

Problem 15. What is the sum of the digits in the decimal representation of $(10^{10} + 1)^2$?

- (A.) 1 (B.) 2 (C.) 4 (D.) 8 (E.) none of these

By looking at small powers of 10, observe the following pattern:

$$(10000000001)^2 = 1(\text{zeros})2(\text{zeros})1.$$

~ Desserts ~

Problem 16. Beginning with 1, write all positive integers successively, beginning as 12345678910111213 ...

What digit appears in the 2013th position?

- (A.) 3 (B.) 4 (C.) 5 (D.) 6 (E.) 7

All one and two digit numbers require 189 digits 2013 - 189 = 1824, and 1824 ÷ 3 = 608. This is how many

three-digit numbers we need to count off 4208 (429) 578 (d) 1125 (line) 257 (e) 608 (28.) -3d)-257(372(digi291.38