Eureka Math

3rd Grade
Module 4
Lesson 11

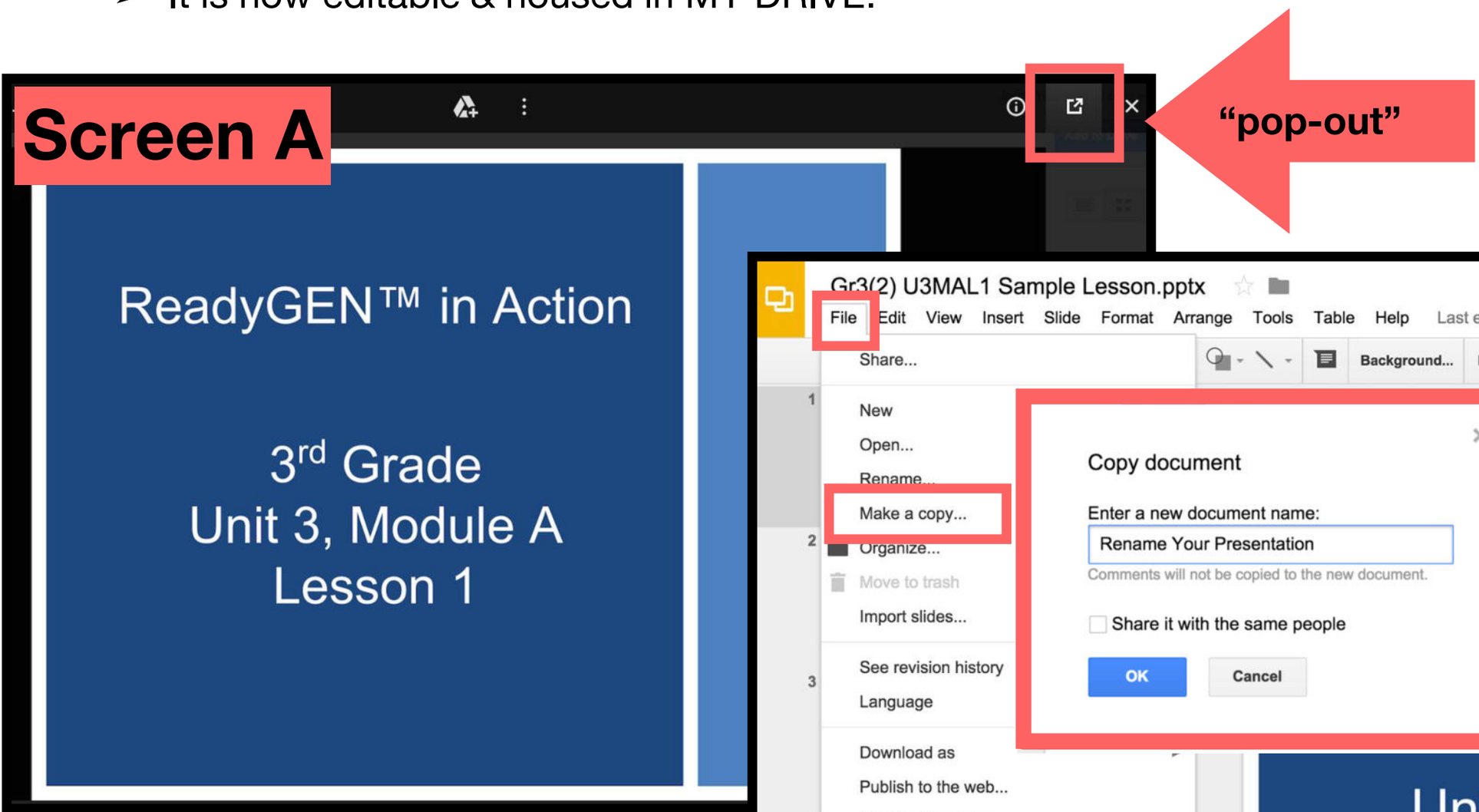
At the request of elementary teachers, a team of Bethel & Sumner educators met as a committee to create Eureka slideshow presentations. These presentations are not meant as a script, nor are they required to be used. Please customize as needed. Thank you to the many educators who contributed to this project!

