Lesson 3.4/3.5

Use Area Models and Partial Products to Multiply

BROADUS LEARNINGS

STANDARD: NC.4.NBT.5

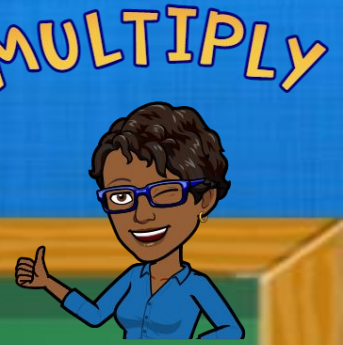
- Multiply a whole number of up to three digits by a one-digit whole number.
- Multiply up to two two-digit numbers with place value understanding using area models, partial products, and the properties of operations.
- Use models to make connections and develop the algorithm.

Essential Question & I Can Statement

I can use area models and partial products to multiply.

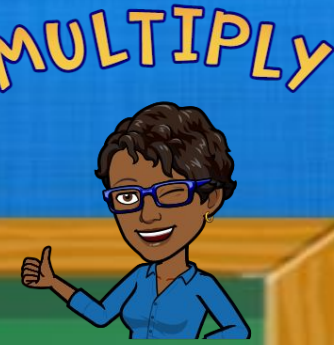
How can you use an area model and partial products to multiply? Lesson 3.4
How can you multiply with greater numbers? Lesson 3.5

Mathematics Objective:



Today we will continue to use place value and partial products to multiply 3-digit numbers by 1-digit numbers.
We will also
practice using area models.

Vocabulary:

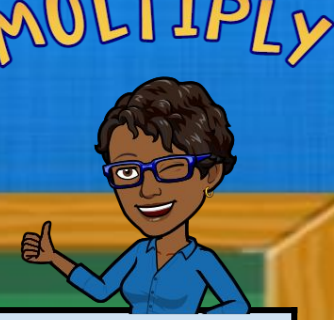


multiply	the result of repeated additions of equal groups.
factor	the numbers that are multiplied together to make a product.
product	the answer to a multiplication problem.
multiple	the product of a given number and any nonzero whole number (factor).
array	A way of displaying objects in rows and columns.

Vocabulary:

numerical expression	an expression that contains numbers and at least one operation.
equation	A number sentence that uses the equal sign (=) to show that two expressions have the same value. Example: 9 + 3 = 12
area model	a rectangle used to model multiplication and division of whole numbers.
partial product	Products found by breaking one factor in a multiplication problem into ones, tens, hundreds, and so on, and then multiplying each of these by the other factor.

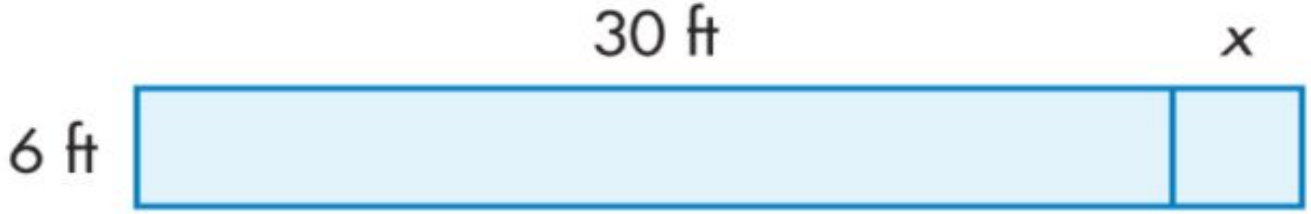
Vocabulary:



commutative property of multiplication	factors can be multiplied in any order and the product stays the same. Example: 3 x 200 or 200 x 3
associative property of multiplication	factors can be regrouped and the product stays the same. Example: 3 x (2 x 100) or (3 x 2) x 100
distributive property of multiplication	multiplying a sum (or difference) by a number is the same as multiplying each number in the sum (or difference) by that number and adding (or subtracting) the products. Example: (3 × 21) = (3 × 20) + (3 × 1)

Solve-N-Share

The horseshoe pit has an area of 228 square feet. The length of one part of the pit was erased by mistake. What is the length of the missing section, x? ***Solve any way you choose***. Explain how you found the answer.



Review!

Solve 4 x 162 using the partial product method.

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Review: Partial Product!

$$
\begin{array}{r}
162 \\
\times \quad 4 \\
\hline
8 \\
240 \\
+400 \\
\hline
648
\end{array}
$$

4×2

4×60

4×100

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There are 24 hours in a day. How many hours are in there in 7 days? Use the partial product strategy to find your product.

