Eureka Math

4th Grade
Module 3
Lesson 23

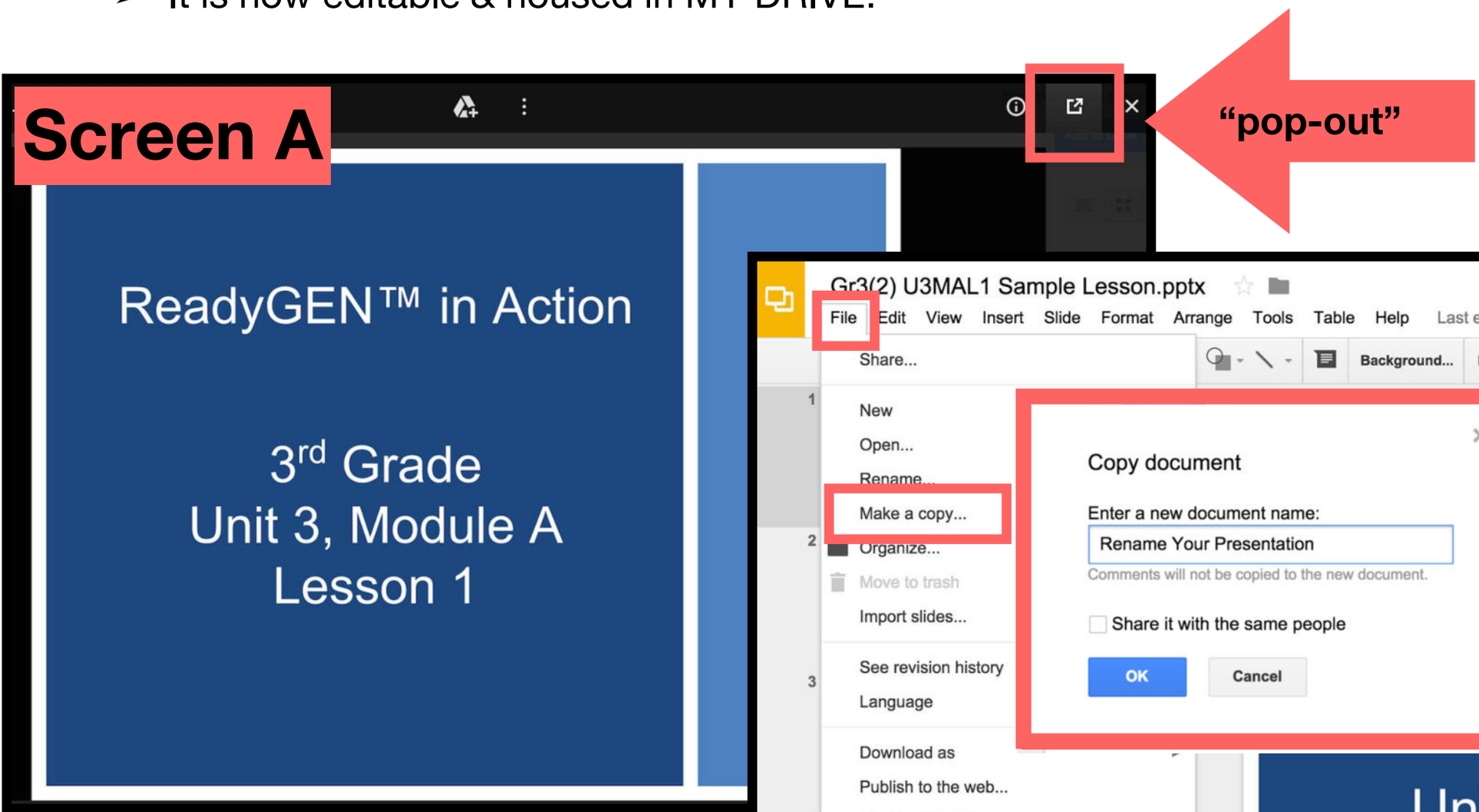
At the request of elementary teachers, a team of Bethel & Sumner educators met as a committee to create Eureka slideshow presentations. These presentations are not meant as a script, nor are they required to be used. Please customize as needed. Thank you to the many educators who contributed to this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

