# Unit Map 2012-2013

***Monroe #2 - Orleans BOCES (Regional Collaboration)***

***Collaboration / Math 3* / Grade 3 (Math Regional Curriculum)***

Wednesday, September 26, 2012, 2:50PM

**Standard/Module: Proficiency with area concepts 3.MD.7** (Week 19, 5 Weeks)

## Stage 1: Desired Results

### Standards Focus

- Major (70%) connects with 3.MD.5-6, 3.OA.3, 3.MD.8

Grade 3 Proficiency Maps.pdf

### Standards

**NYS: CCLS:Mathematics, NYS: 3rd Grade , Measurement & Data**

3.MD Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

- 7. Relate area to the operations of multiplication and addition.
- 7a. 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.
- 7b. 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.
- 7c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of a × b and a × c. Use area models to represent the distributive property in mathematical reasoning.
- 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.

| Enduring Understandings | Essential Questions |
|---|---|
| 1. Understand the concept of area | 1. How would you show the areas of the given plane figure using tiling? |
| 2. Understand the formula for area | 2. How would you show the area of the same given plane figure using multiplication? |
| 3. Make a connection between the concept and the formula for area | 3. Why do they have the same area? |
| 4. Recognize rectangular shapes within a rectilinear figure | 4. How would you find the area of a given rectilinear figure? |
| 5. Distributive property | 5. How could you use the distributive property to find the area of a rectilinear figure? |

### Critical Content

Area

Operations of multiplication and addition

Area of a rectangle with whole number side lengths

Real world and mathematical problems

Distributive property

Mathematical reasoning

Whole number products

Area as additive

Area of rectilinear figures

| **Skills** | **Vocabulary** |
|---|---|
| Relate area to multiplication and addition<br><br>Find area using tiling and multiplication<br><br>Show area is the same using either tiling or multiplication<br><br>Apply techniques to real world problems<br><br>Use area models to represent the distributive property<br><br>Find areas of rectilinear figures<br><br>Decompose rectilinear figures into non-overlapping rectangles<br><br>Add the areas of non-overlapping parts to find total area | Tier 2: relate, tiling, side lengths, concrete, figures, decomposing, non-overlapping<br><br>Tier 3: rectilinear, distributive property, rectangle, whole number, product, additive |

## Stage 2: Assessment Evidence

**Assessments**

**Area of a Shape with Pictures and Numbers**
**Formative: Test: Written**

Students are given a picture of an area that is tiled and asked to write a multiplication problem that represents the picture and find the total area of the shape.

## Stage 3: Learning Plan

| **Learning Activities** | **Resources** |
|---|---|

| | |
|---|---|
| Cover a given rectangular-shaped area with 1" square tiles. Write a related multiplication problem to connect the manipulatives to the numerical representation.<br><br>Cover a rectangular area with 1 cm squares graph paper and determine how many squares it took to cover the area. Write multiplication problems to represent the area covered. | www.illuminations.nctm.org<br><br>www.illustrativemathematics.org |

**Differentiation Opportunities**

Students who struggle with this can take on much smaller areas until the concept of covering or "tiling" an area is easier to understand and write easier multiplication problems to represent those areas.

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