Review: Partial Product!

$$\begin{array}{r} 24 \\ \times\ \ 7 \\ \hline 21 \\ +140 \\ \hline 161 \end{array}$$

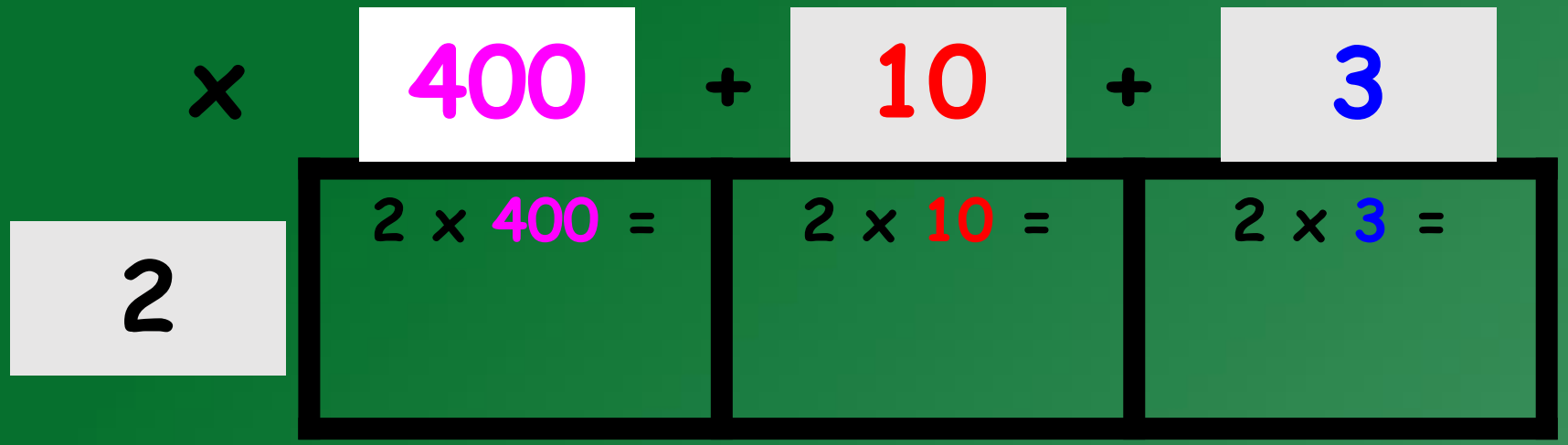
$(20 + 4) \times 7$

7×4

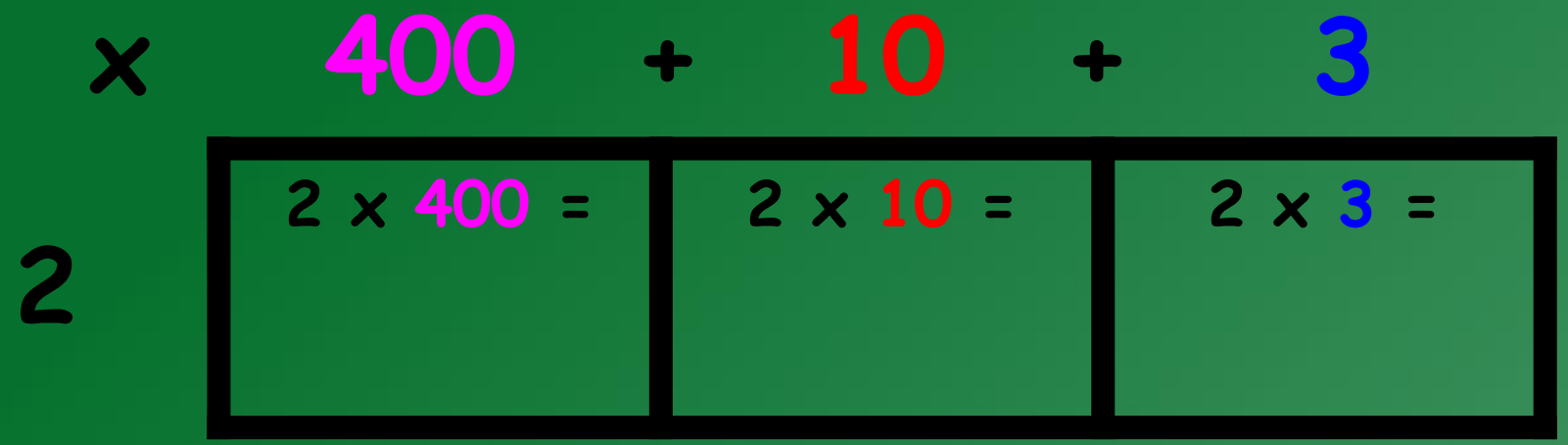
7×20

When using the area model, you need to think about the numbers in expanded form.
Take a look on the next slides for a step by step example!