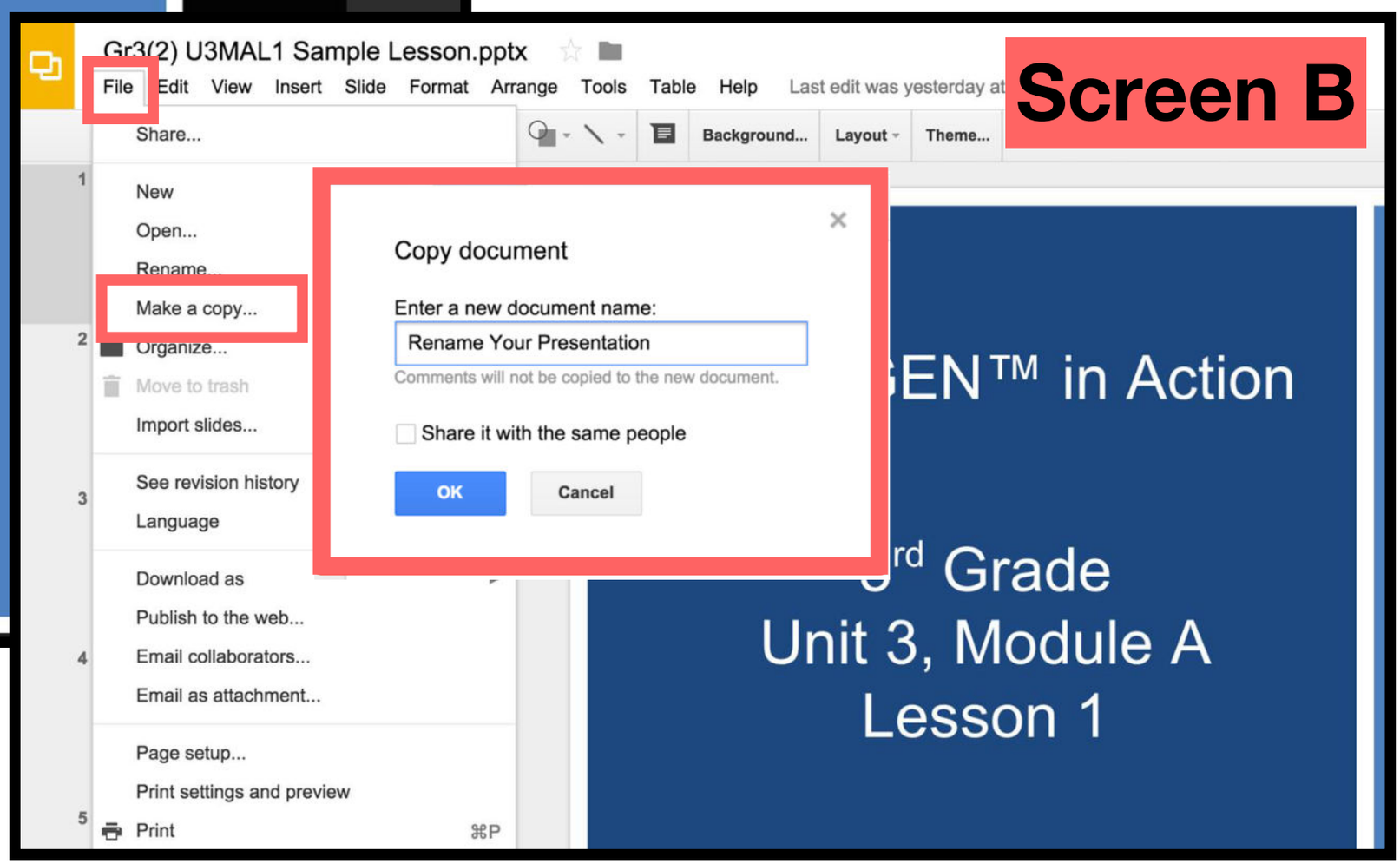
Directions for customizing presentations are available on the next slide.

