Eureka Math

3rd Grade
Module 7
Lesson 24

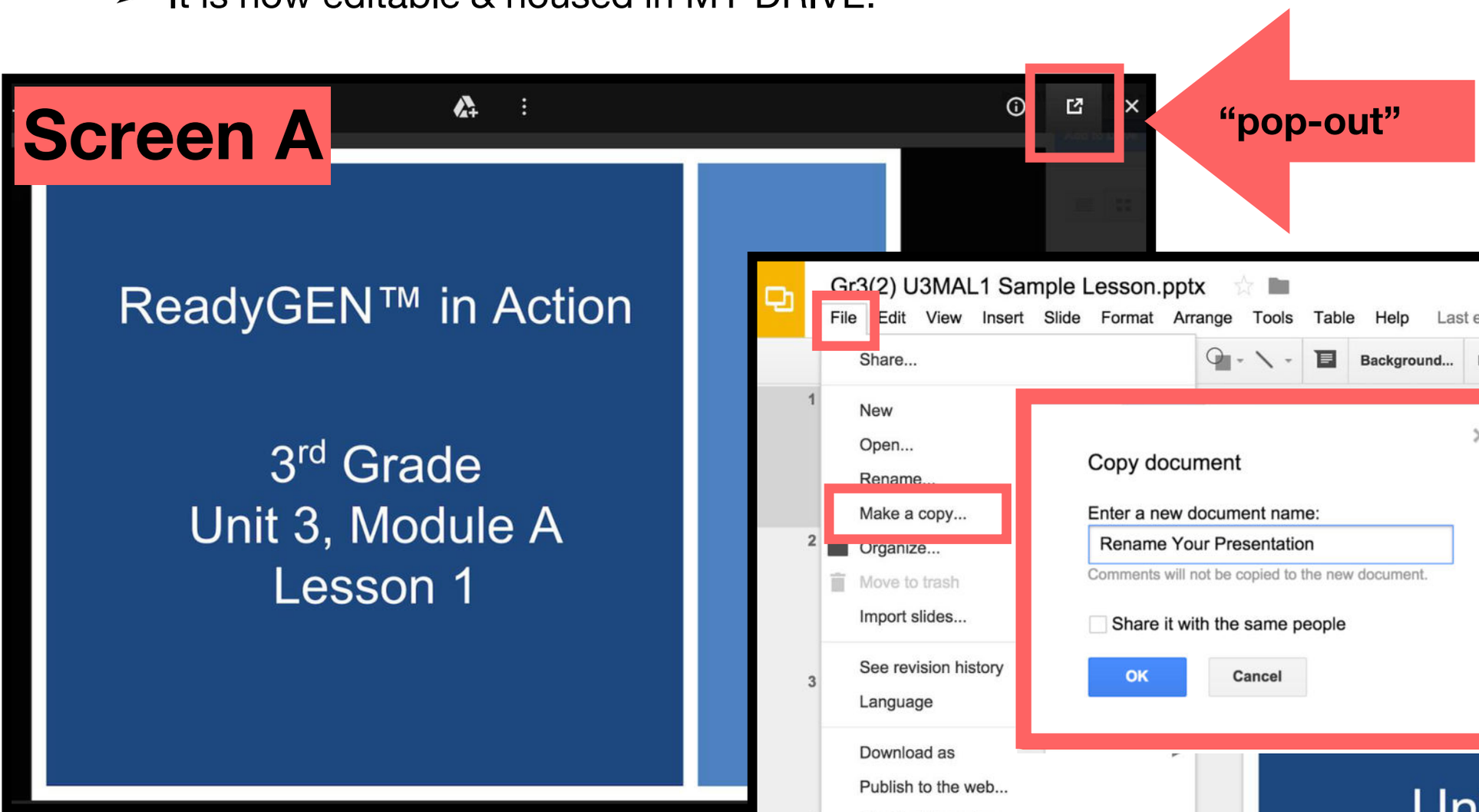
At the request of elementary teachers, a team of Bethel & Sumner educators met as a committee to create Eureka slideshow presentations. These presentations are not meant as a script, nor are they required to be used. Please customize as needed. Thank you to the many educators who contributed to this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

