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.

- 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.
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**Top of the morning to you! Top of the morning to you! Top of the morning to you!**

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- **CHALLENGE:** Which letter will be the 1000th letter to be printed? Explain how you found your answer and how you know it is correct.

**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 the 100th letter to be printed.

- **Top of the morning to you!** 20 letters
- **Top of the morning to you!** 20 more letters = 20 + 20 = 40 letters
- **Top of the morning to you!** 20 more letters = 40 + 20 = 60 letters
- **Top of the morning to you!** 20 more letters = 60 + 20 = 80 letters
- **Top of the morning to you!** 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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CHALLENGE: Which letter will be the 1000th letter to be printed? Explain how you found your answer and how you know it is correct.

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 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 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.