Customize this Slideshow

Reflecting your Teaching Style and Learning Needs of Your Students

- When the Google Slides presentation is opened, it will look like Screen A.
- Click on the “pop-out” button in the upper right hand corner to change the view.
- The view now looks like Screen B.
- Within Google Slides (not Chrome), choose FILE.
- Choose MAKE A COPY and rename your presentation.
- Google Slides will open your renamed presentation.
- It is now editable & housed in MY DRIVE.





Icons

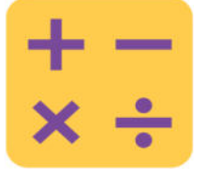
Read, Draw, Write

Learning Target

Personal White Board

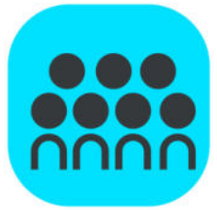
Problem Set

Manipulatives Needed



Fluency

Think Pair Share



Whole Class

Individual

Partner

Small Group

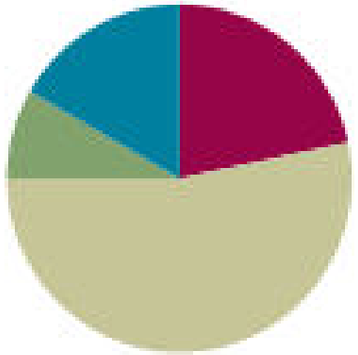
Small Group Time

Lesson 11

Objective: Demonstrate the possible whole number side lengths of rectangles with areas of 24, 36, 48, or 72 square units using the associative property.

Suggested Lesson Structure

Fluency Practice	(13 minutes)
Application Problem	(5 minutes)
Concept Development	(32 minutes)
Student Debrief	(10 minutes)
Total Time	**(60 minutes)**



I can demonstrate the possible whole number side lengths of rectangles with areas of 24, 36, 48, or 72 square units using the associative property.

Fluency Practice

Group Counting

Count forward and backward as I indicate with pointing my finger, by...

- Sixes to 60
- Sevens to 70
- Eights to 80
- Nines to 90

Fluency Practice

Find the Unknown Factor

Write each equation, and fill in the unknown factor.

6 x ____ = 12

4 x ____ = 12

2 x ____ = 12

3 x ____ = 12

Do you notice a pattern?

A: These are all factors of 12.

Fluency Practice

Find the Unknown Factor

Write each equation, and fill in the unknown factor.

6 x ____ = 36

3 x ____ = 36

9 x ____ = 36

4 x ____ = 36

12 x ____ = 36

Do you notice a pattern?

A: These are all factors of 36.

Fluency Practice

Find the Unknown Factor

Write each equation, and fill in the unknown factor.

6 x ____ = 48

12 x ____ = 48

8 x ____ = 48

24 x ____ = 48

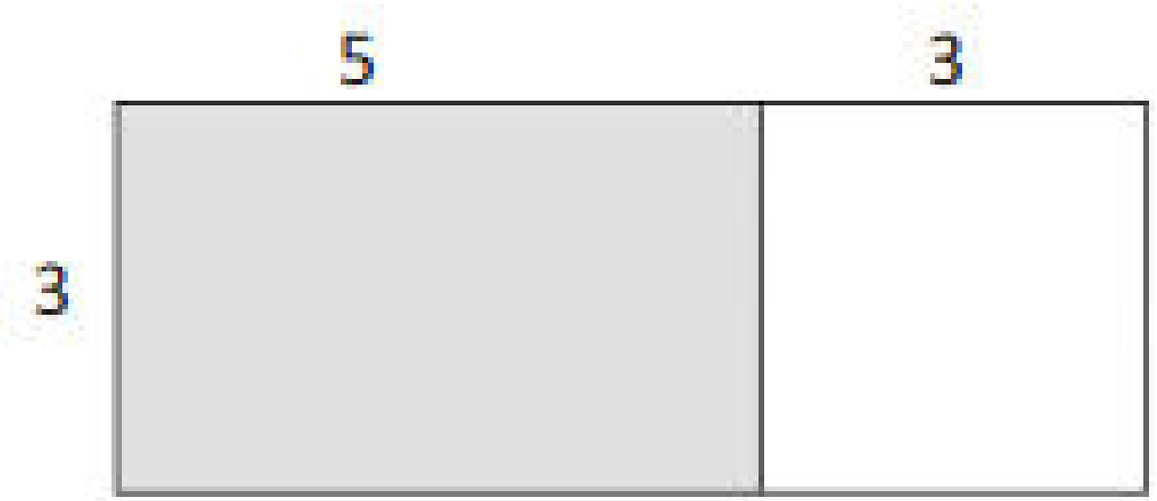
Do you notice a pattern?