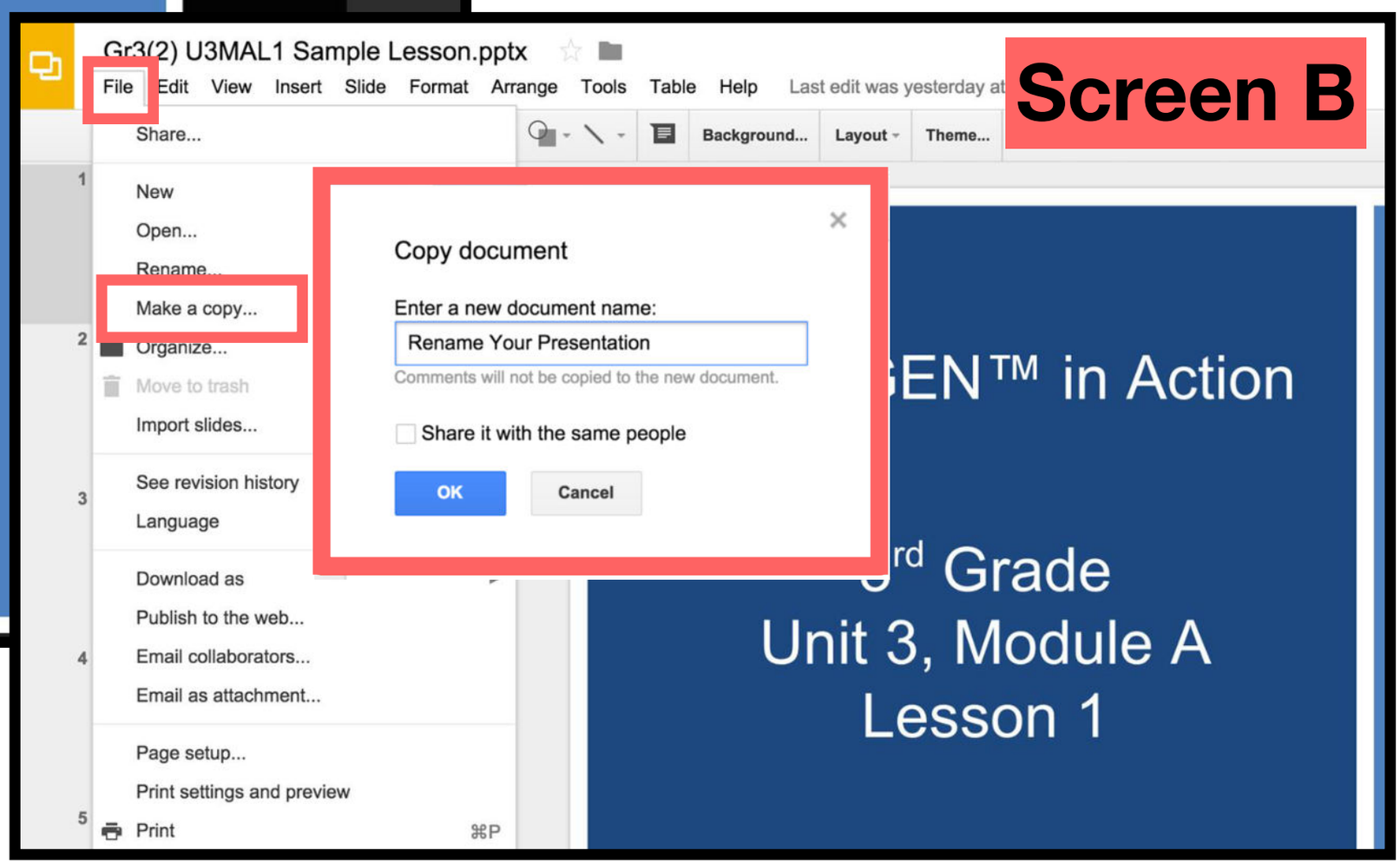
Directions for customizing presentations are available on the next slide.

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

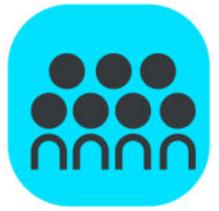
Personal White Board

Problem Set

Manipulatives Needed

Fluency

Think Pair Share



Whole Class

Individual

Partner

Small Group

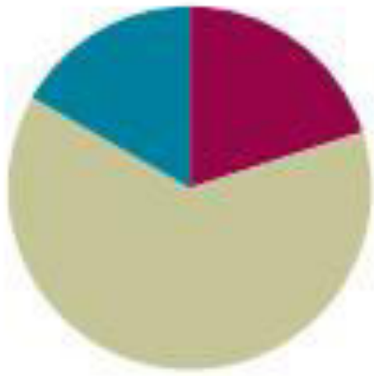
Small Group Time

Lesson 24

Objective: Use rectangles to draw a robot with specified perimeter measurements, and reason about the different areas that may be produced.

