

Mysterious Multiplication 1

**Ask students to calculate 25×25 . Ask them to calculate 35×35 , then 45×45 .
Ask students to look for a pattern that will give you the products quickly.**

Discussion, Suggestions, Possible Solutions

$$25 \times 25 = 625$$

$$35 \times 35 = 1225$$

$$45 \times 45 = 2025$$

$$55 \times 55 = 3025$$

With these problems, the product of the ones digits (5×5) gives the last 2 digits of the product. For the rest of the product, you multiply the tens digit with a number that is one more than the tens digit (2×3 , for 25×25 , for example).

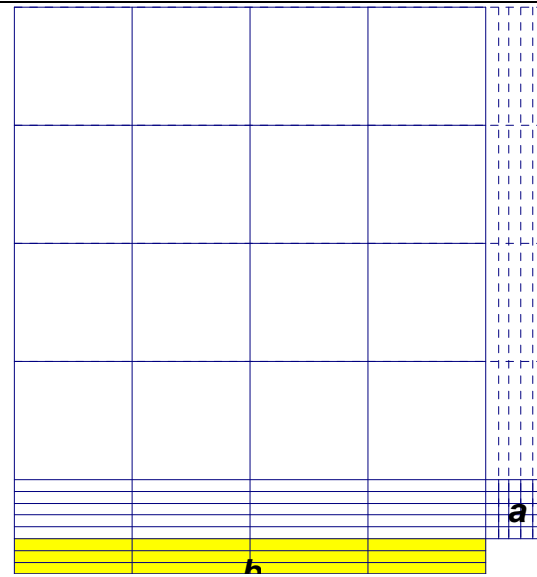
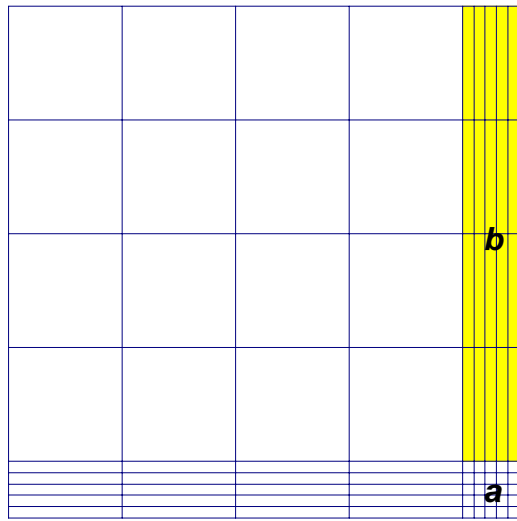
Ask students to check whether or not this pattern can be extended beyond 95×95 .

Extension:

Ask students why this strategy works.

A nice way to think about this strategy is the rectangular model for multiplication. For example, 35×35 may be represented in the following rectangle:

*Note that the set of unit blocks (marked **a**) is the last two digits of the product. The remaining three sections can be rearranged to form a single rectangle. For example, ten-blocks (marked **b**) can be moved below the other two sections, forming a rectangles with the dimensions of 30 and 40. Similarly, with 45×45 , the three sections may be rearranged to form a 40 by 50 rectangle, etc.*



See also Mysterious Multiplication (2).