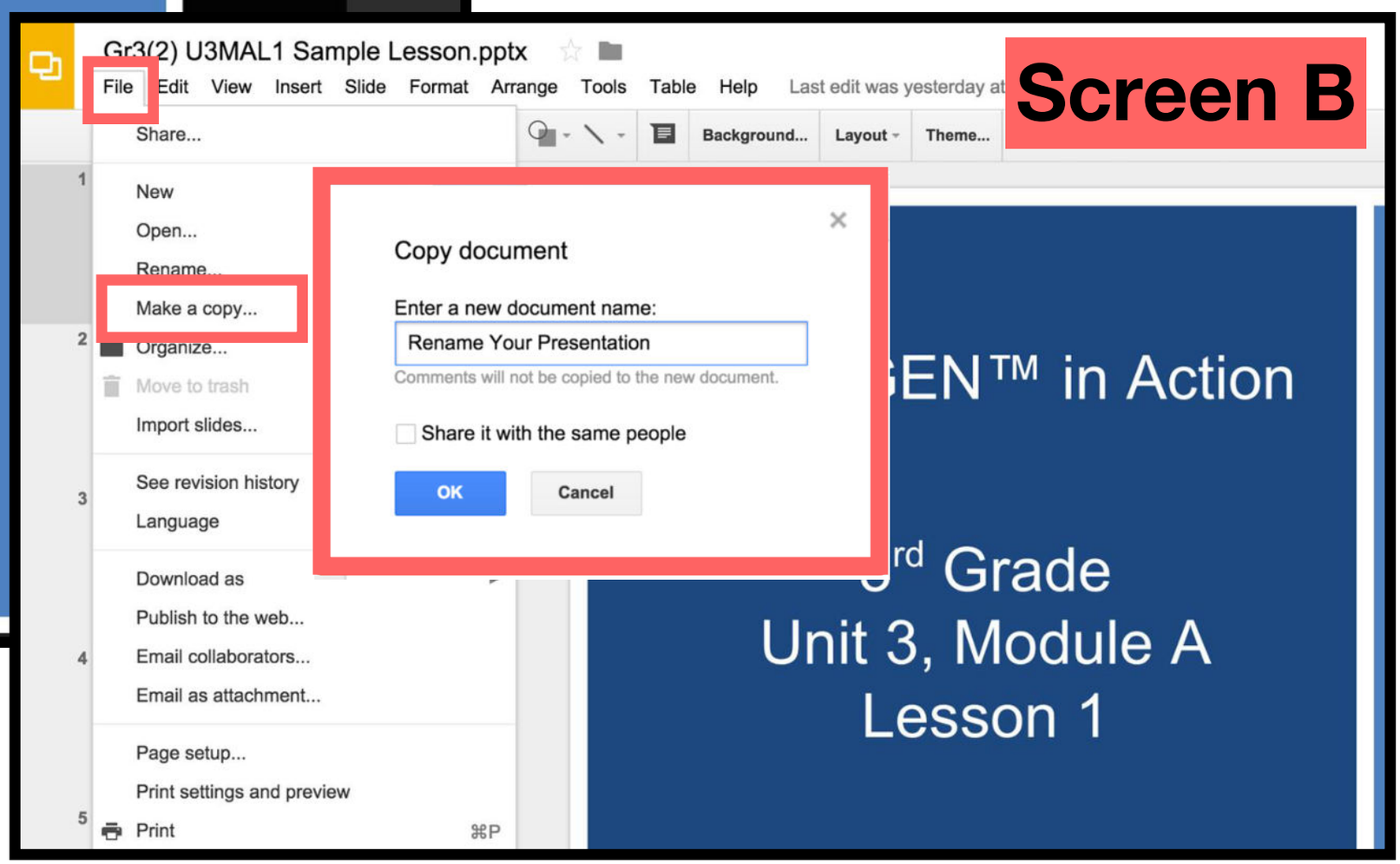
Directions for customizing presentations are available on the next slide.

