Module 5 - Lesson 10:

Find the area of a rectangle with fraction side lengths by relating the rectangle to a unit square.

CCSS Standard – 5.NF.B.5.b

Write and complete the equation. Show <u>YOUR</u> method.

$1.4 - 0.5 =$ _____ $0.9 - 0.27 =$ _____

$$\begin{array}{r} \overset{0}{\cancel{1}}.\overset{14}{\cancel{4}} \\ -\ 0.5 \\ \hline 0.9 \end{array}$$

$$\begin{array}{r} 0.\overset{8}{\cancel{9}}\overset{10}{0} \\ -\ 0.27 \\ \hline 0.63 \end{array}$$

Write and complete the equation. Show YOUR method.

$7.5 - 2.28 =$ _____ $4 - 1.36 =$ _____ $8.23 - 2.75 =$ _____

$$
\begin{array}{r}
9 \\
1010 \\
3\cancel{4}.\cancel{00} \\
-\ 1.36 \\
\hline
2.64
\end{array}
$$

Choral Response: Multiply Fractions

What is the product?
Raise your hand when you know.

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

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

$\frac{5}{7} \times \frac{1}{7} = \underline{\hspace{1cm}}$

$\frac{5}{7} \times \frac{4}{7} = \underline{\hspace{1cm}}$

$\frac{3}{6} \times \frac{3}{4} = \underline{\hspace{1cm}}$

$\frac{4}{6} \times \frac{6}{4} = \underline{\hspace{1cm}}$

$\frac{4}{5} \times \frac{7}{10} = \underline{\hspace{1cm}}$

$\frac{8}{5} \times \frac{8}{11} = \underline{\hspace{1cm}}$

Choral Response: Add Whole Numbers and Fractions

What is the sum?
Raise your hand when you know.

$$1 + 1\tfrac{1}{3} = \underline{\hspace{2cm}}$$

$$3 + 2\tfrac{4}{6} = \underline{\hspace{2cm}}$$

$$1\tfrac{3}{4} + 2 = \underline{\hspace{2cm}}$$

$$2 + \tfrac{5}{5} = \underline{\hspace{1.5cm}}$$

$$2 + \tfrac{7}{5} = \underline{\hspace{1.5cm}}$$

$$6 + \tfrac{10}{10} = \underline{\hspace{1.5cm}}$$

$$4 + \tfrac{13}{10} = \underline{\hspace{2cm}}$$
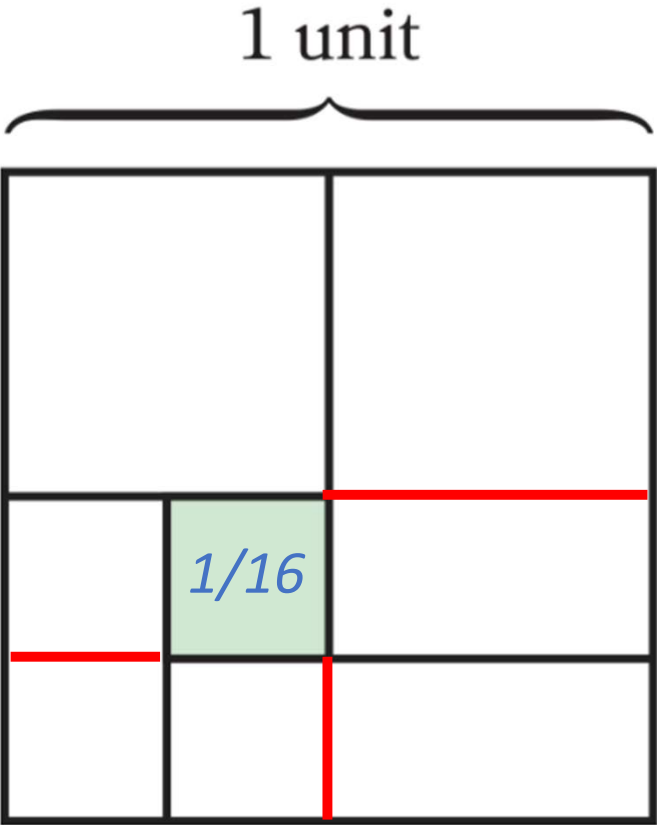
$$\tfrac{8}{4} + 3 = \underline{\hspace{1.5cm}}$$

$$\tfrac{9}{4} + 1 = \underline{\hspace{1.5cm}}$$

**Determine the area of a square that is part of a unit square.**

1-MIN. - SILENT THINKING: Determine the area of the shaded region.

TURN & TALK:
How can you use what you know about the area of the shaded square to find the area of the shaded rectangle?