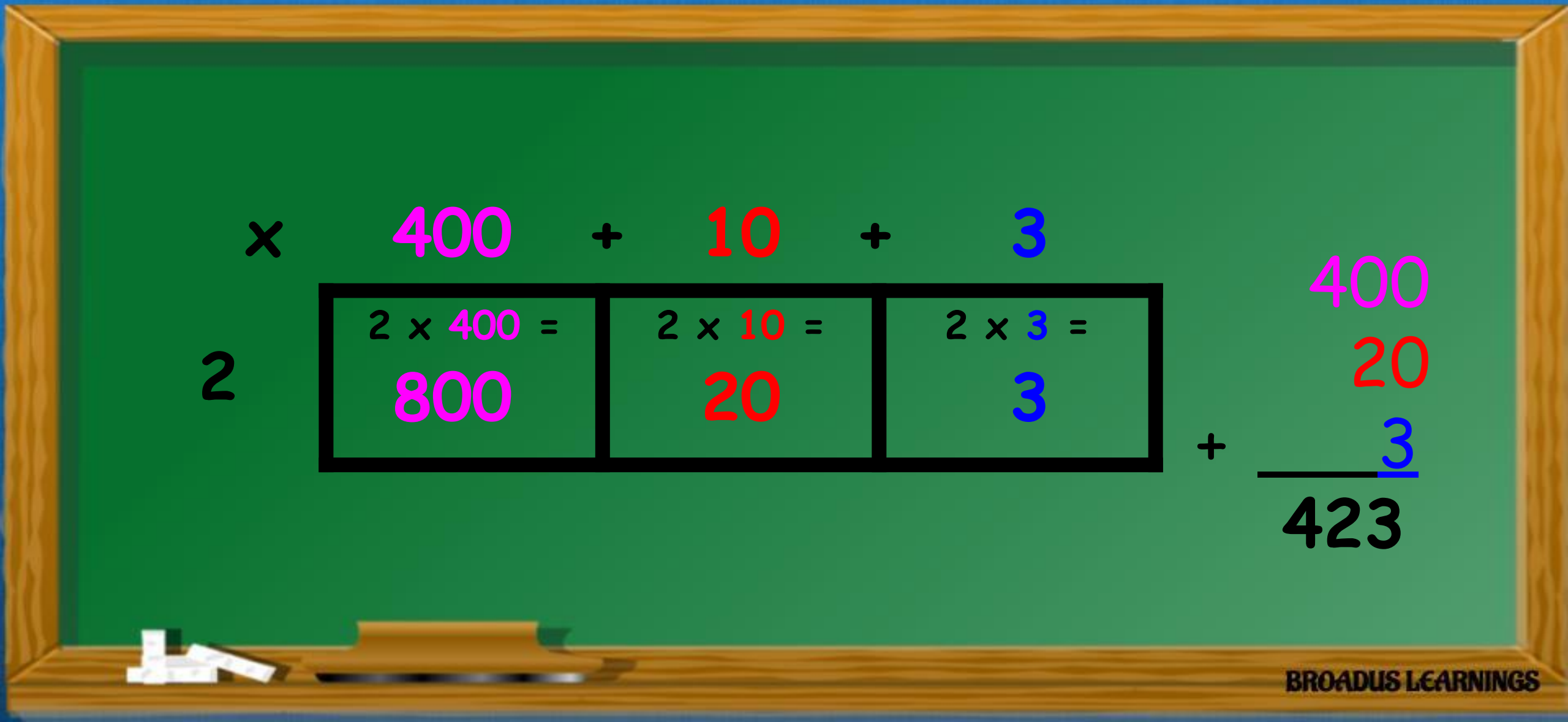
This is an area model that was created for 2 x 313. What do you notice? Let's discuss as a class.



