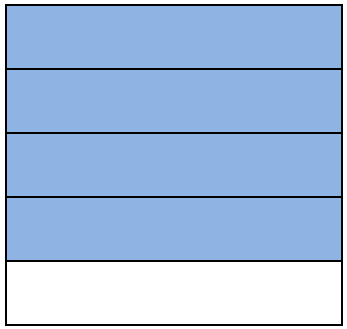
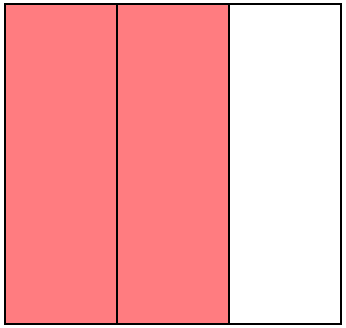
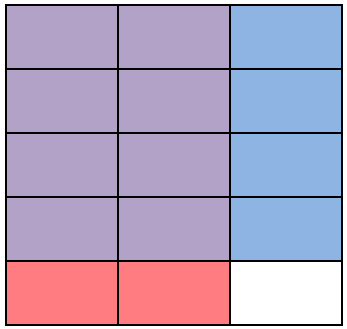
Area Model representation for $4/5 \times 2/3$.

$$\frac{4}{5} \qquad \frac{2}{3} \qquad \frac{4}{5} \times \frac{2}{3} = \frac{4 \times 2}{5 \times 3} = \frac{8}{15}$$







Do you think a 6th grader will find these representations meaningful?

(e.g., What does the *multiplication* operation mean here?)

Why, or why not? Discuss.

Area Model representation for $4/5 \times 2/3$.

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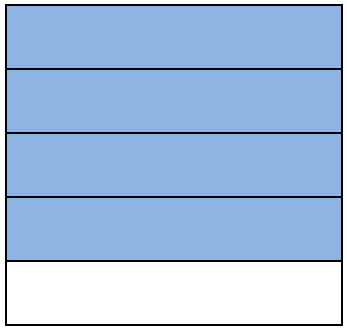
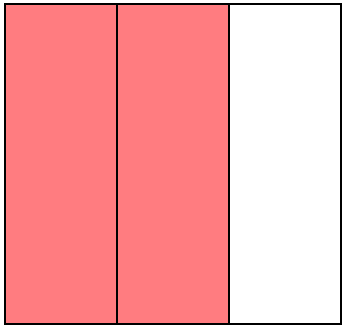
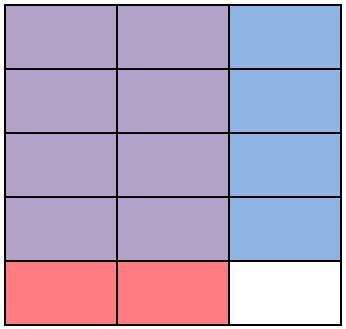






Decide whether the area model is appropriate for each of the three story problems.

A. Mowing-and-raking Lawn Problem

B. Rectangular-area Problem

C. Probability Problem

A. Juanita had mowed 2/3 of the lawn, and her brother Jaime had raked 4/5 of the 2/3 of the mowed lawn? What part of the lawn had been raked?

B. Keanu has a rectangular plot of land with a width of 2/3 meter and a length of 4/5 meter. Find the area of the plot of land?

C. Consider two independent events of picking a ball randomly from a bag and rolling a fair dice. The probability of picking a red ball from Bag A is 4/5 and the probability of picking a rolling an non odd-prime number on a dice is 2/3. What is the probably of picking a red ball and rolling an non odd-prime number?

Handout

List different ways of conceptualizing 3×5.

List different ways of conceptualizing 3×5.

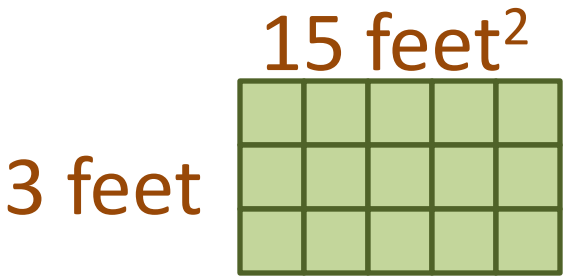
- Repeated addition
  (5 + 5 + 5)

5 feet 5 feet 5 feet

- Enlargement
  (Stretch a 5ft rubber by a factor of 3)

15 feet

- Product-measure
  (3 ft by 5 ft)



1 feet²

List different ways of conceptualizing $1/3 \times 5$.

List different ways of conceptualizing $1/3 \times 5$.