1 unit

1 unit

*Did you draw lines in your mind to partition the unit square into smaller squares? **If so, how many?***

1/16

TIME TO SHARE

1 unit

1 unit

1/16   1/16

Do the partition lines help you determine the area of the shaded area?
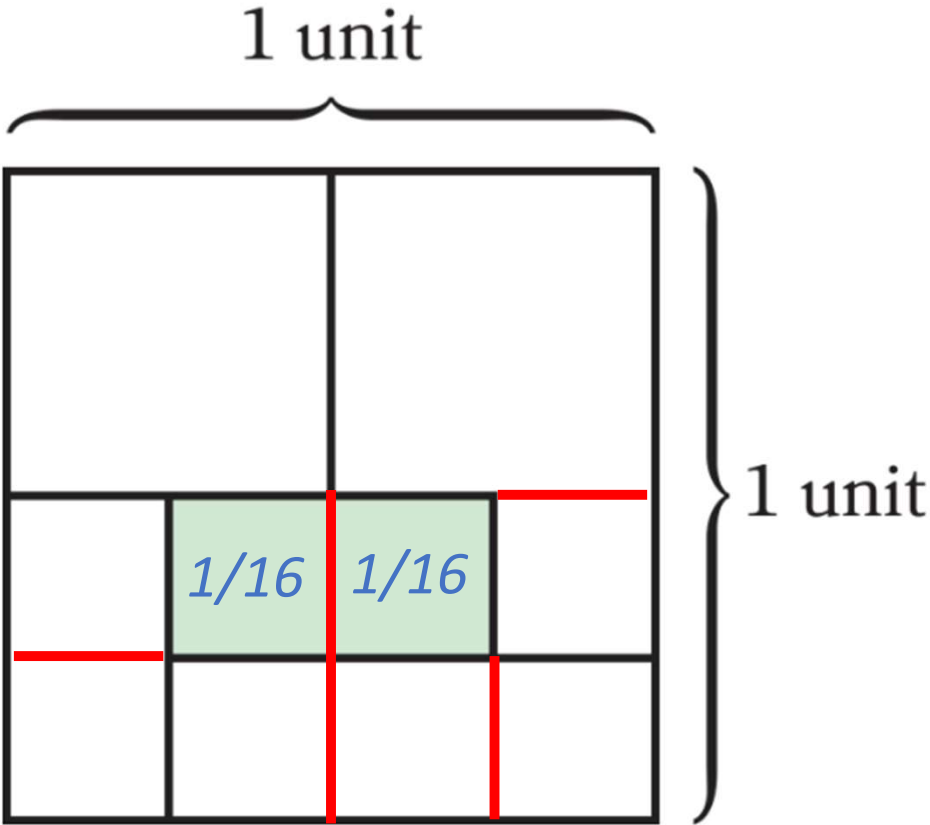
LEARN book page 77.

Find the area of the rectangle.

1.

$\frac{1}{4}$ unit

$\frac{1}{2}$ unit
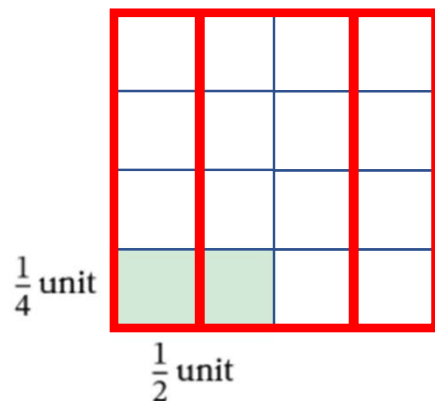
What do you notice about this rectangle?

The side lengths are both fractions.

*The side lengths are both **less than 1 square unit**.*

We know that when the side lengths of a rectangle are both less than 1, the area of the rectangle is **less than 1 square unit.**

IMPORTANT:
Instead of thinking about how many square units it takes to cover the rectangle, we are thinking about how much <u>OF the 1-unit square is covered by the rectangle</u>.

Let's think about this rectangle as part of a unit square.

How many rectangles with side lengths of ¼ unit does it take to make 1 unit?   ***4***

How many rectangles with side lengths of 1/2 unit does it take to make 1 unit?   ***2***

Did we create a UNIT SQUARE?

Yes. We drew a square that has side lengths of 1 unit.

What do you notice about the unit square now?

- *It is portioned into 8 equal parts.*
- *Each part is a rectangular tile with sides of ½ unit and ¼ unit.*
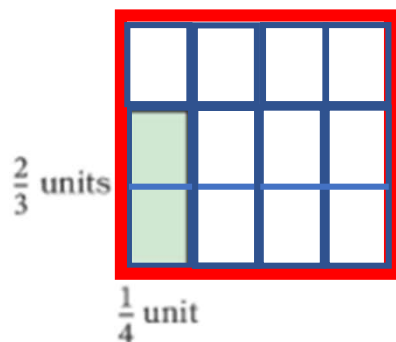- *The unit square looks like it is tiled with rectangular tiles.*

Can we find the area of the shaded rectangle?

