Lesson 3.1

Multiply by Multiples of 10, 100, and 1,000

BROADUS LEARNINGS

Draw or type 2 things you already know about today's topic:

1

2

Students, draw anywhere on this slide!

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

Lesson 3-1

Multiply by Multiples of 10, 100, and 1,000

Lesson 3-1

Topic Essential Questions

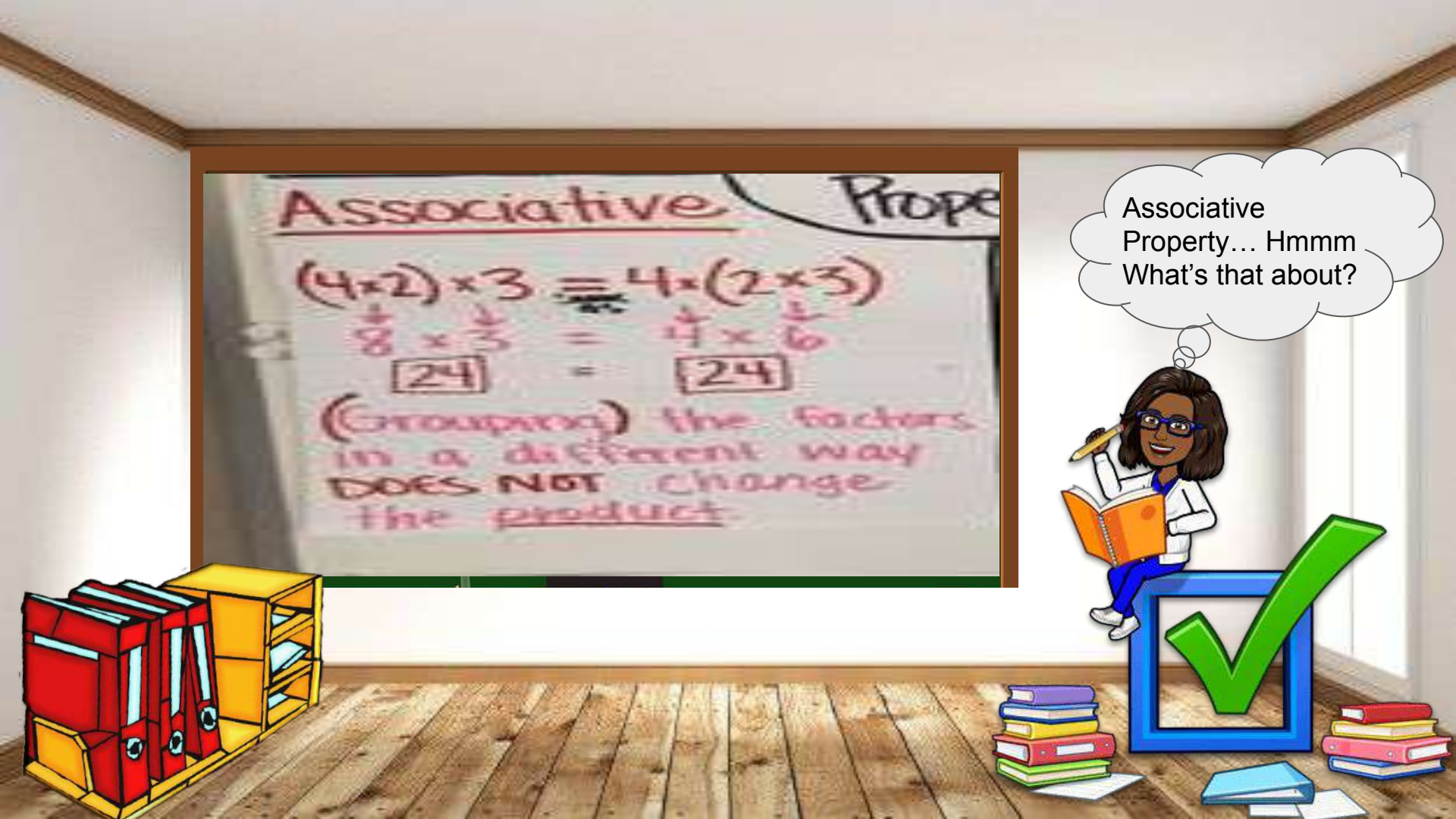
How can you multiply by multiples of 10, 100, and 1,000? How can you multiply whole numbers?

