Multiplication of 3-digit number by a 3-digit number

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Multiplying a 3-digit number by another 3-digit number means finding the total when one 3-digit number is added to itself many times, as given by the other 3-digit number. We use the long multiplication method to solve this step-by-step.

Steps to Multiply

Step 1: Write the numbers one below the other correctly

Step 2: Multiply the top number by the ones digit of the bottom number

Step 3: Multiply the top number by the tens digit of the bottom number and write it starting from the tens place

Step 4: Multiply the top number by the hundreds digit of the bottom number and write it starting from the hundreds place

Step 5: Add all the three results to get the final product

Properties Used

Distributive Property: $a \times (b + c + d) = (a \times b) + (a \times c) + (a \times d)$

Commutative Property: $a \times b = b \times a$

Zero Property: $a \times 0 = 0$

Multiplicative Identity: $a \times 1 = a$

Example 1:

Question: Multiply 123 by 104

Solution:

Step 1: Multiply $123 \times 4 = 492$

Step 2: Multiply $123 \times 0 = 0$ (write under tens place)

Step 3: Multiply $123 \times 100 = 12300$

Now add: $492 + 0 + 12300 = 12792$

Answer: $123 \times 104 = 12792$

Example 2:

Question: Multiply 205 by 312

Solution:

Step 1: Multiply 205 × 2 = 410

Step 2: Multiply 205 × 10 = 2050

Step 3: Multiply 205 × 300 = 61500

Now add: 410 + 2050 + 61500 = 63960

Answer: 205 × 312 = 63960

Summary Points

- To multiply a 3-digit number by another 3-digit number, use the long multiplication method
- Break the second number into hundreds, tens, and ones for step-by-step multiplication
- Add all the partial products carefully to find the final answer
- Follow place value rules and align the numbers properly when adding
- Use multiplication properties to check or simplify multiplication problems