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.



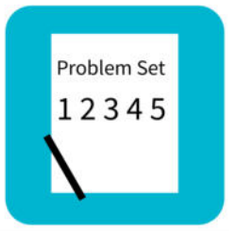


Icons

Read, Draw, Write

Learning Target

Personal White Board

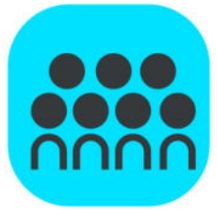


Problem Set

Manipulatives Needed

Fluency

Think Pair Share



Whole Class

Individual

Partner

Small Group

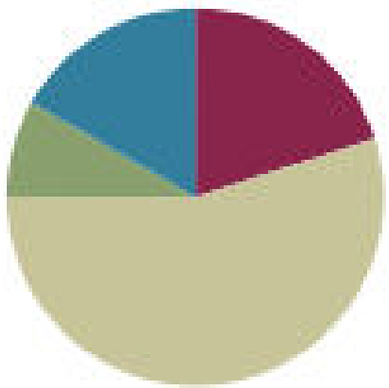
Small Group Time

Lesson 23

Objective: Use division and the associative property to test for factors and observe patterns.

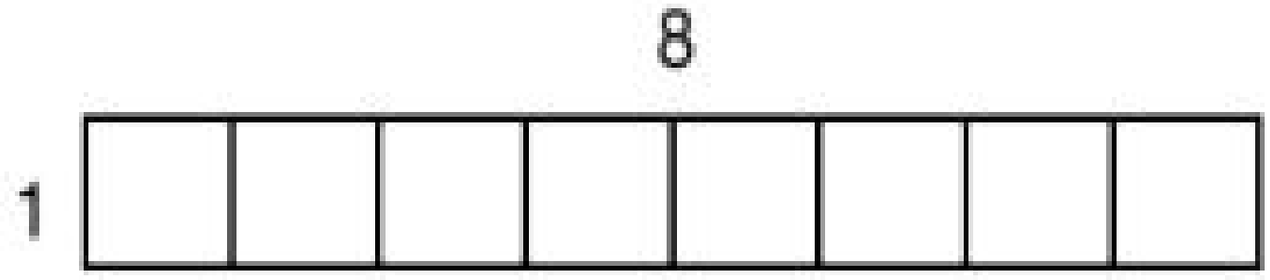
Suggested Lesson Structure

Fluency Practice	(12 minutes)
Application Problem	(5 minutes)
Concept Development	(33 minutes)
Student Debrief	(10 minutes)
Total Time	**(60 minutes)**



Objective: Use division and the associative property to test for factors and observe patterns.

Use Arrays to Find Factors

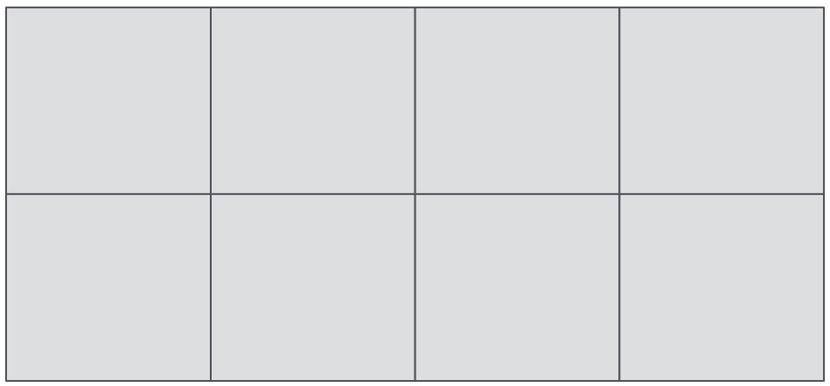


What is the width of the array?

What's the length of the array?

Write the multiplication sentence.

