

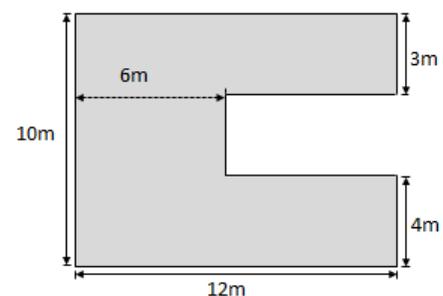
## Topic D

# Applications of Area Using Side Lengths of Figures

3.MD.6, 3.MD.7, 3.MD.5

|                               |                   |   |
|-------------------------------|-------------------|---|
| <b>Focus Standards:</b>       | 3.MD.6            | Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).   |
|                               | 3.MD.7            | Relate area to the operations of multiplication and addition. <ol style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths <math>a</math> and <math>b + c</math> is the sum of <math>a \times b</math> and <math>a \times c</math>. Use area models to represent the distributive property in mathematical reasoning.</li> <li>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.</li> </ol> |
| <b>Instructional Days:</b>    | 5                 |   |
| <b>Coherence -Links from:</b> | G2–M2             | Addition and Subtraction of Length Units  |
|                               | G3–M1             | Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10   |
|                               | G3–M3             | Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10  |
|                               | <b>-Links to:</b> | G4–M3   |
|                               | G4–M7             | Exploring Multiplication  |

Topic D requires students to synthesize and apply their knowledge of area. Lesson 12 begins the topic with an emphasis on real-world applications by providing students with opportunities to apply their understanding of area to solving word problems. Students may practice *unknown product*, *group size unknown*, and *number of groups unknown* types of problems. (See examples of problem types in the chart on page 19 of the Geometric Measurement Progression.) The word problems provide a stepping-stone for the real-world, project-based application of area to composite shapes and the area floor plan in this topic.



Lessons 13 and 14 introduce students to finding the area of composite shapes. They learn to find the unknown measurements using the given side lengths and then make decisions about whether to decompose the tiled region into smaller rectangles and add the areas (**3.MD.7c**) or complete the composite figures and then subtract.

In Lessons 15 and 16, students apply their work with composite shapes from the previous two lessons to a real-world application, determining areas of rooms in a given floor plan.

### A Teaching Sequence Toward Mastery of Applications of Area Using Side Lengths of Figures

**Objective 1: Solve word problems involving area.**  
(Lesson 12)

**Objective 2: Find areas by decomposing into rectangles or completing composite figures to form rectangles.**  
(Lessons 13–14)

**Objective 3: Apply knowledge of area to determine areas of rooms in a given floor plan.**  
(Lessons 15–16)