PI DAY CHALLENGE Please do all work on a separate sheet of paper. NO CREDIT WILL BE GIVEN IF I CAN'T UNDERSTAND YOUR REASONING

1. Imagine there was a string that went around the equator of the earth tightly (there was no slack in the string). In other words, the length of the string is exactly the same as the length of the circumference of the earth.

Now imagine that you added exactly one meter to the length of the string, so that it was raised slightly off the ground/sea. What would be the distance from the ground to the string (assuming it was the same for the entire length of the equator)?

For your calculations, remember that $C=2\pi r$, and you can use the value of 6,378,100 meters as the radius of the earth. Round your answer to the nearest 1/10 of a centimeter.

2. Now imagine the same problem, but applied to the moon (the moon's radius is 1,737,400 meters).

3. Now apply the same problem to mars (radius of 3,397,000)

4. Compare the answers that you got for the previous problems.

5. Can you give your answers as an exact value (that is, in terms of π) instead of as an approximation?

6. Most people celebrate PI day on March 14 (3/14). What is a better day for PI day and why? Hint—it's not in March.

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