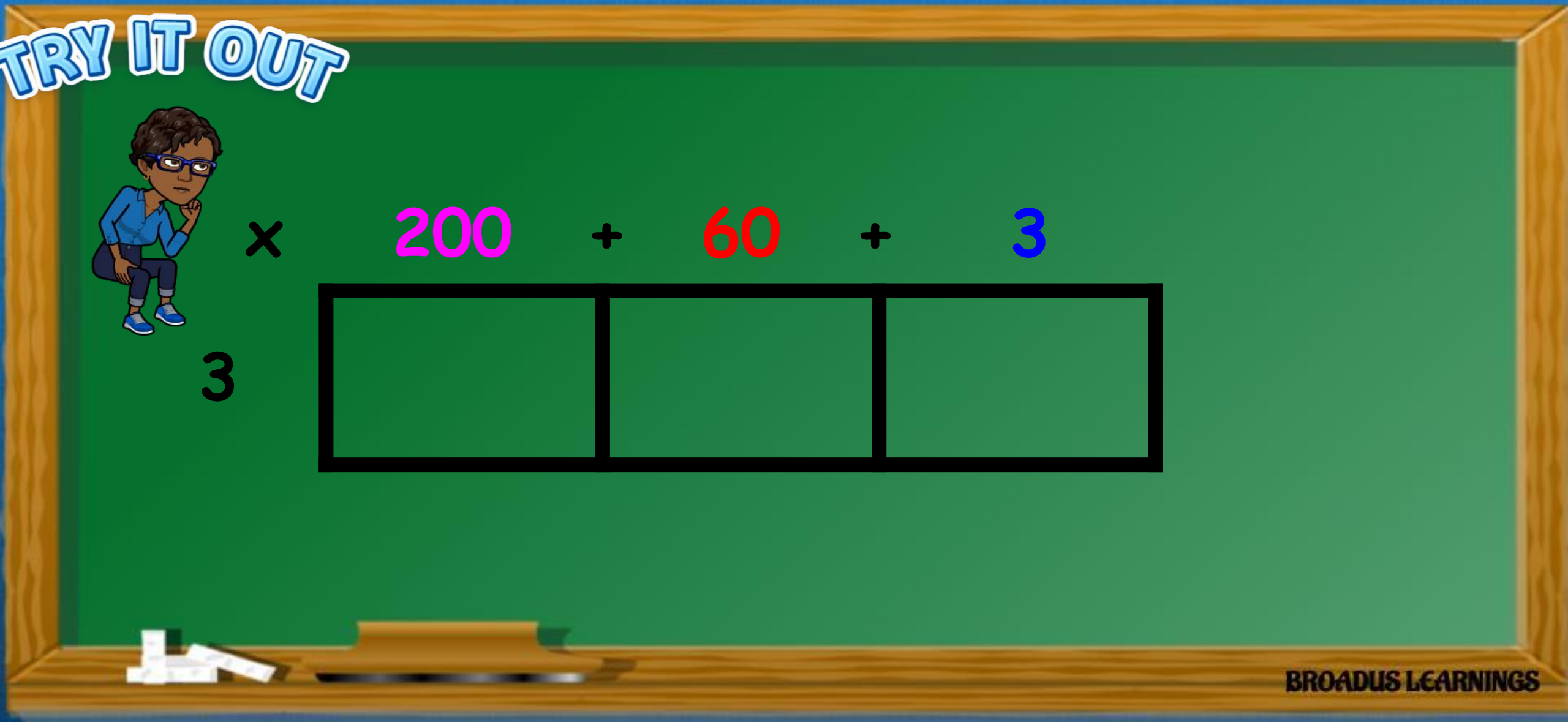
This is the second step in multiplying 2 x 313. Let's multiply!!