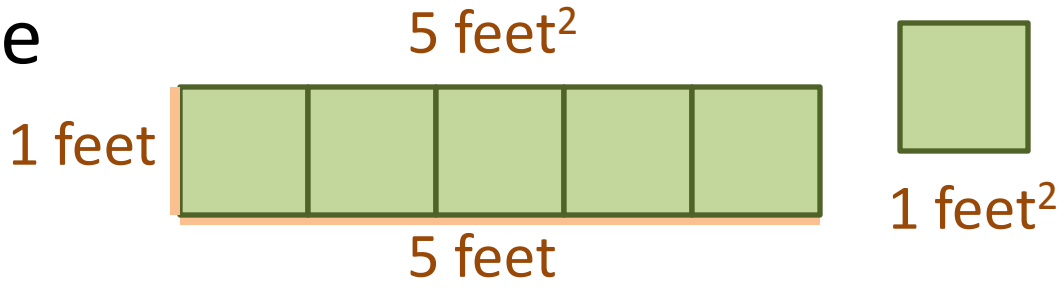
- Fractional Part of A Quantity

1/3 of 5 feet

- Shrinking

Length is shrunk to 1/3 of its original size

- Product-measure
  (1 ft by 5 ft)



List different ways of conceptualizing $1/3 \times 5$.

- Fractional Part of A Quantity

- Shrinking

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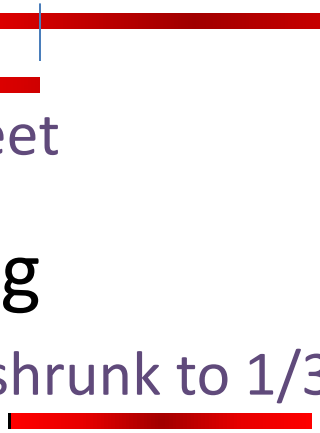
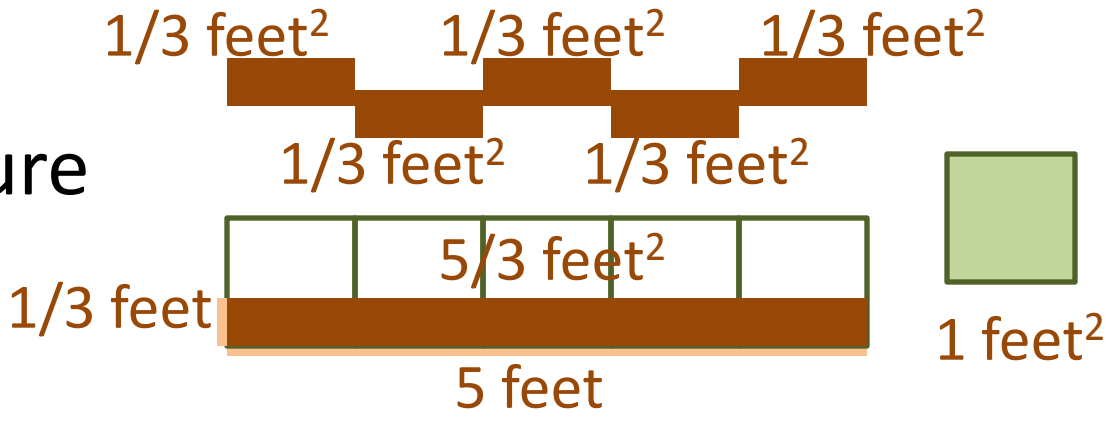


- Product-measure
(1/3 ft by 5 ft)



List different ways of conceptualizing $1/3 \times 5$.

- Fractional Part of A Quantity

- Shrinking

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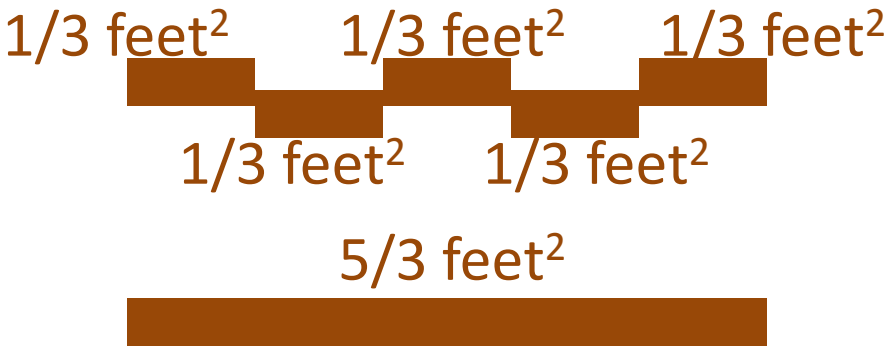
- Product-measure
(1/3 ft by 5 ft)