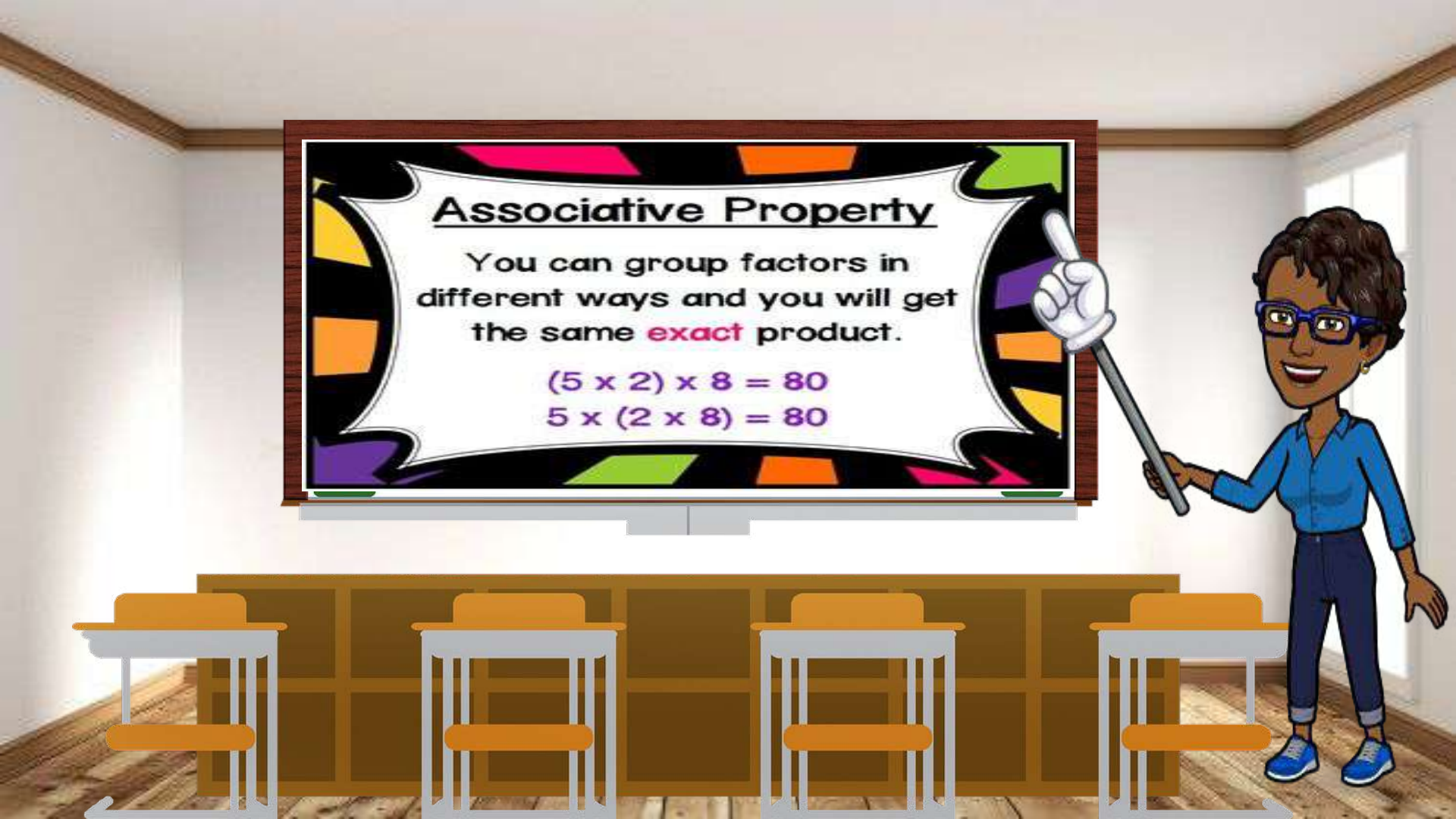
I can...

find the products of multiples of 10, 100, and 1,000 using mental math and place-value strategies.

Mathematics Objective:

Today, we will multiply multiples of 10, 100, and 1,000 using mental math and place value strategies.


Associative Prope
(4×2)×3 = 4×(2×3)
8 × 3 = 4 × 6
24 = 24
(Grouping) the factors in a different way DOES NOT change the product
Associative Property… Hmmm What's that about?


