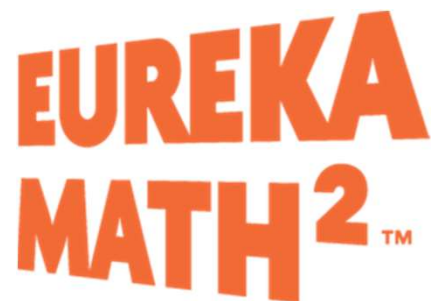




Module 5 - Lesson 11:

Find areas of rectangles with fraction side lengths by using multiplication.

CCSS Standard – 5.NF.B.4.b

FLUENCY (10-min)

Whiteboard Exchange: Round Decimals



Round 0.826 to the nearest tenth.

$$0.826 \approx \underline{\hspace{2cm}}$$

Round 0.826 to the nearest hundredth.

$$0.826 \approx \underline{\hspace{2cm}}$$

Round 7.057 to the nearest tenth.

$$7.057 \approx \underline{\hspace{2cm}}$$

Round 7.057 to the nearest hundredth.

$$7.057 \approx \underline{\hspace{2cm}}$$

FLUENCY (10-min)

Whiteboard Exchange: Round Decimals



Round 21.493 to the nearest tenth.

$$21.493 \approx \underline{\hspace{2cm}}$$

Round 21.493 to the nearest hundredth.

$$21.493 \approx \underline{\hspace{2cm}}$$

Round 90.604 to the nearest tenth.

$$90.604 \approx \underline{\hspace{2cm}}$$

Round 90.604 to the nearest hundredth.

$$90.604 \approx \underline{\hspace{2cm}}$$

FLUENCY (10-min)**Choral Response: Multiply Fractions**

What is the product?

Raise your hand when you know.

$$\frac{1}{3} \times \frac{1}{5} = \underline{\hspace{2cm}}$$

$$\frac{1}{3} \times \frac{4}{5} = \underline{\hspace{2cm}}$$

$$\frac{7}{8} \times \frac{1}{8} = \underline{\hspace{2cm}}$$

$$\frac{7}{8} \times \frac{5}{8} = \underline{\hspace{2cm}}$$

$$\frac{3}{7} \times \frac{3}{4} = \underline{\hspace{2cm}}$$

$$\frac{4}{7} \times \frac{7}{4} = \underline{\hspace{2cm}}$$

$$\frac{5}{6} \times \frac{7}{10} = \underline{\hspace{2cm}}$$

$$\frac{9}{6} \times \frac{9}{11} = \underline{\hspace{2cm}}$$

FLUENCY (10-min)**Choral Response: Add Whole Numbers and Fractions**

What is the sum?

Raise your hand when you know.

$$1 + 1\frac{1}{4} = \underline{\hspace{2cm}}$$

$$3 + 2\frac{3}{8} = \underline{\hspace{2cm}}$$

$$1\frac{2}{5} + 2 = \underline{\hspace{2cm}}$$

$$2 + \frac{3}{3} = \underline{\hspace{2cm}}$$

$$2 + \frac{5}{3} = \underline{\hspace{2cm}}$$

$$4 + \frac{6}{6} = \underline{\hspace{2cm}}$$

$$3 + \frac{7}{6} = \underline{\hspace{2cm}}$$

$$\frac{16}{8} + 5 = \underline{\hspace{2cm}}$$

$$\frac{19}{8} + 1 = \underline{\hspace{2cm}}$$

LAUNCH (5-min)

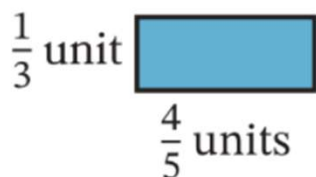
Reason how to find the area of a rectangle with fraction side lengths greater than 1.

$$4/3 \times 4/5 = 16/15$$

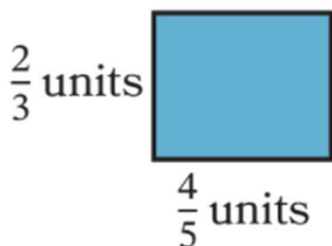
THINK-PAIR-SHARE: What do you notice and wonder about the area of the rectangles below?

