Why I love Algebra



Imagine a rope is tied tightly around the Earth’s equator. Now an extra yard in length is added to the rope and the rope is repositioned so that every point on the rope is the same distance above the equator. Will the gap between the rope and Earth allow the passage of a soccer ball, an orange, or a thin knife blade?

# A picture containing person, blue, vegetable Description automatically generatedTest your conclusion:

Let’s start with some things we can hold and pose the same question.

1. Take a round object, wrap a long string tightly around the circumference.

A picture containing floor

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1. Remove the string, add a yard to its length, and cut the string.



1. Reposition the string around the object so every point on the string is the same distance from the outer edge of the object.
2. Measure and record the distance between the outer edge of the object and the string in the table on the next page.
3. Repeat a few times for each ball to reduce the error. Repeat for different sizes of balls.

Can you answer the original question with certainty - Will the gap between the rope and Earth allow the passage of a soccer ball, an orange, or a thin knife blade?

## Distance between the outer edge of the object and the string

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Golf ball  Image result for practice golf balls |  | Tennis Ball  Image result for tennis balls |  | Soccer Ball  https://images-na.ssl-images-amazon.com/images/I/81q-DvjDEOL._SL1500_.jpg |  | Beach Ball  Image result for beach ball |  | Yoga Ball  Image result for yoga ball |
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What conclusions can you draw from the results of our table? Can you answer the original question with certainty - Will the gap between the rope and Earth allow the passage of a soccer ball, an orange, or a thin knife blade?