EUREKA MATH²®

Participant Handout

Launch

Bringing *Eureka Math²* to Life, 6–9

A Story of Ratios®

A Story of Functions®

Contents

Session Opening

Focus Questions

Directions: Use the space to jot your notes throughout the session.

1. What makes *Eureka Math*^{2} teachable, accessible, and engaging?

2. How will the curriculum's teachability, accessibility, and engagement impact your instruction and your students?

Math Is a Story

Directions: Complete the progression of math problems. As you complete them, consider the following question: In each problem, how did you use your understanding of what a ratio is?

1. Grade 4 Module 1 Lesson 1

   There are 9 tables in the cafeteria. There are 8 times as many chairs as tables. How many chairs are in the cafeteria?

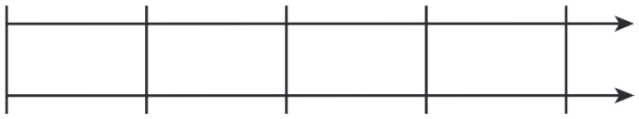
2. Grade 6 Module 1 Lesson 6

   For every 12 ounces of soda, there are 40 grams of sugar.

   a. Complete the ratio table.

Number of Ounces of Soda	Number of Grams of Sugar
12	
24	
	120
	160

   b. Use the completed ratio table from part (a) to create a double number line.

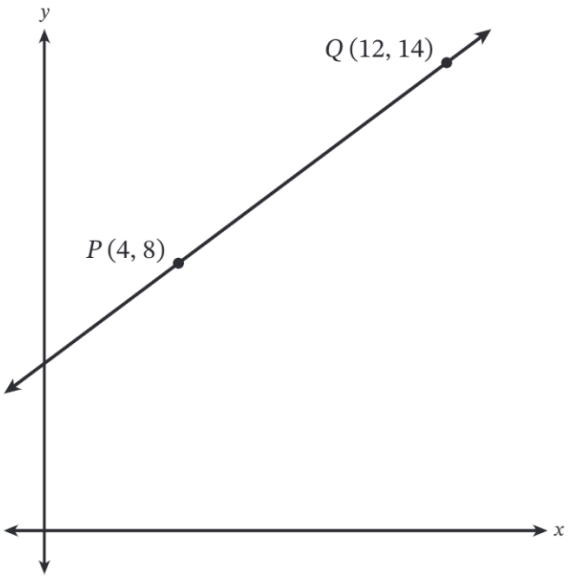


3. Grade 7 Module 1 Lesson 11

   Shawn and his family are on a road trip. They drive at an average speed of 70 miles per hour on the highway. Use a double number line to show how many miles Shawn's family drives during times ranging from 0 to 10 hours.

4. Grade 8 Module 4 Lesson 19

Find the slope of the line that passes through points P and Q.



5. Algebra I Module 2 Lesson 3

Thomas is packaging online orders for a clothing store. The table shows the number of orders y Thomas has packaged after x hours. Assume Thomas packages orders at a constant rate. Write an equation to model this situation.

Time, x (hours)	**Number of Orders Packaged, y**
2	26
5	65

Reflection: For each problem, how did you use your understanding of what a ratio is?

1.

2.