Did anyone notice this....

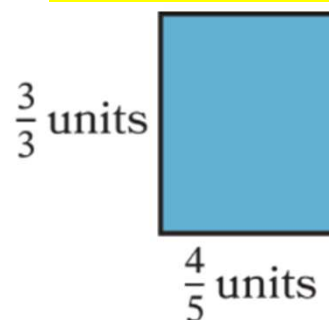
$$1/3 \times 4/5 = 4/15$$



$$2/3 \times 4/5 = 8/15$$



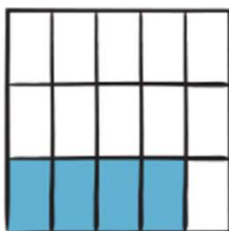
$$3/3 \times 4/5 = 12/15$$



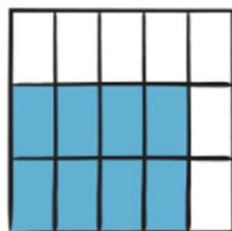
$4/3$ units



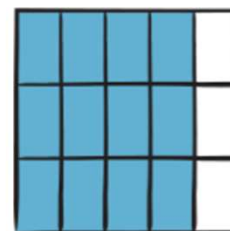
That in each rectangle, one side length stayed the same length and one side length increased by $1/3$ unit.



Area: $\frac{4}{15}$ square units



Area: $\frac{8}{15}$ square units



Area: $\frac{12}{15}$ square units

The product of each length and width is equal to the AREA of the rectangles.

That as the side length increased by $1/3$ unit, the area always increased by $4/15$ square units.

LEARN (35-min)

Rectangles with One Side Length That is a Fraction Greater Than 1

Two-Minutes:

Identify the error or ambiguity of this students' work.

*Each unit square shows **15 equal parts**.
20/30 is incorrect. The denominator should be in **fifteenths**.*

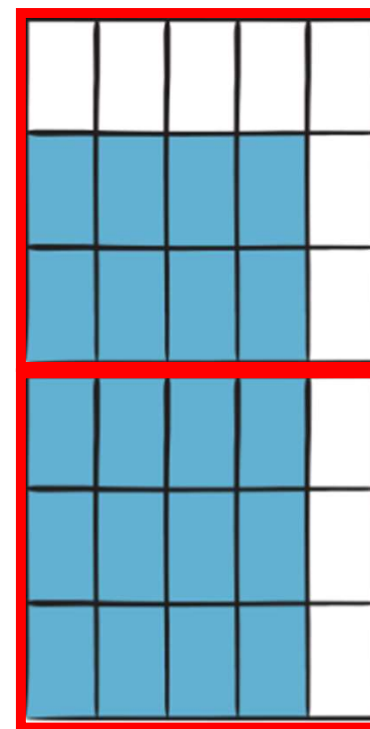
*The total area is larger than 1 square unit.
20/30 is incorrect because it is not larger than 1.*

$$5/3 \times 4/5 = 20/15$$

$\frac{5}{3}$ units



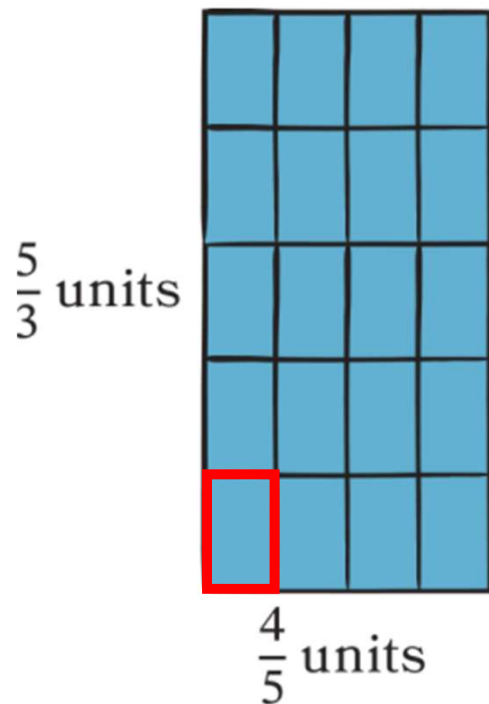
$\frac{4}{5}$ units



Area: $\frac{20}{30}$ square units

LEARN (35-min)