A: These are all factors of 48.

Fluency Practice

Find the Area

Write an expression to find the area of the **shaded** rectangle.



Write an expression for the **unshaded** rectangle.

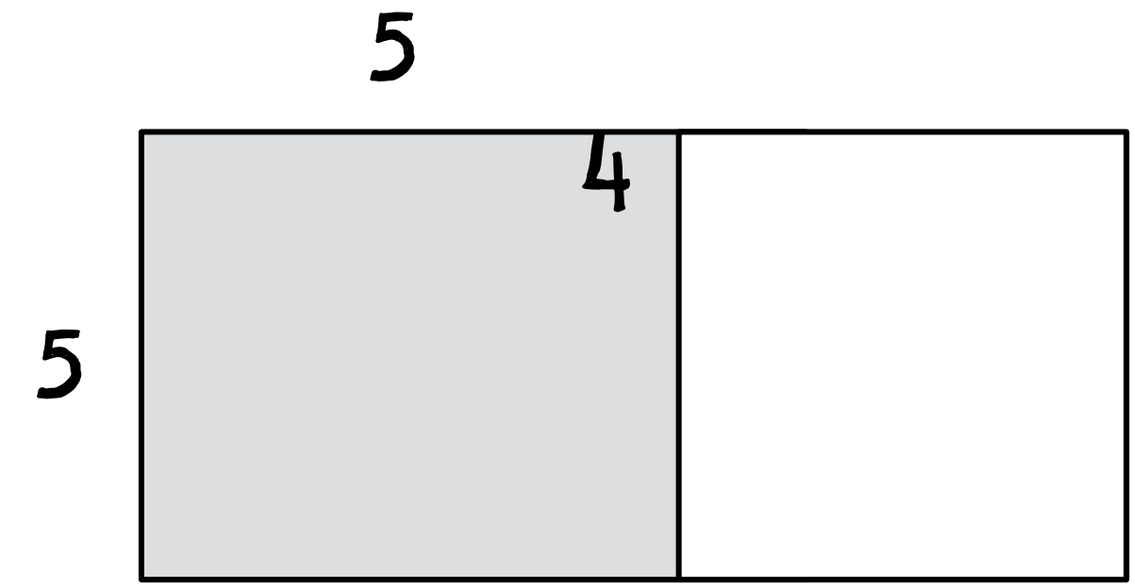
How can we use the expression to find the area of the big rectangle?

Write the equations to explain this thinking:

(3 x 5) + (3 x 3)
= 15 + 9
= 24

Fluency Practice

Write an expression to find the area of the **shaded** rectangle.



Write an expression for the **unshaded** rectangle.

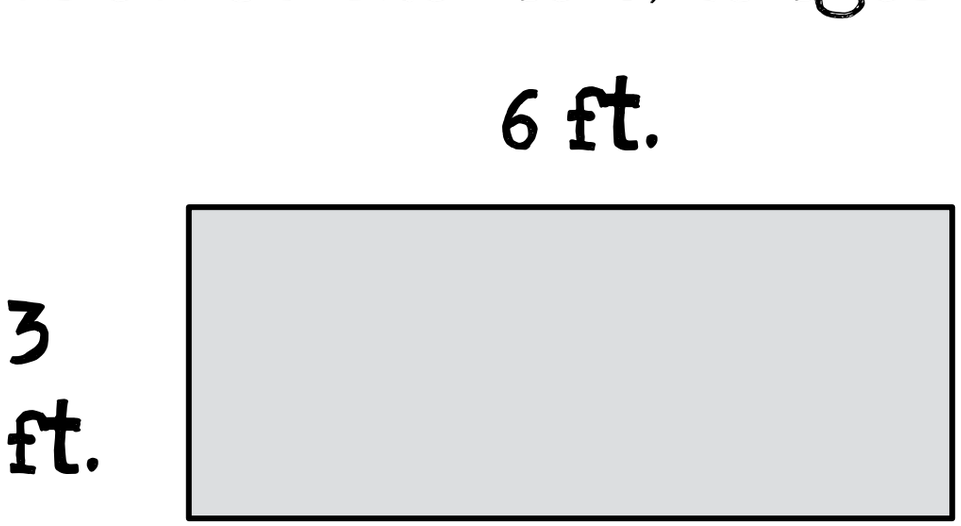
How can we use the expression to find the area of the big rectangle?

