

Squaring A 2-Digit Number:

A. This method is similar to the [*FOIL method*](#) in that it is time-consuming and there are many other methods that are faster in certain situations. However, this method will work for any 2-digit number.

B. This method comes from algebra:

$$(10a + b)^2 = 100a^2 + 10(2ab) + b^2$$

C. Using numbers instead of variables we can get the following steps:

1. Square the one's digit. Write this number down, carry if necessary.
2. Multiply the one's digit with the ten's digit and multiply by 2. Write this number down, carry if necessary.
3. Square the ten's digit. Write this number down.

Ex [1] $32^2 =$ _____.

- a) $2^2 = 4$. Write 4.
- b) $2 \times 3 = 6$. $6 \times 2 = 12$. Write 2, carry *1.
- c) $3^2 = 9 + *1 = 10$. Write 10.
- d) The answer is 1024.

Ex [2] $78^2 =$ _____.

- a) $8^2 = 64$. Write 4, carry *6.
- b) $7 \times 8 = 56$. $56 \times 2 = 112 + *6 = 118$. Write 8, carry *11.
- c) $7^2 = 49 + *11 = 60$. Write 60.
- d) The answer is 6084.

D. This method can also be adapted for 3 digit numbers as well:

Ex [1] $123^2 =$ _____.

- a) Think of 123 as (12)3 where 12 is the number in the ten's digit.
- b) $3^2 = 9$. Write 9.
- c) $12 \times 3 = 36$. $36 \times 2 = 72$. Write 2, carry *7.
- d) $12^2 = 144 + *7 = 151$. Write 151.
- e) The answer is 15129.