Rectangles with One Side Length That is a Fraction Greater Than 1



Area of 1 tile: $\frac{1}{3} \times \frac{1}{5} = \frac{1}{15}$ square unit

Area of rectangle:

$$20 \times \frac{1}{15} \text{ square unit} = \frac{20}{15} \text{ square units}$$

$$\frac{5}{3} \times \frac{4}{5} = \frac{20}{15}$$

The formula for finding the area of a rectangle with whole number side lengths is $A = L \times W$.
The formula also works for finding rectangles with fraction side lengths.

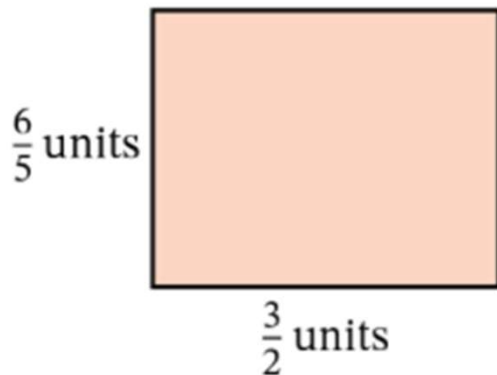
LEARN (35-min)

Rectangles with Both Side Lengths That Are Fractions Greater Than 1

LEARN book page 87.

Find the area of the rectangle.

1.



Use **square tiles** and find the area of 1 square unit.

Area of 1 tile: $\frac{1}{5} \times \frac{1}{2} = \frac{1}{10}$ square unit.

$18 \times \frac{1}{10} = \frac{18}{10}$ square units.

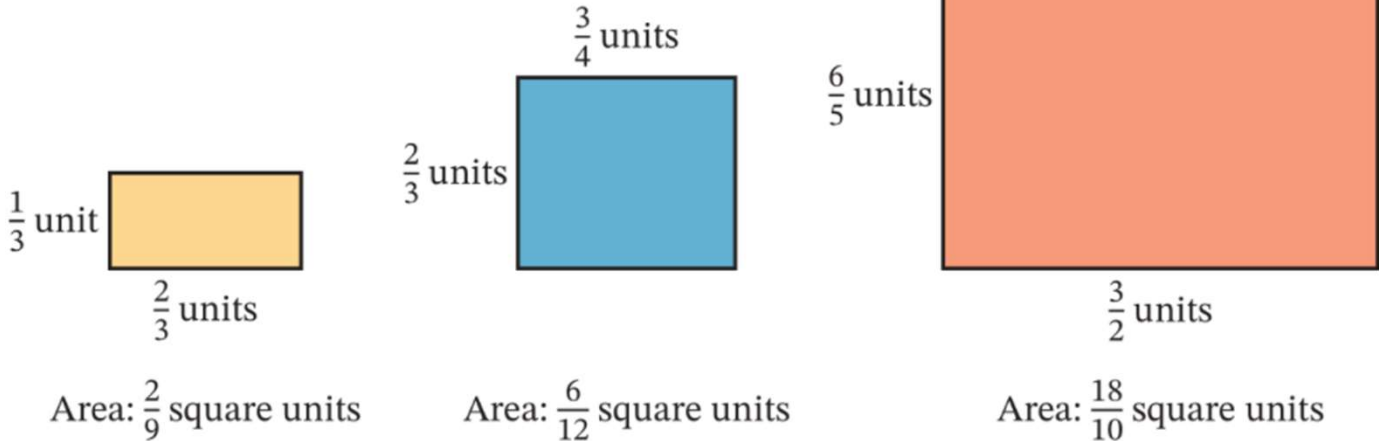
$$\frac{6}{5} \times \frac{3}{2} = \frac{18}{10}$$

LEARN (35-min)

We can find the area of a rectangular tile with unit-fraction side lengths by multiplying the length and width.

I wonder whether this is true for any rectangle with fraction side lengths.

