

Name: _____ Date: _____

Top of the Morning to You!

To celebrate St. Patrick's Day, the electronic signboard in the cafeteria keeps printing out "Top of the morning to you!" over and over again .



Top of the morning to you! Top of the morning to you! Top of the mor

- If the signboard keeps repeating this sentence over and over, which letter will be the **100th letter** to be printed? Explain how you found your answer and how you know it is correct.
- CHALLENGE: Which letter will be the **1000th letter** to be printed? Explain how you found your answer and how you know it is correct.

Name: Possible Solution

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SOLUTION:

Top of the morning to you! has 20 letters in the sentence. The signboard repeats this sentence over and over. I need to find out which letter will be the 100th letter to be printed.

<i>Top of the morning to you!</i>	20 letters
<i>Top of the morning to you!</i>	20 more letters = $20 + 20 = 40$ letters
<i>Top of the morning to you!</i>	20 more letters = $40 + 20 = 60$ letters
<i>Top of the morning to you!</i>	20 more letters = $60 + 20 = 80$ letters
<i>Top of the morning to you!</i>	20 more letters = $80 + 20 = 100$ letters

The signboard will repeat the whole sentence exactly 5 times.

ANSWER: If the signboard repeats the sentence over and over, the "u" in "you" will be the 100th letter to be printed.

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SOLUTION TO CHALLENGE:

Top of the morning to you! has 20 letters in the sentence. The signboard repeats this sentence over and over. I need to find out which letter will be the 1000th letter to be printed.

Top of the morning to you! 20 letters

I need to find out how many times the whole sentence of 20 letters will be repeated in 1000 letters.

$$1000 \text{ divided by } 20 = 50$$

Because there is no remainder, the signboard will repeat the whole sentence exactly 50 times.

ANSWER: If the signboard repeats the sentence over and over, the "u" in "you" will be the 1000th letter to be printed.