Write the equations to explain this thinking:

(5 x ____) + (5 x ____)

Application Problem

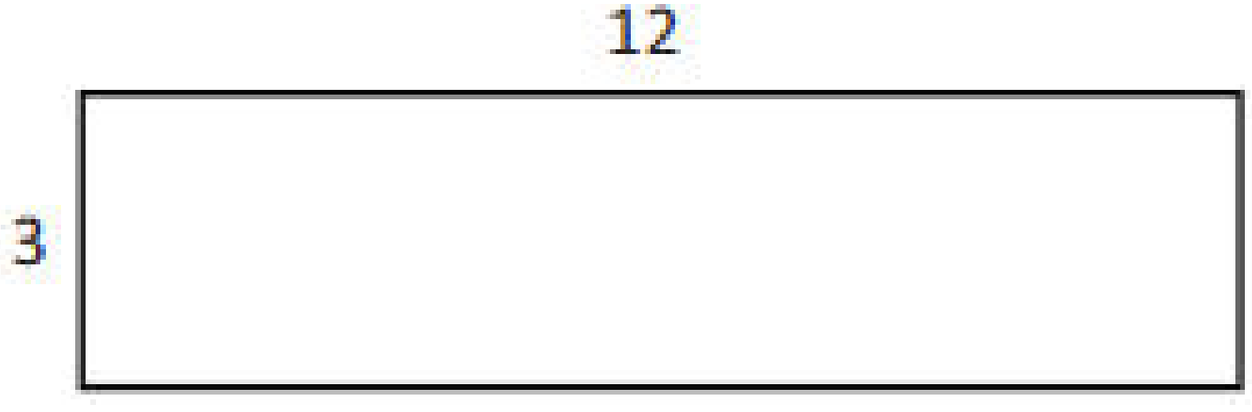
The banquet table in a restaurant measures 3 feet by 6 feet. For a large party, workers at the restaurant place 2 banquet tables side by side to create 1 long table. Find the area of the new, longer table.



Concept Development

On your whiteboards:

Write an expression to find the area of this rectangle and solve.



- Write 3 x 2 x 6
- Put the parentheses in a different spot than I did.

3 x (2 x 6)

(3 x 2) x 6

= 6 x 6

Why is this expression equal to the one you just wrote?

What **new side lengths** did we find for a rectangle with an area of 36 square units?

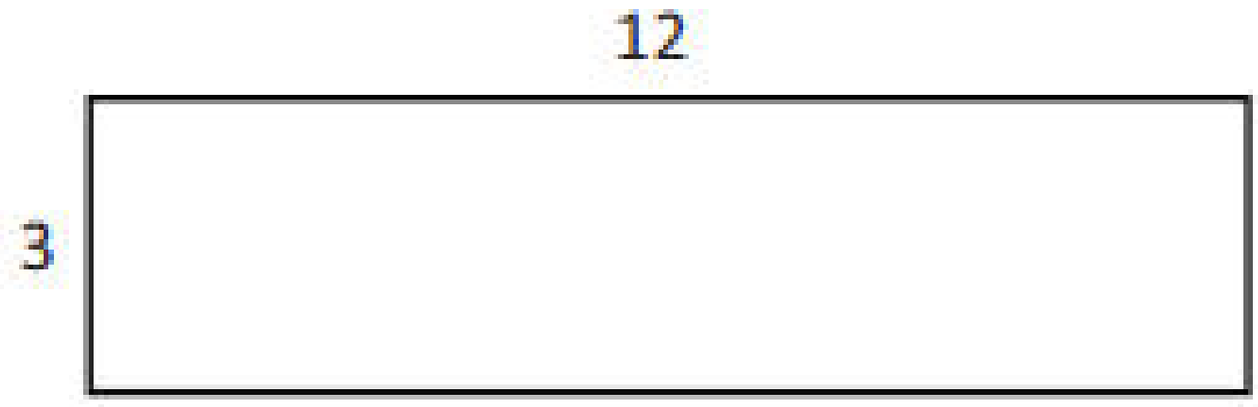
Concept Development

On your whiteboards:

Look at the expression

$$(3 \times 2) \times 6$$

- Use the commutative property to switch the order of the factors in the parentheses.



- $(2 \times 3) \times 6$

$$(2 \times 3) \times 6$$
$$= 6 \times 6$$

What **new side lengths** did we find for a rectangle with an area of 36 square units?

Concept Development

On your whiteboards:

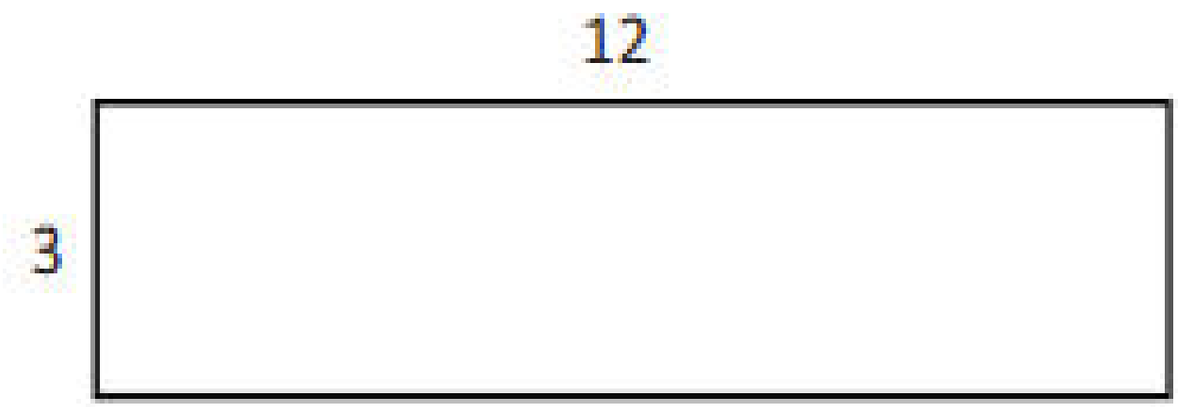
- Will you be able to find new side lengths by moving the parentheses?

(2 x 3) x 6

- 2 x (3 x 6)

How is the following like our first equation?

- 3 x (3 x 4)



- Write 3 x 3 x 4
- Put the parentheses in a different spot than I did.

