Problem 1. To celebrate the new year, Emily wrote down a large number by writing the integers 1, 2, 3, . . . , 2016 one after another to produce the number

\[ N = 1234 \ldots 201420152016. \]

For full credit answer, with complete explanations, the following questions

a. How many digits are in the number \( N \)?

b. Reading from the left, what is the 2016th digit of \( N \)?

c. What is the remainder when \( N \) is divided by 9?

Solutions due by 10:00am Tuesday, January 19.