Squaring Numbers In The Form: $(101a)^2$, $(102a)^2$, $(103a)^2$

A. From algebra we learn:

$$(101a)^2 = 10201 \text{ x } a^2$$

$$(102a)^2 = 10404 \text{ x } a^2$$

$$(103a)^2 = 10609 \text{ x } a^2$$

B. Each one can be multiplied the same way. All follow the form: $10c0d \text{ x } a^2$. To compute this there are 3 sets of numbers.

1. The last is a^2 x d. Write this down. (Make sure it takes 2 place values). Carry if necessary.

2. The middle is a^2 x c. Write this down. (Make sure it takes 2 place values). Carry if necessary.

3. The first is simply a^2. Add any carried numbers.

C. Examples:

Ex [1] $707^2 = $ _____

a. 707 = 101 x 7. So $7^2 = 49$.

b. The last digits are 49 x 1 = 49. Write 49.

c. The middle digits are 49 x 2 = 98. Write 98.

d. The first digits are 49. Write 49.

e. The answer is 499849.

Ex [2] $408^2 = $ _____

a. 408 = 102 x 4. So $4^2 = 16$.

b. The last digits are 16 x 4 = 64. Write 64.

c. The middle digits are 16 x 4 = 64. Write 64.

d. The first digits are 16.

e. The answer is 166464.

Ex [3] $618^2 =$ _____

    a. $618 = 103$ x 6. So $6^2 = 36$.

    b. The last digits are 36 x 9 = 324. Write 24, carry *3.

    c. The middle digits are 36 x 6 = 216 + *3 = 219. Write 19, carry *2.

    d. The first digits are 36 + *2 = 38.

    e. The answer is 381924.