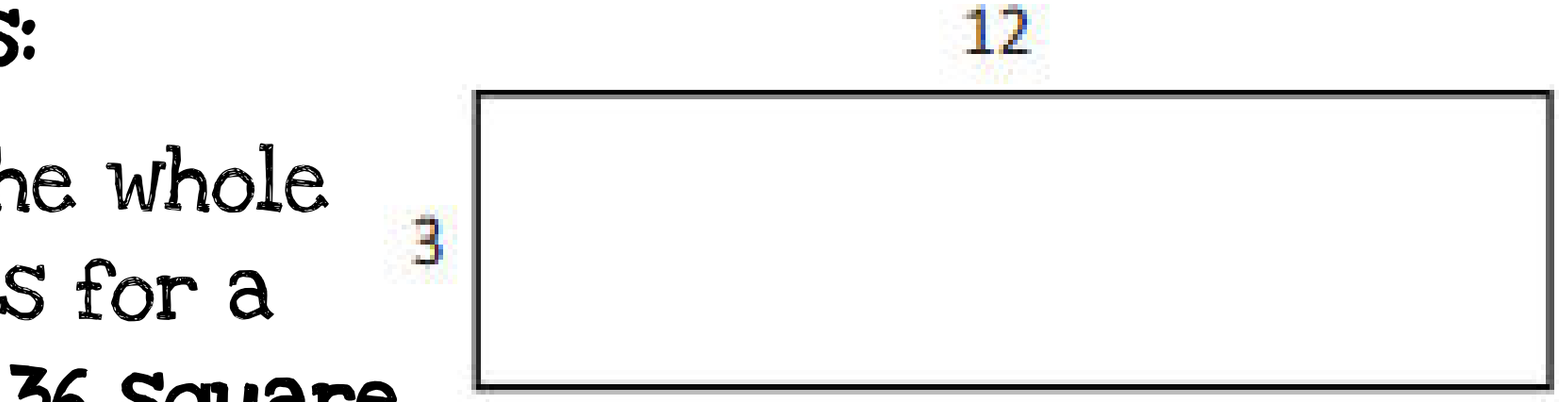
(3 x 3) x 4
= 9 x 4

What **new side lengths** did we find for a rectangle with an area of 36 square units?

Concept Development

On your whiteboards:

Have we found **all** the whole number side lengths for a rectangle that has **36 square units**?



Work with your partner to look at the rest of your side lengths to see if you have the numbers 4 through 10.

Let's review:

- 3 x 12
- 6 x 6
- 2 x 18
- 9 x 4

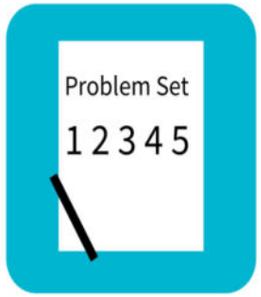
Do we have a side length of 1?

Concept Development

On your whiteboards:

Can you find all the side lengths for the following rectangle?

You may want to draw all the different rectangles.

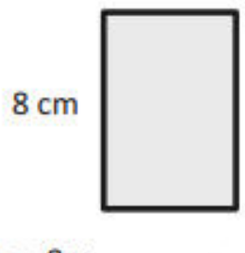


Problem Set

Name _____ Date _____

1. The rectangles below have the same area. Move the parentheses to find the unknown side lengths. Then, solve.

a.



Area: 8 × _____ = _____

Area: _____ sq cm

b.

Area: 1 × 48 = _____

Area: _____ sq cm

c.

Area: **8 × 6** = (2 × 4) × 6

= 2 × 4 × 6

= _____ × _____

= _____

Area: _____ sq cm

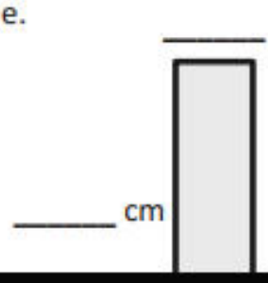
d.

Area: **8 × 6** = (4 × 2) × 6

= 4 × 2 × 6

= _____ × _____

e.



Area: **8 × 6** = 8 × (2 × 3)

= 8 × 2 × 3

Debrief

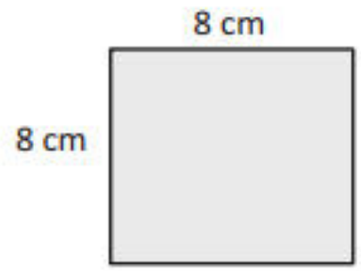
Any combination of the questions below may be used to lead the discussion.

- Turn your paper horizontally and look at Problem 1. What property does this show?
- Share your answer to Problem 2 with a partner.
- Discuss your answer to Problem 4 with a partner. What would the rectangle look like if the difference between side lengths was 0? How do you know?
- Compare your answer to Problem 4(c) with a partner's. Did you both come up with the same side lengths? Why or why not?
- Explain to a partner how to use the strategy we learned today to find all possible **whole number** side lengths for a rectangle with an area of 60 square units.

Exit Ticket

Name _____ Date _____

1. Find the area of the rectangle.



2. The rectangle below has the same area as the rectangle in Problem 1. Move the parentheses to find the unknown side lengths. Then, solve.

Area: $\mathbf{8 \times 8} = (4 \times 2) \times 8$

$= 4 \times 2 \times 8$

$=$ _____ $\times$ _____

$=$ _____

Area: _____ sq cm