Use Arrays to Find Factors



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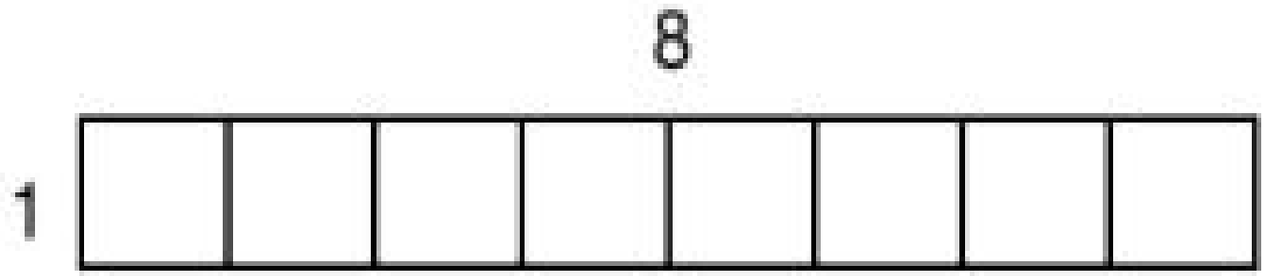


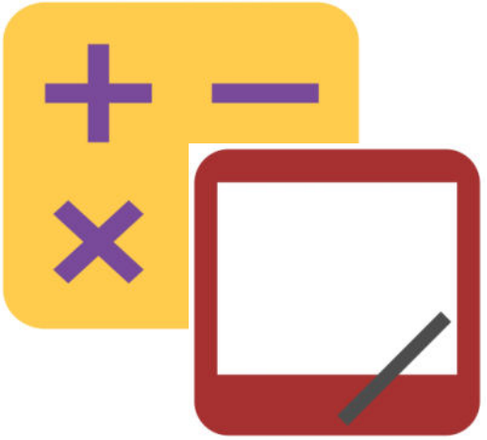
List the factors of 8.

Use Arrays to Find Factors

What arrays can you draw to show the factors of 12?

16?

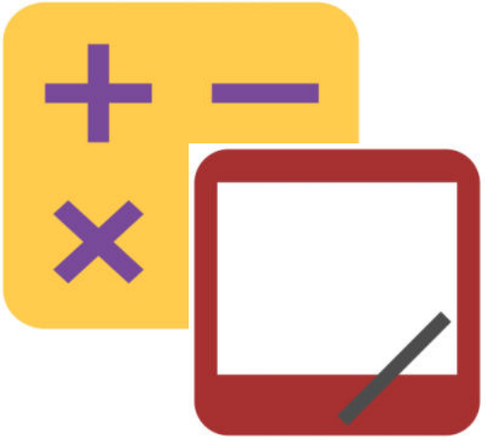
18?



Multiply Two Factors

$$174 \times 2 = \_\_\_\_\_$$

On your personal white board, solve the multiplication sentence using the standard algorithm.



Multiply Two Factors

Repeat the process using the following possible sequence:

348×2

696×2

$1{,}392 \times 2$.

Prime or Composite?

7

Prime or composite?

Write the factor pair of 7.

Prime or Composite?

12

Prime or composite?

Write the factor pair(s).

Prime or Composite?

15

Prime or composite?

Write the factor pair(s).

Prime or Composite?

17

Prime or composite?

Write the factor pair(s).

Prime or Composite?

21

Prime or composite?

Write the factor pair(s).

Application Problem

Sasha says that every number in the twenties is a composite number because 2 is even. Amanda says there are two prime numbers in the twenties. Who is correct? How do you know?

Concept Development

Materials

- [ ] (S) Personal white board

Finding Factors

Find the unknown factor: 28 = 7 × ___.

How did you find the unknown factor?

Is 10 a factor of 28?

How do you know?

Finding Factors

How can I find out if 3 is a factor of **54**?

What if I get a remainder?

Work with your partner to see if 3 is a factor of 54.

