LESSON MAKER PRO

Fraction Tile Builders

Use tiles and multiplication to find rectangle areas.

GRADE 5 · NY-5.NF.4.b

NY-5.NF.4.b "Find the area of a rectangle with fractional side lengths by tiling it with rectangles of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths..."

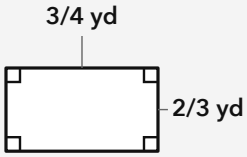
NAME _____ DATE _____

TILE IT, THEN MULTIPLY

Split a rectangle into unit-fraction tiles whose side lengths match the denominators. Count the tiles and multiply by the area of one tile. You will get the same area by multiplying the two side lengths.

WORKED EXAMPLE

The rectangle is 3/4 yd by 2/3 yd. Find its area by imagining unit-fraction tiles, then check by multiplying the side lengths.

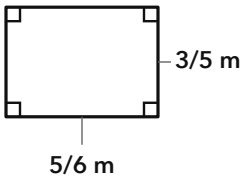


1. Split the 3/4-yard side into 3 parts of 1/4 yard and the 2/3-yard side into 2 parts of 1/3 yard.
2. This makes 3 x 2 = 6 tiles. Each tile has area 1/4 x 1/3 = 1/12 square yard.
3. 6 x 1/12 = 6/12 = 1/2. Check: 3/4 x 2/3 = 6/12 = 1/2.

Answer: 1/2 square yard

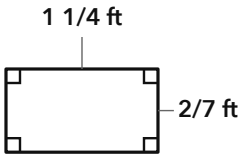
PRACTICE 6 problems

1 The blank rectangle is 5/6 meter by 3/5 meter. Draw a complete covering grid: divide the 5/6-meter edge into 5 equal parts and the 3/5-meter edge into 3 equal parts, then connect matching marks with a straightedge. Count the 1/6-meter by 1/5-meter tiles. Record one tile's area, the total area from your tile count, and the side-length product. Explain why they agree.



ANSWER _____

2 The rectangle is 1 1/4 ft by 2/7 ft. Find its area by multiplying the side lengths.



ANSWER _____

3 Find the area of a rectangle that is 7/8 unit long and 4/9 unit wide.

ANSWER _____

4 Find the area of a rectangle that is 4/11 unit long and 5/8 unit wide.

ANSWER _____

5 Find the area of a rectangle that is 1 2/5 units long and 5/11 unit wide.

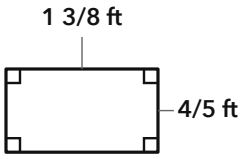
ANSWER _____

6 Find the area of a rectangle that is 7/9 unit long and 3/7 unit wide.

ANSWER _____

APPLY IT Show your work

1 The gaming club makes a rectangular tournament poster measuring 1 3/8 ft by 4/5 ft. What area of paper is needed for one poster?



ANSWER _____

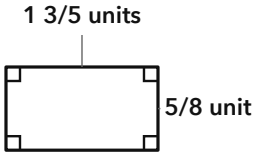
2 Maya cuts a rectangular piece of paper for the cover of her comic book. The paper is 5/9 yard long and 7/10 yard wide. What is the area of the paper?

WORK SPACE

ANSWER _____

CHALLENGE One step up

The rectangle is 1 3/5 units by 5/8 unit. Imagine tiling it with 1/5-unit by 1/8-unit tiles. How many tiles fit? Explain how the tile count proves that the area is 1 square unit.



WORK SPACE AND ANSWER

ANSWER KEY

Fraction Tile Builders

GRADE 5 · NY-5.NF.4.b

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	The blank rectangle is 5/6 meter by 3/5 meter. Draw a complete covering grid: divide the 5/6-meter edge into 5 equal parts and the 3/5-meter edge into 3 equal parts, then connect matching marks with a straightedge. Count the 1/6-meter by 1/5-meter tiles. Record one tile's area, the total area from your tile count, and the side-length product. Explain why they agree.	**15 tiles; each tile 1/30 square meter; 15 × 1/30 = 1/2 square meter = 5/6 × 3/5.**
2	The rectangle is 1 1/4 ft by 2/7 ft. Find its area by multiplying the side lengths.	**5/14 square foot**
3	Find the area of a rectangle that is 7/8 unit long and 4/9 unit wide.	**7/18 square unit**
4	Find the area of a rectangle that is 4/11 unit long and 5/8 unit wide.	**5/22 square unit**
5	Find the area of a rectangle that is 1 2/5 units long and 5/11 unit wide.	**7/11 square unit**
6	Find the area of a rectangle that is 7/9 unit long and 3/7 unit wide.	**1/3 square unit**

PART 2 · APPLY IT

1. **1 1/10 square feet** Change 1 3/8 to 11/8. Multiply 11/8 x 4/5 = 44/40 = 11/10 = 1 1/10.
2. **7/18 square yard** Multiply the side lengths: 5/9 x 7/10 = 35/90. Simplify 35/90 to 7/18.

CHALLENGE

40 tiles fit. Each tile has area 1/5 x 1/8 = 1/40 square unit, so 40 x 1/40 = 1 square unit. Also, 1 3/5 x 5/8 = 8/5 x 5/8 = 1.

Accept equivalent simplified area forms, such as 11/10 square feet for 1 1/10 square feet. For the challenge, accept an explanation that correctly connects 40 tiles of area 1/40 to a total area of 1. Practice 1 requires an actual full 5-column by 3-row partition, with no gaps or overlapping cells, and reasoning 15 × (1/6 × 1/5) =15/30 =1/2 square meter. Accept small hand-drawing inaccuracies when equal-part intent and complete coverage are clear. The supplied blank outline has correct side ratio 25: 18; the teacher array is a schematic count diagram, not a metric scale drawing.

Practice 1 schematic partition: 3 rows × 5 columns =15 tiles; each tile 1/6 m × 1/5 m. This count diagram is not a scale drawing.

