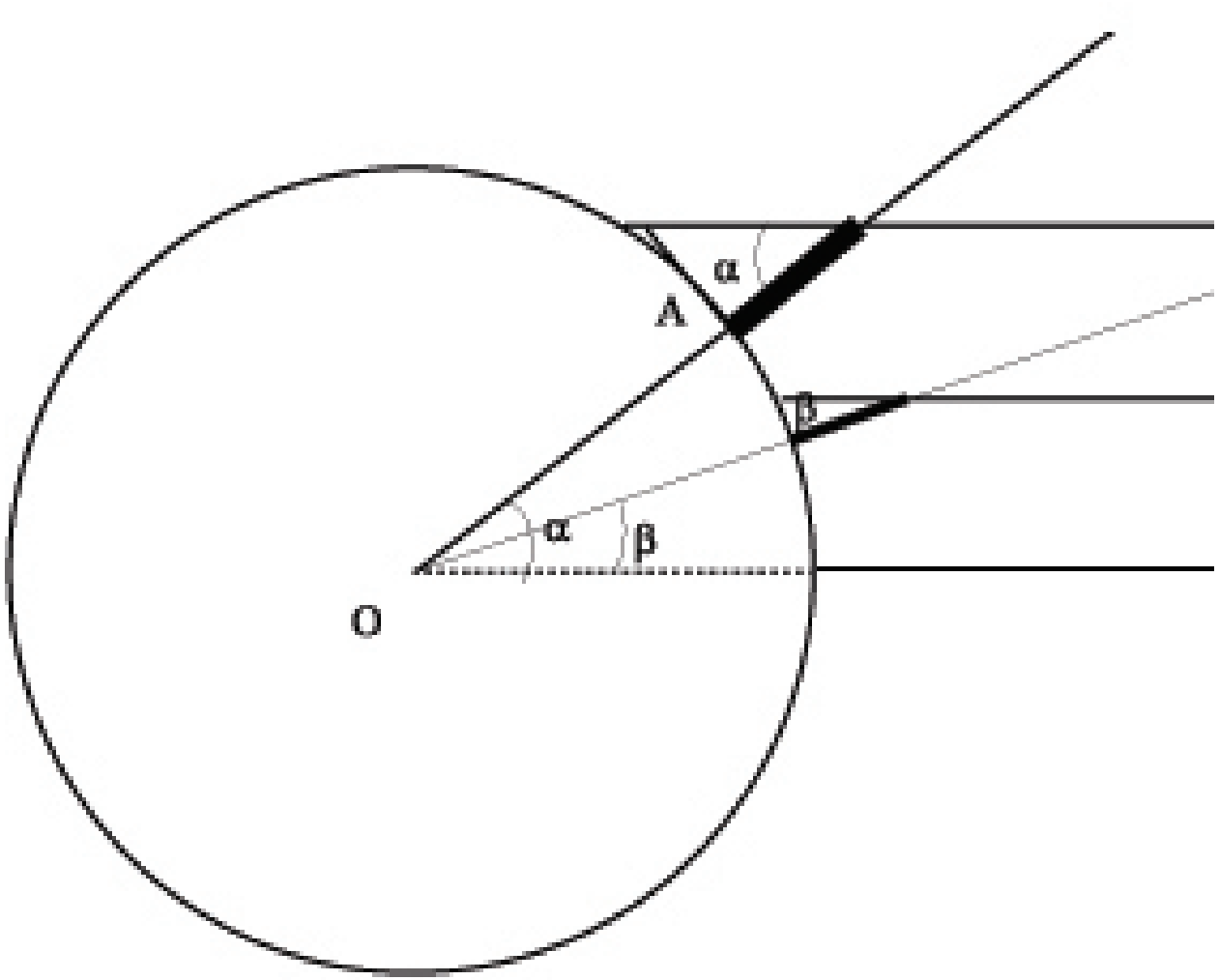

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- How can you verify your calculation?
- What are now the difficulties to measure the radius of the earth?
- Write the complete list of what you'll have to do and what you need (material, preparation, first calculation and observation, etc.) to calculate the earth's radius.