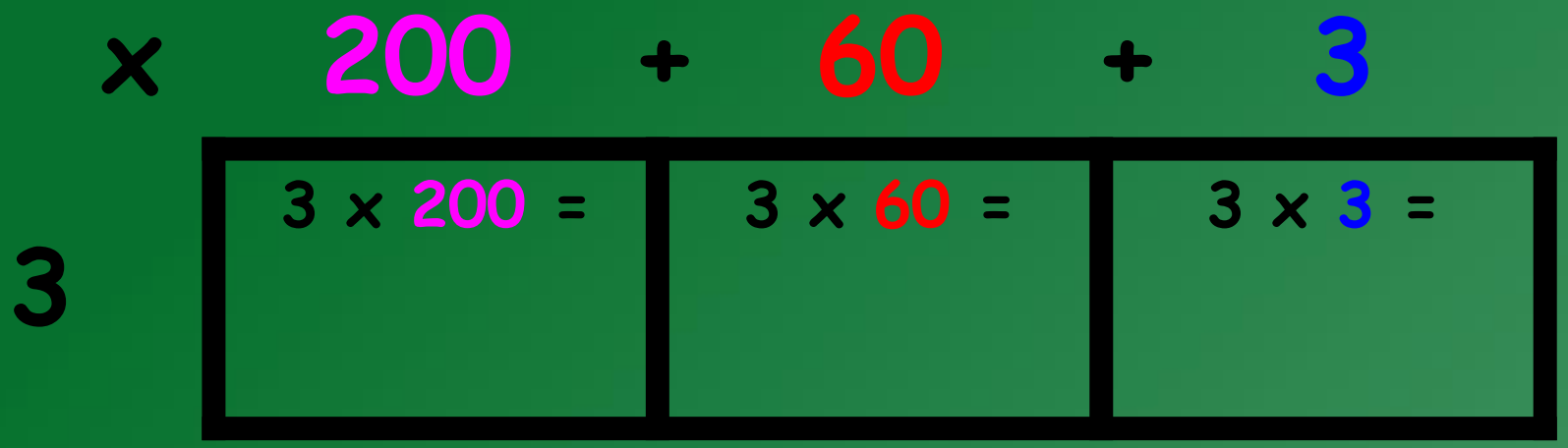
This is the last step in multiplying 2 x 313 = 423. What do you notice? How was the product determined?



Try it out. The area model has been started for you. Multiply 263 x 3 or (200 + 60 + 3) x 3

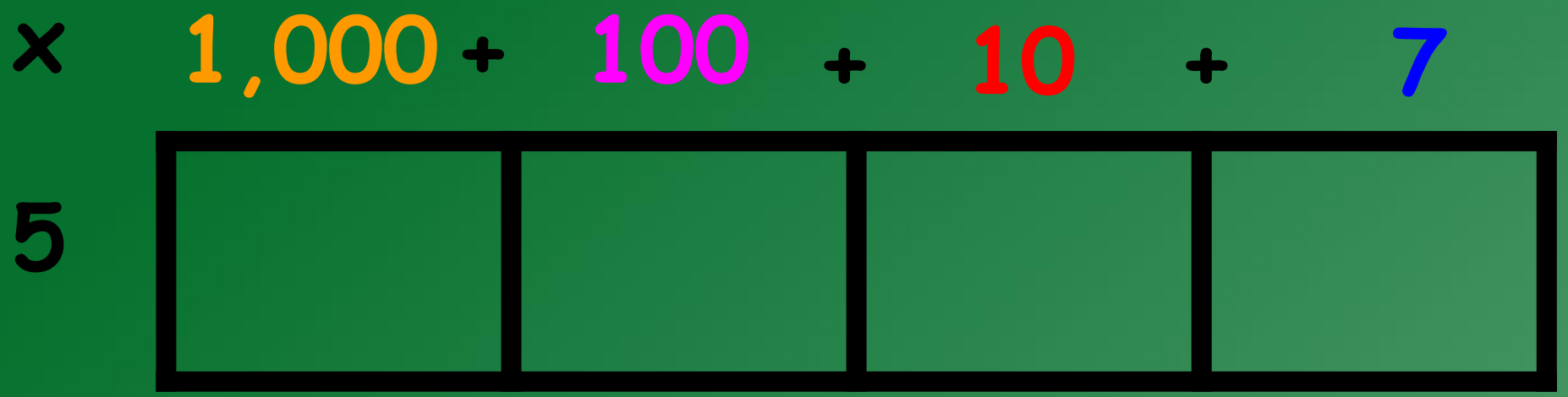


Try it out. The area model has been started for you. Multiply 263 x 3 or (200 + 60 + 3) x 5

