



MATH NEWS



Grade 3, Module 4, Topic A

3rd Grade Math

Module 4: Multiplication and Area

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math (© 2013 Common Core, Inc.) that is also posted as the Engage New York material which is taught in the classroom. Module 4 of Eureka Math (Engage New York) covers understanding concepts of area and relating area to multiplication and addition. This newsletter will discuss Module 4, Topic A.

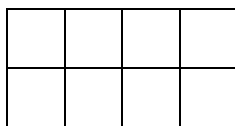
Topic A: Foundations for Understanding Area

Vocabulary Words

- array
- area
- attribute
- commutative property
- decompose
- length
- rows and columns
- square unit
- tile
- unit square

Things to Remember!!

When we are “tiling” we want to make sure there are no gaps or overlaps. We are also looking for the space **INSIDE** the polygon. The units for **AREA** are **ALWAYS** square units (square inches, square centimeters, etc.)



OBJECTIVE OF TOPIC A

- 1 Understand area as an attribute of plane figures.
- 2 Decompose and recompose shapes to compare areas.
- 3 Model tiling with centimeter and inch unit squares as a strategy to measure area.
- 4 Relate side lengths with the number of tiles on a side.

Focus Area– Topic A

Foundations for Understanding Area

Students will be introduced to area. They will use pattern blocks to tile given polygons without gaps or overlaps to determine the amount of two-dimensional space is within a region or shape.

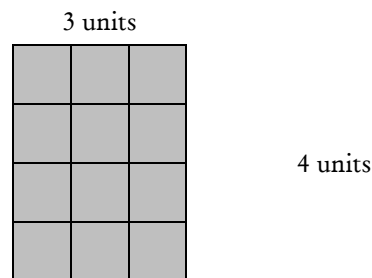


Shape A: 6 Triangles

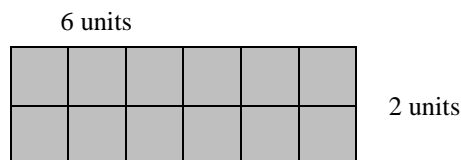


Shape B: 6 Triangles

Through exploration students will work with square units (square centimeters and square inches) to create rectangular arrays with the same area, but different side lengths. By the end of Topic A, students will begin to relate total area with multiplication of side lengths.



Area = 12 square units



Area = 12 square units



MATH NEWS



Grade 3, Module 4, Topic B

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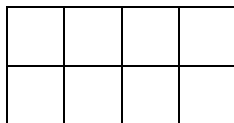
Topic B: Concepts of Area Measurement

Vocabulary Words

- array
- area
- area model
- attribute
- commutative property
- length
- rows and columns
- square unit
- tile
- unit square
- unknown

Things to Remember!!

When we are “tiling” we want to make sure there are no gaps or overlaps. We are also looking for the space **INSIDE** the polygon. The units for **AREA** are **ALWAYS** square units (square inches, square centimeters, etc.)

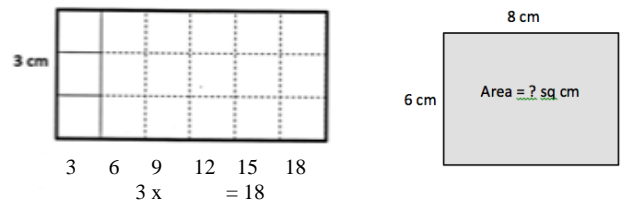


Focus Area– Topic B

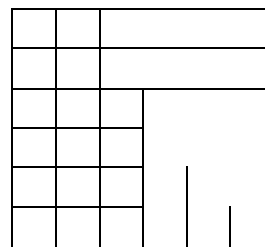
Concepts of Area Measurement

In **Lesson 5**, students will build rectangles using unit square tiles to make arrays. For example: students may be told that there are 24 tiles inside the rectangle and that one side of the rectangle is covered with 4 tiles. Students may start building one column of the array to represent the length of 4 units. This process will continue until they reach 24 tiles, by skip-counting by fours. They would then physically push the columns together to make an array. When they count the number of fours, the process connects to unknown factor problems.

Area= 18 square centimeters



In **Lesson 6**, students find the area of an incomplete array. Example: Amy skip-counts by sixes to find the total square units in the rectangle below. She says there are 36 square units. Is she correct? Explain your answer.



Yes, Amy is correct because 6 units x 6 units = 36 square units.

She can also skip count by sixes: 6, 12, 18, 24, 30, 36

OBJECTIVE OF TOPIC B

- 1 Form rectangles by tiling with unit squares to make arrays.
- 2 Draw rows and columns to determine the area of a rectangle, given an incomplete array.
- 3 Interpret area models to form rectangular arrays.
- 4 Find the area of a rectangle through multiplication of the side lengths.

In **Lesson 8**, students recognize that side lengths are an important part in determining the area of a rectangle. Multiplying the number of square units in a row by the number of rows produces the same result as skip-counting the squares within the array. Given the area and one side length, students realize that they can use multiplication with an unknown factor or division to find the unknown side length.



MATH NEWS



Grade 3, Module 4, Topic C

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Topic C: Arithmetic Properties Using Area Models

Vocabulary Words

- area
- area model
- array
- associative property
- distributive property
- length
- rows and columns
- square unit
- unit square

Things to Remember!

Distributive Property

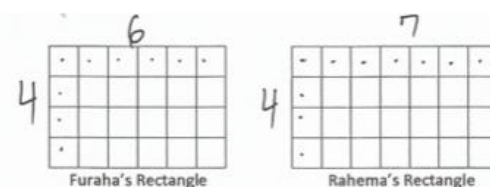
$$\begin{aligned}
 8 \times 6 &= (5 + 3) \times 6 \\
 &= (5 \times 6) + (3 \times 6) \\
 &= 30 + 18
 \end{aligned}$$

Focus Area– Topic C

Arithmetic Properties Using Area Models

In **Lesson 9**, students will cut apart rectangular grids and rearrange the parts to create new rectangles with the same area.

