# Math Worksheet

Name ……………………………………………………… Date …………………………………………………………

## Activity 1

Watch the following video by IBM (International Business Machine Corporation ) and answer the following questions.
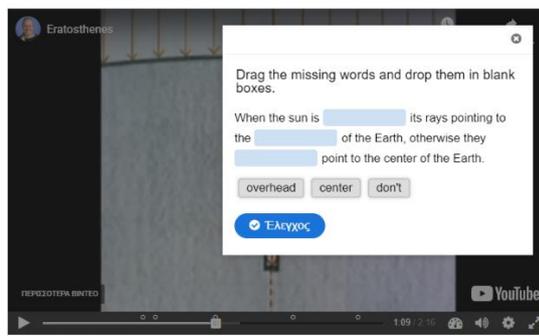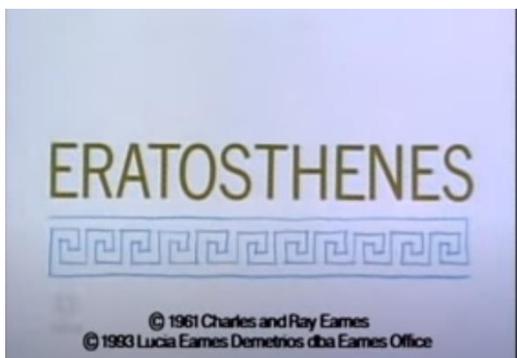


1. How could Eratosthenes and other Greek scientists have figured out that the sun rays were beaming parallel to them according to the video?
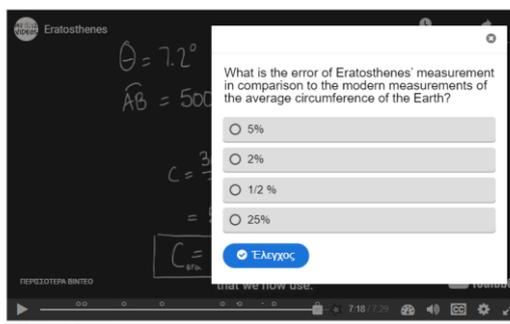
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2.  When the sun is overhead, where are the sun rays pointing to?

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## Activity 2

Watch the following video by MIT (Massachusetts Institution of Technology ) and answer the following questions.
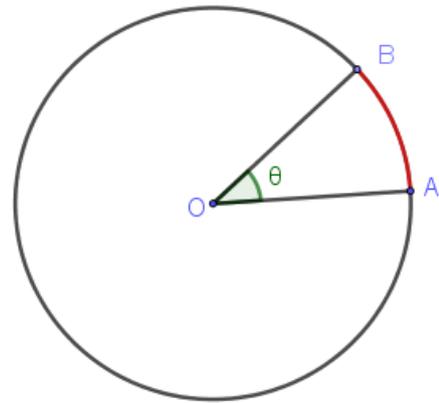


1. If we have two random points A and B on a circle and we know the length of the arc AB, is this information enough  to  determine the length of the circumference of the circle? If not, what other information do we need?

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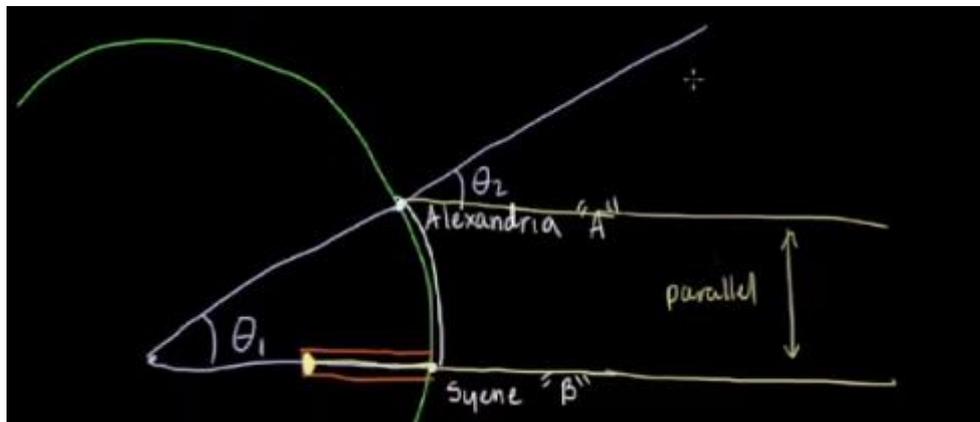………………………………………………………………………………………………………………………………………………

2.  If the central angle AOB of an arc AB is 90 degrees, how many times the arc AB  is the circumference of the circle?  Answer the same question if the central angle is 36 degrees.

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3. What is the formula to calculate the circumference of a circle when you know the length of he arc and its central angle?
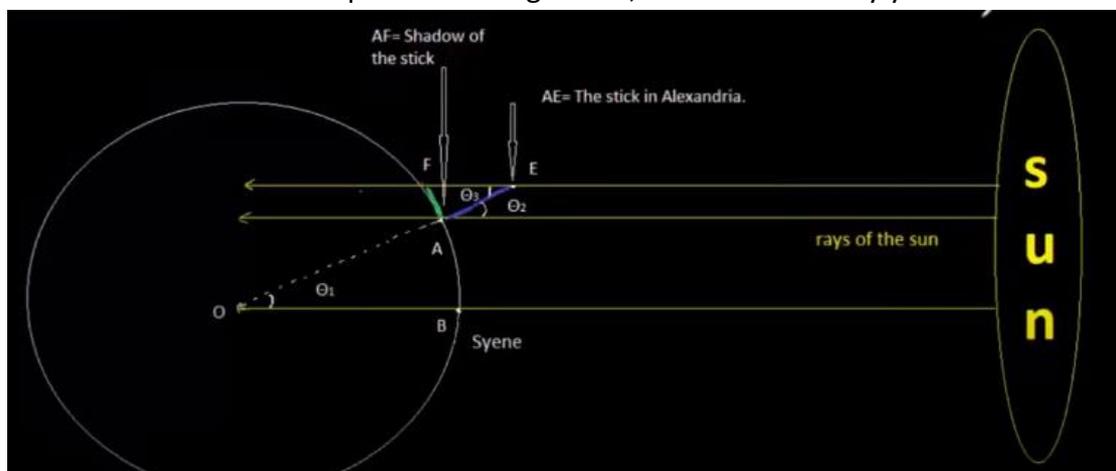
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4. What is the distance between Alexadria and Syene in miles and in km if we know that 1mile= 1609 metres ?

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5. What is the relationship between angles $\Theta_1$ and $\Theta_2$. Justify your answer.

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6. .What is the relationship between angles $\Theta_1$ , $\Theta_2$ and $\Theta_3$. Justify your answer.

7. How did Eratosthenes manage to  calculate the angle Θ3?

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8.  How many degrees did Eratosthenes measure angle Θ1?

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9.  Do the final calculations that Eratosthenes did in order to calculate the circumference of the Earth.

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## Activity 3

Little Princess, a friend of The Little Prince, lived on a similar planet to Earth but too big to be able to walk around and measure its circumference. She was aware of the method that Eratosthenes used and she took two sticks 40 cm each and put them on two different points on the planet. She measured the distance between these sticks and she found it was 1200 meters. Then, she called the Little Prince and asked him to stand next to one of the sticks   and she stood next to the other one. The two kids waited until the stick of the Little Prince cast no shadow. Exactly at that moment, after a signal made by the Little Prince, the girl measured the shadow of her  stick  and found that is was  4 cm .  She did some calculations and she found the circumference of the planet. Can you find the circumference of her planet?

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