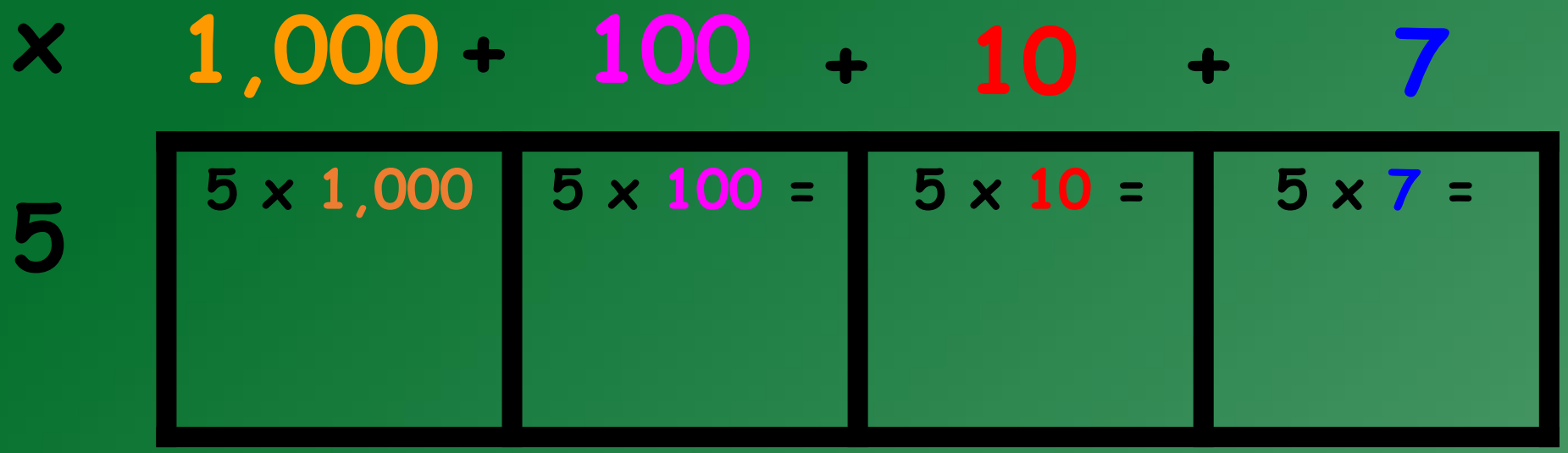


600 + 180 + 9 = 789

Try it out. The area model has been started for you. Multiply 1,117 x 5 or (1,000 + 100 + 10 + 7) x 5



Try it out. The area model has been started for you. Multiply 1,117 x 5 or (1,000 + 100 + 10 + 7) x 3



Try it out. The area model has been started for you. Multiply 1,117 x 5 or (1,000 + 100 + 10 + 7) x 3

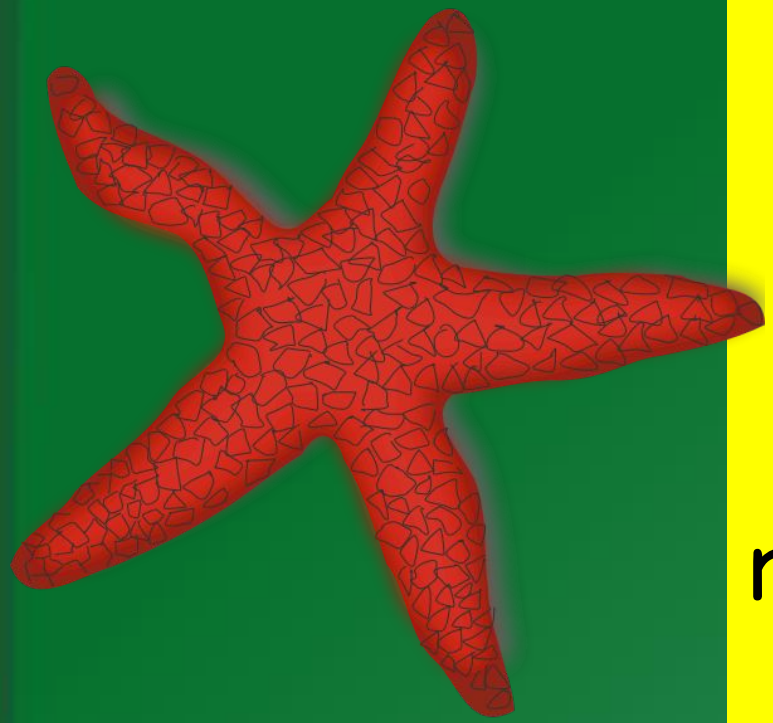
×	1,000	+ 100	+ 10	+ 7
5	5 x 1,000	5 x 100 =	5 x 10 =	5 x 7 =

5,000 + 500 + 50 + 35 = 5,585

Partial Product!

For math class Kisha's mom filled 4 pencil boxes with pencils. If each box held 329 pencils, how many pencils did she have for class? Use the partial product strategy to solve.

Area Model!



Cahmad went to the aquarium and visited the starfish room. The room had 7 tanks and each tank contained 384 starfish. How many starfish did Cahmad count in the room? Use the area model strategy to solve.

EXIT TICKET

Admit One

Explain the process of using partial products. What are the steps and how does it help you to find the product of two numbers?

Admit One

Independent Practice

Admit One

Page 99 Problems 3-8. Use area model and partial products.

Admit One

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