Suggested Lesson Structure

Fluency Practice	(12 minutes)
Concept Development	(38 minutes)
Student Debrief	(10 minutes)
Total Time	**(60 minutes)**



I can use rectangles to draw a robot with specified perimeter measurements, and reason about the different areas that may be produced.

Fluency Practice

Multiply by 6 (5 minutes)

Let’s skip-count up by sixes. I’ll raise a finger for each six

7x6=

Let’s skip-count up by sixes starting at 30. Why is 30 a good place to start?

It is a fact we already know, so we can use it to figure out a fact we do not know.

Let’s see how we can skip-count down to find the answer, too. Start at 60 with 10 fingers, 1 for each six.

Continue with the following possible sequence:
9 × 6, 6 × 6, and 8 × 6.

Fluency Practice

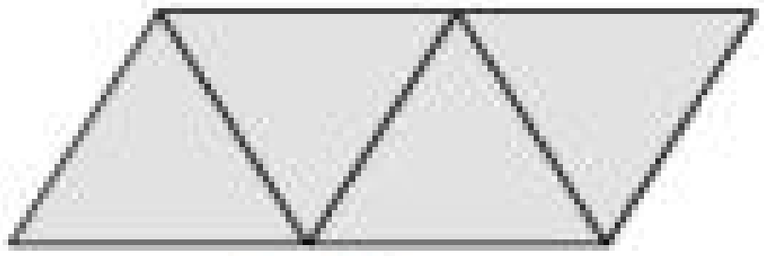
Multiply by 6 Pattern Sheet (2 minutes)

Multiply.

6 x 1 = _____	6 x 2 = _____	6 x 3 = _____	6 x 4 = _____
6 x 5 = _____	6 x 6 = _____	6 x 7 = _____	6 x 8 = _____
6 x 9 = _____	6 x 10 = _____	6 x 5 = _____	6 x 6 = _____
6 x 5 = _____	6 x 7 = _____	6 x 5 = _____	6 x 8 = _____
6 x 5 = _____	6 x 9 = _____	6 x 5 = _____	6 x 10 = _____
6 x 6 = _____	6 x 5 = _____	6 x 6 = _____	6 x 7 = _____
6 x 6 = _____	6 x 8 = _____	6 x 6 = _____	6 x 9 = _____

Fluency Practice

Find the Side Lengths (4 minutes)



P = 24 cm

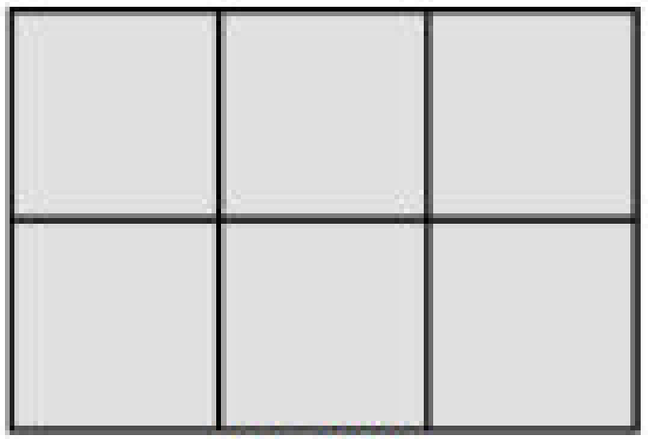
__ cm ÷ __ = __ cm

Each side of the triangle is the same length. The perimeter of this shape is 24 cm. Find the side lengths of each triangle by filling in the missing numbers.

24 cm ÷ 6 = 4 cm

Fluency Practice

Find the Side Lengths (4 minutes)



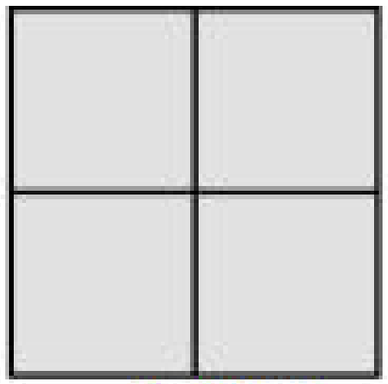
__ in ÷ __ = __ in

The perimeter of this shape is 90 in. Find the side lengths of each square by filling in the missing numbers.