Find Area by Multiplying



Length (units)		Width (units)		Area (square units)
$\frac{2}{3}$	X	$\frac{1}{3}$	=	$\frac{2}{9}$
$\frac{3}{4}$	X	$\frac{2}{3}$	=	$\frac{6}{12}$
$\frac{3}{2}$	X	$\frac{6}{5}$	=	$\frac{18}{10}$

LEARN (35-min)

Find Area by Multiplying

LEARN book page 87.

Find the area of each rectangle with the given side lengths.

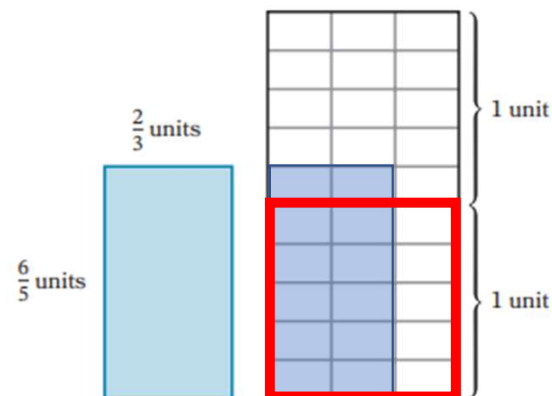
	Length (units)		Width (units)		Area (square units)	
2.	$\frac{2}{3}$	X	$\frac{5}{6}$	=	$\frac{10}{18}$	Why is the area in problems 2 less than $\frac{2}{3}$ square units?
3.	$\frac{3}{2}$	X	$\frac{5}{6}$	=	$\frac{15}{12}$	
4.	$\frac{3}{2}$	X	$\frac{7}{6}$	=	$\frac{21}{12}$	Why is the area in problems 4 greater than 1 square unit?
5.	$\frac{5}{6}$	X	$\frac{3}{3}$	=	$\frac{15}{18}$	

LEARN (35-min)

Problem Set

LEARN book page 89.

1. Use the models to complete parts (a)–(d).



a. Each unit square shown is partitioned into 15 equal parts.

b. What is the area of each equal part?

$\frac{1}{15}$ square unit

c. Use blue to color the equal parts of the unit squares to represent the blue rectangle shown.

$\frac{2}{3}$

X

$\frac{6}{5}$

=

$\frac{12}{15}$

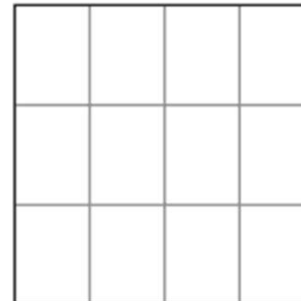
d. What is the area of the blue rectangle?

LEARN (35-min)

Problem Set

LEARN book page 90.

2. Use the partitioned unit squares to complete parts (a)–(d).



a. How many equal parts is the unit square partitioned into?

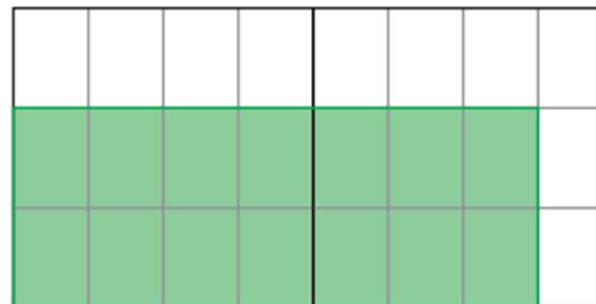
12

b. What is the area of each equal part?

$\frac{1}{12}$

square unit

c.



The rectangle represented by the green portion of the two unit squares has side lengths of $\frac{7}{4}$ units and $\frac{2}{3}$ units.

d. What is the area of the rectangle represented in part (c)?

$$\frac{7}{4} \times \frac{2}{3} = \frac{14}{12}$$

square units

LAND (10-min)

Exit Ticket



Name

Date



11

Find the area of a rectangle with side lengths of $\frac{3}{4}$ units and $\frac{11}{9}$ units.

Exit Ticket – PAGE 93

Small Group Time:

Problem Set Pages 89 - 92

Homework:

Page 71 APPLY BOOK