- *Yes. The shaded rectangle has an area of 2/16 or 1/8.*

Let's do a few more using this example:

$\frac{2}{3}$ units

$\frac{1}{4}$ unit

How many rectangles with side lengths of ¼ unit does it take to make 1 unit?   *4*

How many rectangles with side lengths of 2/3 unit does it take to make 1 unit?   *3*

Area of **1 rectangle** tile:
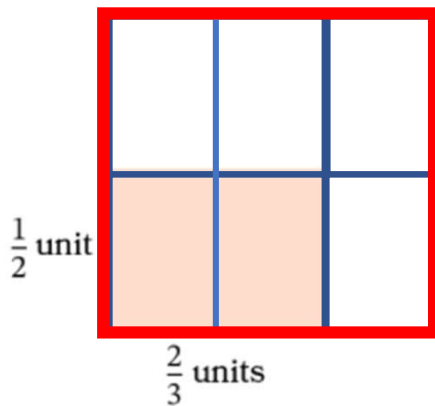
1/12 square unit

Area of **shaded rectangle**:

2 x 1/12 = 2/12 square units

1/6 square units

LEARN book page 77.

$\frac{1}{2}$ unit

$\frac{2}{3}$ units

How many rectangles with side lengths of ½ unit does it take to make 1 unit? *2*

How many rectangles with side lengths of 2/3 unit does it take to make 1 unit? *3*

Area of **1 rectangle** tile:

1/6 square unit

Area of **shaded rectangle**:

2 x 1/6 = 2/6 square units

1/3 square units

LEARN book page 78.
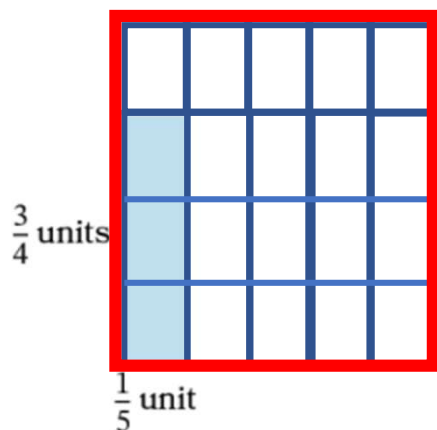
$\frac{3}{4}$ units

$\frac{1}{5}$ unit

How many rectangles with side lengths of 1/5 unit does it take to make 1 unit? *5*

How many rectangles with side lengths of ¾ unit does it take to make 1 unit? *4*

Area of **1 rectangle** tile:

1/20 square unit

Area of **shaded rectangle**:

3 x 1/20 = 3/20 square units

LEARN book page 78.

Area of **1 rectangle** tile:

1/30 square unit

Area of **shaded rectangle**:

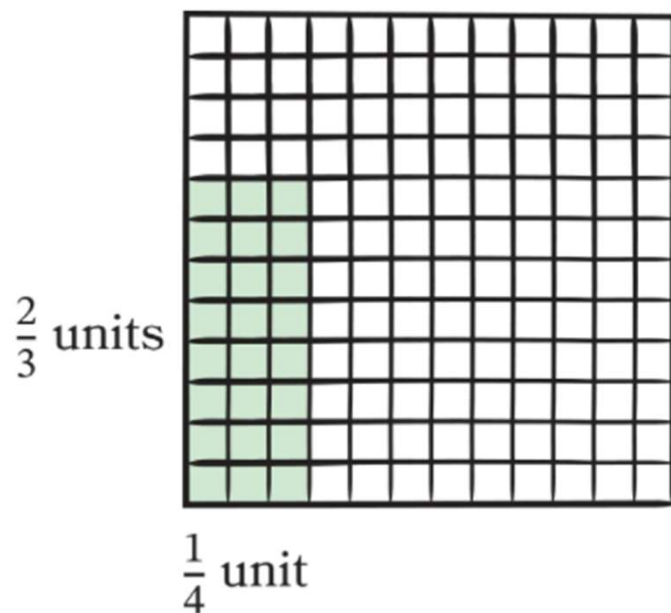**3 x 1/30 = 3/30** square units
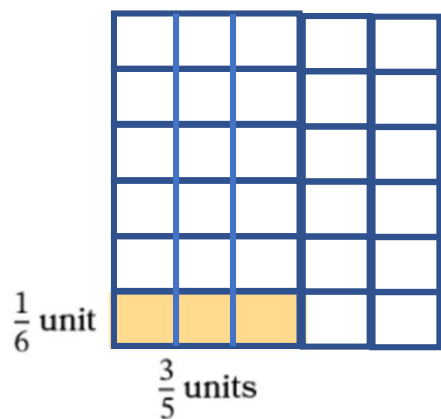
$\frac{1}{6}$ unit

$\frac{3}{5}$ units

How many rectangles with side lengths of 1/6 unit does it take to make 1 unit?   *6*

How many rectangles with side lengths of 3/5 unit does it take to make 1 unit?   *5*

Review a students work:

Did this student get the correct answer?

$\frac{2}{3}$ units

$\frac{1}{4}$ unit

Area of 1 square tile: $\frac{1}{144}$ square unit

Area of shaded rectangle:

$24 \times \frac{1}{144}$ square unit $= \frac{24}{144}$ square units

Exit Ticket

TEACHER HELP   QUICK CHECK   GOOD TO GO

☑ 10

Name _____   Date _____

Find the area of a rectangle with side lengths of $\frac{1}{2}$ unit and $\frac{7}{8}$ units. Sketch to show how you know.

Exit Ticket – PAGE 85

Small Group Time:
Problem Set Page 79 - 83

Homework:
Page 65   APPLY BOOK