90 in ÷ 10 = 9 in.

Fluency Practice

Find the Side Lengths (4 minutes)



__ m ÷ __ = __ m

The perimeter of this shape is 48 m. Find the side lengths of each square by filling in the missing numbers.

48 m ÷ 8 = 6 m

Concept Development

(38 minutes)

Today, you will use all you have learned about perimeter and area to start designing a robot and an environment for it.

We'll work on this for four days, so today we will just do our planning.

Read the directions for completing the chart on the first page of the Problem Set.

Concept Development

(38 minutes)

Use the given perimeters in the chart below to choose the widths and lengths of your robot's rectangular body parts. Write the widths and lengths in the chart below. Use the blank rows if you want to add extra rectangular body parts to your robot.

We will not be working with fractional units, only whole numbers, throughout the project.

Talk to a partner. How can you use the given perimeters to find possible widths and lengths of each robot body part?

You can find half of the perimeter and then find pairs of numbers that add up to half of the perimeter. These pairs of numbers are the possible widths and lengths.

Concept Development

(38 minutes)

Do that now for the perimeter of one of your robot's arms, 14 centimeters.

How many rectangles can you make for that perimeter with whole number side lengths?

Three rectangles

Sketch the rectangles, and then compare them to decide which one to use for your robot's arm. Record the width and length of your choice in the chart.

Concept Development

(38 minutes)

Look at the chart on page 2 of your Problem Set. Why are some of the width and length spaces shaded in?

They are circles, so they do not have length and width.

So, do you have to write anything in your chart for the widths and lengths of the circular items?

No!

What is the given perimeter of the robot's house?

82 centimeters

What is half of 82?

41

Concept Development

(38 minutes)

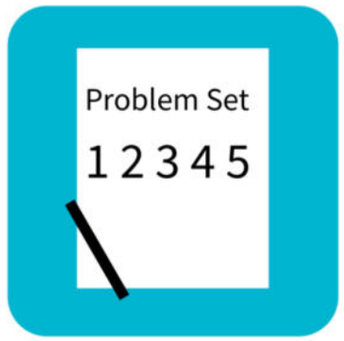
Think about finding the pairs of numbers that add to 41.

That is a lot of pairs of numbers! It will take a long time, and it seems easy to miss one.

Talk to a partner: If you want a tall, skinny house for your robot, will the difference between the width and length be big or small? How do you know?

It will be big. A big difference between the width and length makes a tall and skinny rectangle. When the difference is small, the rectangle starts to look like a square.

Keep that in mind when you plan for the robot's house. Instead of listing all the pairs of numbers that add to 41 and then deciding, think about the pairs of numbers that have a sum of 41 that will make the type of house you want.



Problem Set (23 minutes)

Students should do their personal best to complete the Problem Set within the allotted 23 minutes. Students who do not finish planning during this time can finish for homework, possibly instead of the Homework provided. Students who finish early may begin constructing their robots.

A STORY OF UNITS — Lesson 24 Problem Set — 3•7

Name _____ Date _____

Use the given perimeters in the chart below to choose the widths and lengths of your robot's rectangular body parts. Write the widths and lengths in the chart below. Use the blank rows if you want to add extra rectangular body parts to your robot.

Letter	Body Part	Perimeter	Width and Length
A	arm	14 cm	_____ cm by _____cm
B	arm	14 cm	_____ cm by _____cm
C	leg	18 cm	_____ cm by _____cm
D	leg	18 cm	_____ cm by _____cm

Debrief (10 minutes)

- Which body part has the greatest perimeter? Why? The smallest perimeter? Why?
- The perimeter of the body is double the perimeter of an arm. Are the width and length of your robot's body double the width and length of its arm? Why or why not?
- The perimeter of the neck is half the perimeter of the head. Are the width and length of your robot's neck half the width and length of its head? Why or why not?
- Explain to a partner how you found the width and length of your robot's house. What shape house will your robot have? How do you know?
- What extra body parts or items for the environment did you plan? What shapes are your extra body parts or items?

Exit Ticket (3 minutes)

Name _____ Date _____

Estimate to draw three different rectangles with a perimeter of 16 centimeters. Label the width and length of each rectangle.