Lesson 3.2

Estimate Products

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.

I CAN STATEMENT

I can use rounding to estimate products and check if answers are reasonable.

ESSENTIAL QUESTION

How can you estimate when you multiply?

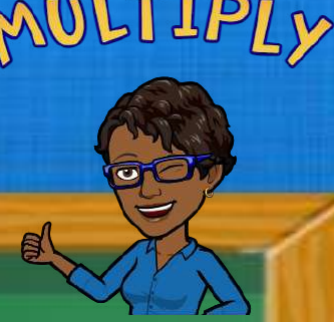
Mathematics Objective:

Today we will use rounding to estimate products and check if answers are reasonable.

1. Underline the place that you are rounding to.
2. Look to your neighbor to the right (draw squiggly eyes).

3. 4 or less, let it rest (underlined digit stays the same).
   5 or more, raise the score and add one more to the underlined digit (underlined digit goes up by 1).
4. All digits to right of underlined digit drop and add zeros. All digits to left of underlined digit stays the same.

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:

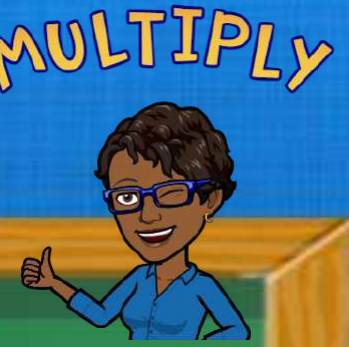
commutative property of multiplication	factors can be multiplied in any order and the product stays the same. Example: 3 x 200 or 200 x 3
associative property of multiplication	factors can be regrouped and the product stays the same. Example: 3 x (2 x 100) or (3 x 2) x 100
distributive property of multiplication	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

What is a real-life example of a time when someone might need to get an estimate when multiplying?

Example #1



We will round 237 and then multiply. What is a good estimate?

Rounded to nearest hundreds

237 rounds to 200

200 x 3 = 600

is one possible estimate

OR

Rounded to nearest tens

237 also rounds to 240

240 x 3 = 720

is another possible estimate.

Both are reasonable.

Example #2

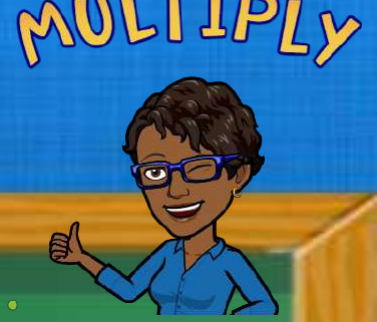
Use estimation to solve.

Rounded to nearest hundreds

398 x 4

400 x 4 = 1,600

Example #3



Use estimation to solve.

Rounded to nearest thousands → 7,405 x 4

7,405 can round to 7,000

7,000 x 4 = 28,000

Jonathan saves about $124 each month in his cookie jar. About how much money will he save in 8 months?

PRACTICE

Jonathan saves about $124 each month in his cookie jar. About how much money will he save in 8 months?

PRACTICE

124 x 8

100 x 8 = $800

For your class assignment you will finish ...

p 87 problems 6-11

If you turned in your assignment yesterday, you will pick up a worksheet from the last blue bin.
Please work quietly on your assignments.

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