Furaha and Rahema use square tiles to make the rectangles shown. Label the side lengths on the rectangles above and find the area of each rectangle.



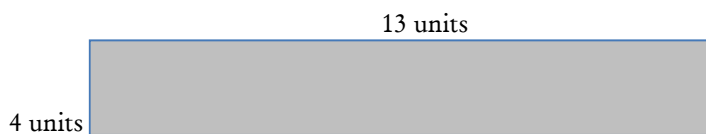
$$4 \times 6 = 24$$

Furaha's rectangle has an area of 24 sq. units.

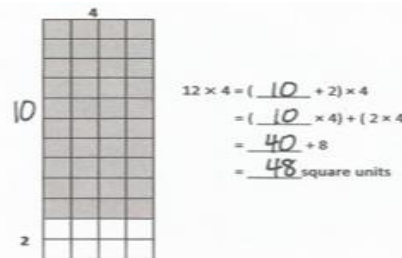
$$4 \times 7 = 28$$

Rahema's rectangle has an area of 28 sq. units.

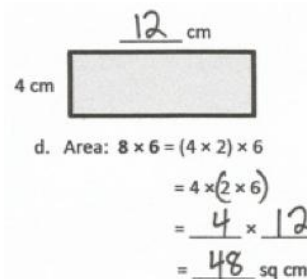
Furaha pushes his rectangle next to Rahema's to form a new, longer rectangle. Draw an area model to show the new rectangle. Label the side lengths.



In **Lesson 10**, students apply the distributive property to find area.



In **Lesson 11**, students will apply the associative property to determine area.



OBJECTIVE OF TOPIC C

- 1 Analyze different rectangles and reason about their area.
- 2 Apply the distributive property as a strategy to find the total area of a larger rectangle by adding two products.
- 3 Demonstrate the possible whole number side lengths of rectangles with areas of 24, 36, 48, or 72 square units using the associative property.



MATH NEWS



Grade 3, Module 4, Topic D

3rd Grade Math

Module 4: Multiplication and Area

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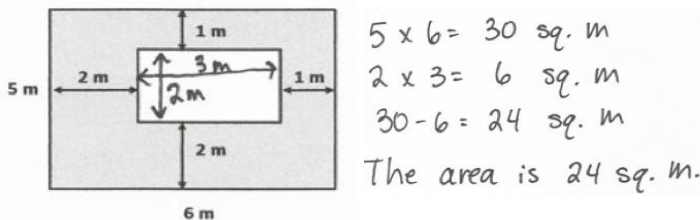
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Topic D: Applications of Area Using Side Lengths of Figures

Vocabulary Words

- area
- area model
- decompose
- unknown group size
- unknown product
- length
- square unit
- unit square
- unknown number of groups

The figure below shows a small rectangle in a big rectangle. Find the area of the shaded part of the figure.



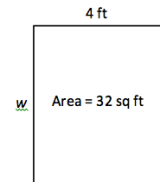
Focus Area– Topic D

Applications of Area Using Side Lengths of Figures

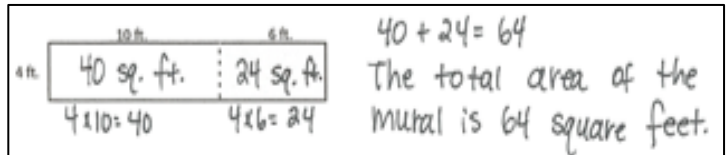
How can we find the value of w ?

$$32 \div 4 = w$$

The value of w is 8 feet.

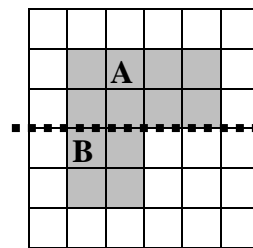


An artist paints a 4 x 16 foot mural on a wall. What is the total area of the mural? Use the break apart and distributive strategy.



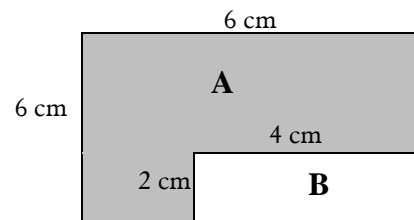
There is more than one way to find the unknown area

1. Break Apart Strategy



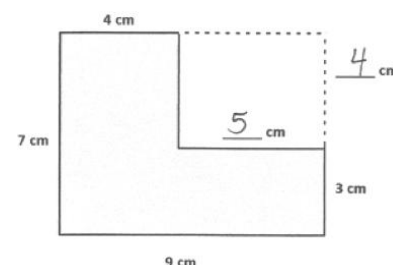
Area A + Area B = Area of Figure
 $(2 \times 4) + (2 \times 2) = 8 + 4 = 12 \text{ sq. units}$

2. Subtract to Find Area



Area of Figure - Area B = Area A
 $(6 \times 6) - (4 \times 2) = 36 - 8 = 28 \text{ sq. cm}$

3. Subtract to find Area with Missing Sides



Label the missing sides.
 Big rectangle
 $(7 \times 9) = 63 \text{ sq. cm.}$
 Small rectangle
 $(4 \times 5) = 20 \text{ sq. cm.}$
 Shaded region
 $63 - 20 = 43 \text{ sq. cm.}$

OBJECTIVE OF TOPIC D

- 1 Solve word problems involving area.
- 2 Find areas by decomposing into rectangles or completing composite figures to form rectangles.
- 3 Apply knowledge of area to determine areas of rooms in a given floor plan.