Associative Property
You can group factors in different ways and you will get the same exact product.
(5 x 2) x 8 = 80
5 x (2 x 8) = 80

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: Factor, product, multiple, numerical expression

$3 \times 6 = 18$

multiple of 3

$18 + 3 \times 3$

$(4 \times 2) + 1 - 5$

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)

Vocabulary:

identity property of multiplication	The product of any number and one is that number. Example: 1 x 200 = 200 or 1,000 x 1 = 1,000
zero property of multiplication	The product of any number and zero is zero. Examples: 3×0=0; 5×0=0

The local doughnut shop has to make 100 doughnuts for each of the 6 elementary schools in Halifax County. The treat is for all 4th graders that read the most books in November. How many total doughnuts did the shop make?

Choose a response

The local doughnut shop has to make 100 doughnuts for each of the 6 elementary schools in Halifax County. The treat is for all 4th graders that read the most books in November. How many total doughnuts did the shop make?

A. 24
B. 60
C. 600
D. 2,400

Let's Talk

6 groups of 100 would look like this.

100 + 100 + 100 + 100 + 100 + 100 = 600

6 groups of 100, or 6 x 100 = 600

Patterns of Zeros

$6 \times 1\boxed{00} = 600$

➔ Box the zeros and add them to your product.

➔ Find the basic fact: 6 x 1. That's 6.

You can use the pattern of zeros to find the correct product!

Here comes the place value….

H	T	O

$6 \times 100 = 600$

H	T	O

Hundreds Tens Ones

We moved the 6 over two places to multiply by 100.
First we moved it to the tens place and then we moved it to the hundreds place!

Stretch Break!

Let's take 2 minutes to stretch

Students, follow the instructions on the slide

Use the pattern of zeros to find the products:

8 x 100 3 x 100 5 x 100

8 x 1,000 3 x 1,000 5 x 1,000

Use your own paper to work the problems out.

Patterns of Zeros

$8 \times 1\,\boxed{00} = 800$

$8 \times 1,\boxed{000} = 8,000$

➔ Box the zeros and add them to your product.

➔ Find the basic fact: 8 x 1. That's 8.

You can use the pattern of zeros to find the correct product!

Patterns of Zeros

➔ Box the zeros and add them to your product.

➔ Find the basic fact: 3 x 1. That's 3.

You can use the pattern of zeros to find the correct product!

Patterns of Zeros

$5 \times 1\,\boxed{00} = 500$

$5 \times 1,\boxed{000} = 5,000$

➔ Box the zeros and add them to your product.

➔ Find the basic fact: 5 x 1. That's 5.

You can use the pattern of zeros to find the correct product!

You just worked on boxing the zeros and adding them to the products. Then you found the basic facts of the non-zero digits. Guess what!! We can use that same strategy when multiplying by numbers such as 70 or 700 or 7,000! Look for the basic fact.

What pattern do you notice?

$3 \times 9 = 27$

$3 \times 90 = 270$

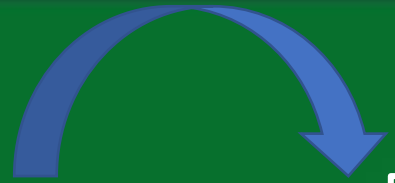
$3 \times 900 = 2{,}700$

$3 \times 9{,}000 = 27{,}000$

$3 \times 90{,}000 = 270{,}000$

Solve: Valerie made a bargain with Catlyn for 3 packs of trading cards. Each pack contained 300 cards. How many total cards did she trade for? Show your work below and put the answer in the yellow box.

Students, draw anywhere on this slide!

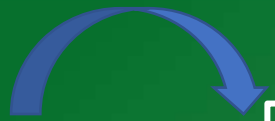


3 x 300 = 900 Cards

Challenge

Look at the strategy we used in the previous problems. How might you quickly solve 13 x 300?

Challenge



$13 \times 300 = 3{,}900$

- Box the zeros and add them to your product.
- Find the basic fact: 13 x 3. That's 39.

Exit Ticket

How can you quickly and easily multiply numbers by multiples of 10, 100 and 1,000 mentally?

For your class assignment you will do ...

p 83 problems 6-8
use basic facts and place value to solve the problems.

p 83 problem 9-11
solve the problems using the associative property of multiplication.

Do not go any further than problem 11.

When you finish your assignment, make sure to go to google classroom and submit your assignment.

Students, follow the instructions on the slide