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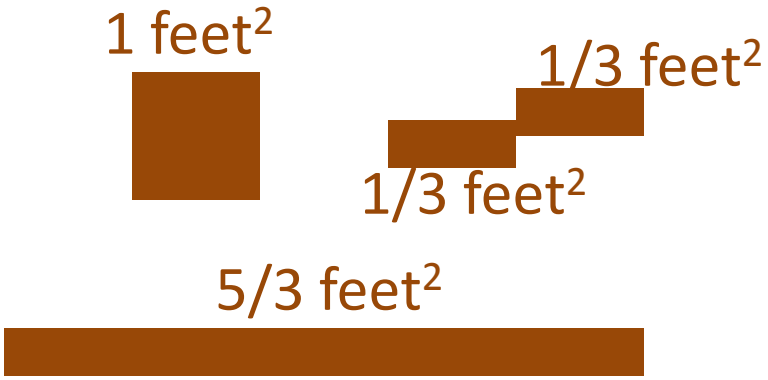
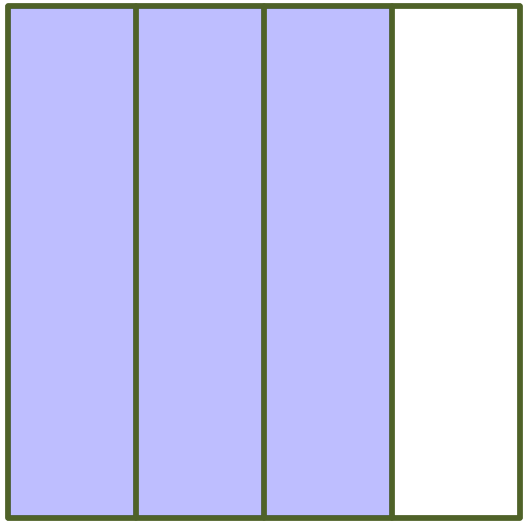


What have we learned?

- There are various ways of understanding multiplication involving proper fractions
  - Fractional part of a quantity
  - Shrinking
  - Area of a rectangle
  - Probability of two independent events (A and B)
  - Intersection of two regions (A and B)

You are given a square.
Color ¾ of the square in blue.
Color ½ of the square in red.

What fraction of the square is colored twice (in blue and in red)?



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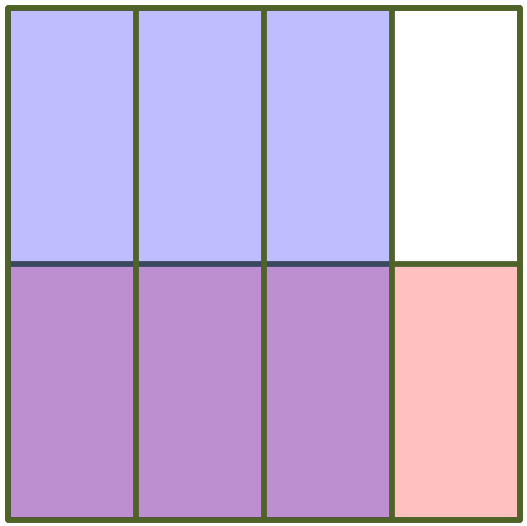

$\frac{3}{8}$

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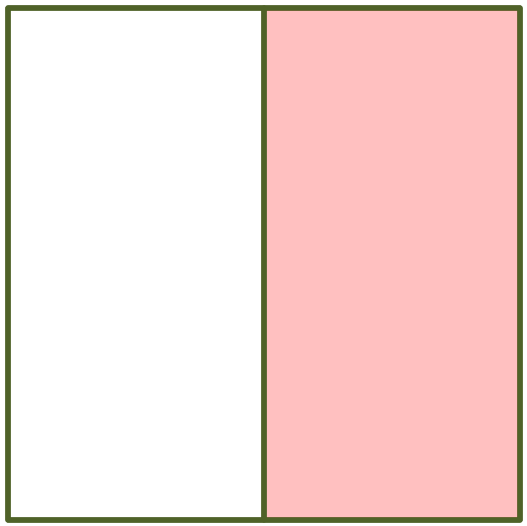

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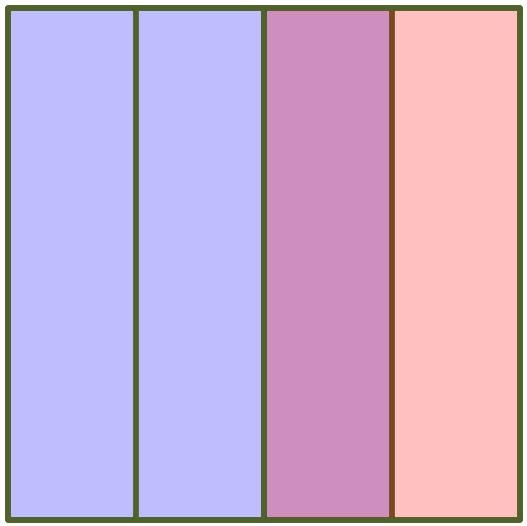
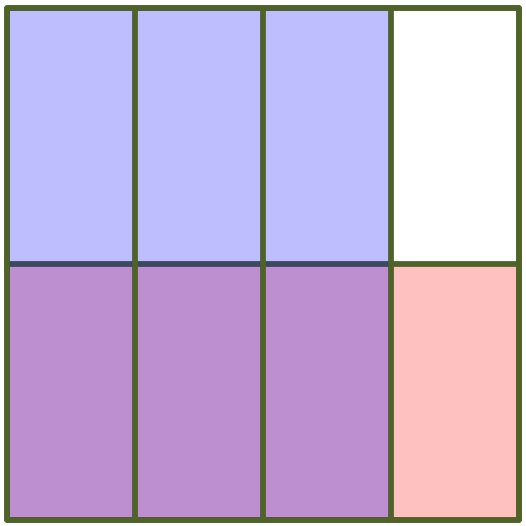


$\frac{1}{4}$



$\frac{3}{8}$

What is happening?