

Family Letter

Unit 2 Math

Grade 3



Vocabulary

Commutative Property: See page 3

Associative Property: See page 3

Distributive Property: See page 3

Product: The answer to a multiplication problem.

Area: The space inside a shape, measured in squares.

Parentheses: Symbols () used to group numbers together.

Fraction: A part of a whole.

Area Model: A diagram showing the area of a rectangle can be divided into two smaller rectangles.

Numerator: The top number of a fraction. Represents how many parts of the whole are being re-

Denominator: The bottom number of a fraction. Represents how many equal parts the whole has

Key Concepts for Unit 2

- > Commutative, associative, and distributive Properties
- > Even/Odd patterns in Addition and Multiplication
- > Area
- > Use multiplication and division to solve word problems
- > Multiplication facts (3x, 4x, 6x)
- > Solve two-step word problems using the four operations
- > Concept of a fraction
- > Fluently add and subtract within 1,000

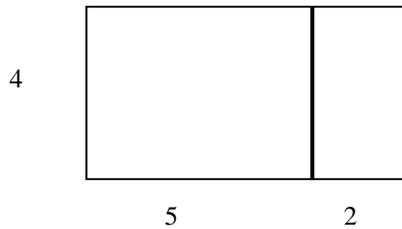
Common Core State Standards for this Unit

- 3.OA.5** Apply properties of operations as strategies to multiply and divide.
- 3.OA.7** Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division
- 3.OA.3** Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.
- 3.OA.9** Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.
- 3.MD.7** Relate area to the operations of multiplication and addition.
- Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.
 - Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
- 3.MD.7d** Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.
- 3.NBT.A2** Fluently add and subtract within 1,000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
- 3.NF.A1** Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction as $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.



3.MD.7c

Example of Area Model

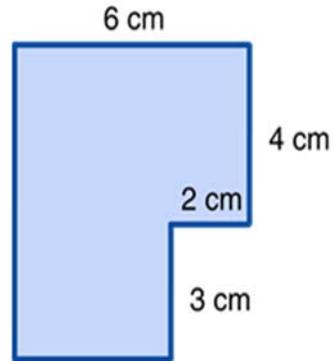


This area model represents the problem $4 \times 7 = \underline{\quad}$, which can be answered by solving for the smaller facts $4 \times 5 = 20$ and $4 \times 2 = 8$ and then adding $20 + 8 = 28$.

3.MD.7d

Area is

additive:



Students would divide this shape into two smaller rectangles. Students would find the areas of the two rectangles, then add the areas together.

(Note: The shape could be divided horizontally, creating a 6×4 rectangle and a 4×3 rectangle, or vertically to create a 4×2 rectangle and a 4×7 rectangle. Either way is acceptable.)

Important to Know:

- By the end of the year third graders are expected to be able to give the answers to multiplication facts $0 \times$ to $10 \times$ without having to take time to calculate.
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Further explanation for Standard 3.OA.5 . . .

Some patterns...

...for addition:

Even + Even = Even
Even + Odd = Odd
Odd + Odd = Even

...for multiplication:

Even x Even = Even
Even x Odd = Even
Odd x Odd = Odd

The 4x facts will be double the 2x facts.

The products of the 5x facts will always have a 0 or 5 in the ones place.

Commutative Property

This property is also referred to as the “Turn-Around Rule.” Basically, factors in a multiplication sentence can be reversed without changing the answer.

Example:

If you know $4 \times 6 = 24$, then $6 \times 4 = 24$ is also known.

Associative Property

This property tells us that when multiplying three or more numbers, the answer is always the same regardless of their grouping.

Example:

$3 \times 5 \times 2$ can be found by:

$3 \times 5 = 15$, then $15 \times 2 = 30$,

or

$5 \times 2 = 10$, then $3 \times 10 = 30$.

Distributive Property

This tells us that we can break one of the factors into two smaller numbers, multiply by those, then add the products together to get the answer to the original problem.

Example:

If you don't know 8×7 ...

Think of the 7 as $5 + 2$.

Now you have $8 \times (5 + 2)$.

Multiply. $8 \times 5 = 40$ and $8 \times 2 = 16$.

Add the products.
 $40 + 16 = 56$

. . . And other standards from this unit.

3.OA.7

Use drawings and equations with a symbol for the unknown number to represent the problem.

3.OA.3

For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.