Finding Factors

How can I find out if **2** is a factor of 54?

Work with your partner...

Finding Factors

Use division to find out if:

- 3 is a factor of 78
- 4 is a factor of 94
- 3 is a factor of 87

Associative Property

Talk to your partner. Is it necessary to divide to figure out if 5 is a factor of 54? Explain to your partner why or why not.

How can we know if 6 a factor of 54?

Associative Property

Earlier we saw that 2 and 3 are both factors of 54. Talk to your partner. Is this number sentence true?

$$54 = 6 \times 9 = (2 \times 3) \times 9$$

Let’s write it vertically so that it is very easy to see how the factor 6 is related to 2 times 3...

Associative Property

$$54 = 6 \times 9 = (2 \times 3) \times 9$$

$$\begin{aligned} 54 &= 6 \times 9 \\ &= (2 \times 3) \times 9 \\ &= 2 \times (3 \times 9) \\ &= 2 \times 27 \\ &= 54 \end{aligned}$$

We used the associative property to show that both 2 and 3 are factors of 54.Let’s test this method to see if it works with a number other than 54.

Associative Property

Forty-two is 6 times…?

Let’s use the associative property to see if 2 and 3 are also factors of 42.

How will we rewrite 6?

Associative Property

$$
\begin{aligned}
42 &= 6 \times 7 \\
&= (2 \times 3) \times 7 \\
&= 2 \times (3 \times 7) \\
&= 2 \times 21 \\
&= 42
\end{aligned}
$$

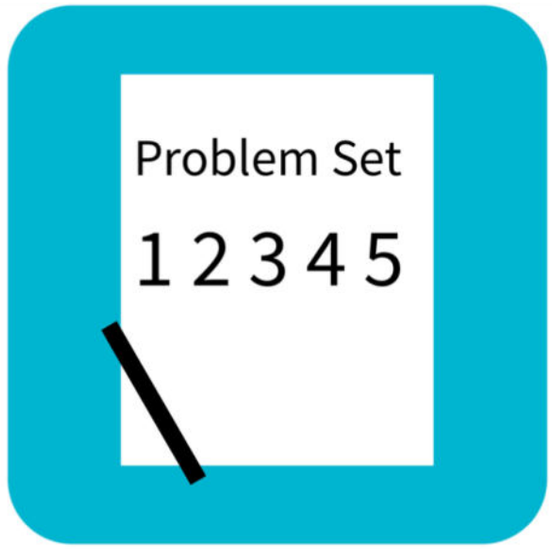
Are 2 and 3 factors of 42?

Solve a Division Problem

Multiply 6 times 12

The answer is…?

Using either division or the associative property, work with your partner to prove that since 6 is a factor of 72, 2 and 3 are also factors.



Problem Set

Name _____ Date _____

1. Explain your thinking or use division to answer the following.

a. Is 2 a factor of 84?	b. Is 2 a factor of 83?
c. Is 3 a factor of 84?	d. Is 2 a factor of 92?

Debrief

Participate in the discussion by...

- Thinking about the question.
- Sharing your work.
- Explaining your strategy.
- Listening to others.

Debrief

- How did answering Problem 1, Part (a) help you answer Problem 1, Part (b)? Was it necessary to divide?
- What relationship do you notice between Problem 1, Parts (a), (c), and (e)? What about between Problem 1, Parts (d), (f), and (h)?
- Discuss with your partner what is similar and what is different about Problem 1, Parts (a), (c), and (e) and Problem 1, Parts (d), (f), and (h).
- What's the difference between the statements in Problem 4? Why is one false and the other true?
- When we divided 72 by 3, we saw that there was no remainder. Another way to say that is "72 is divisible by 3." Is 24 divisible by 3? Is 25 divisible by 3?

Exit Ticket

Name _____ Date _____

1. Explain your thinking or use division to answer the following.

a. Is 2 a factor of 34?	b. Is 3 a factor of 34?
c. Is 4 a factor of 72?	d. Is 3 a factor of 72?