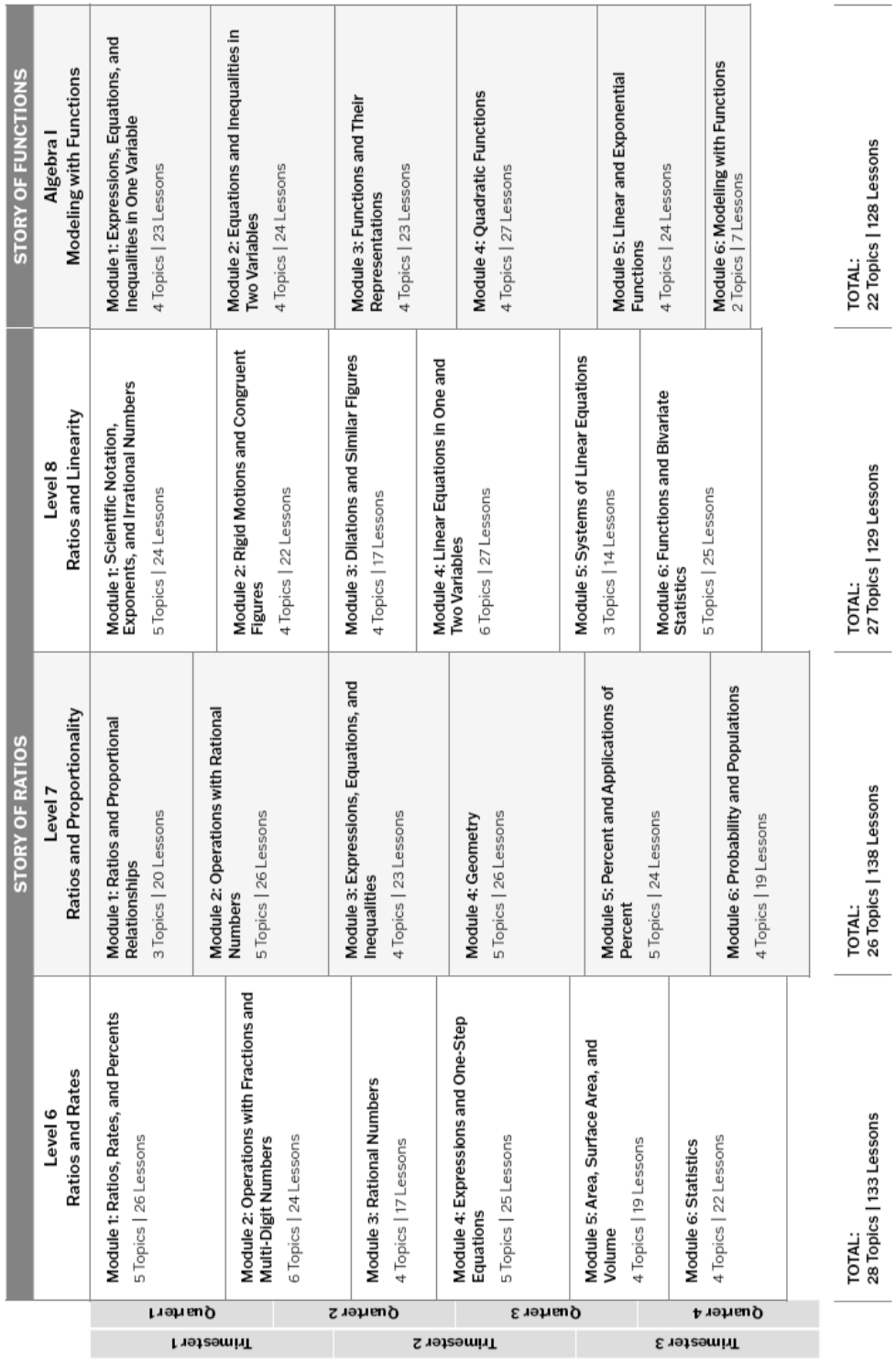
3.

4.

5.

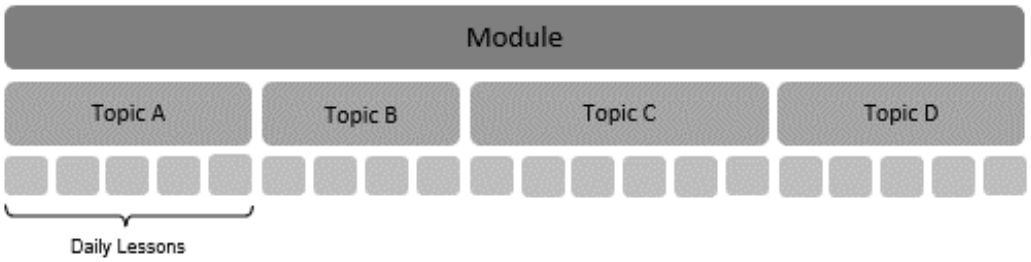
Structure of *Eureka Math*^{2}

Year at a Glance



	STORY OF RATIOS		STORY OF FUNCTIONS
	Level 6 Ratios and Rates	**Level 7** Ratios and Proportionality	**Level 8** Ratios and Linearity	**Algebra I** Modeling with Functions
Trimester 1 / Quarter 1	**Module 1: Ratios, Rates, and Percents** 5 Topics | 26 Lessons	**Module 1: Ratios and Proportional Relationships** 3 Topics | 20 Lessons	**Module 1: Scientific Notation, Exponents, and Irrational Numbers** 5 Topics | 24 Lessons	**Module 1: Expressions, Equations, and Inequalities in One Variable** 4 Topics | 23 Lessons
Trimester 1 / Quarter 2	**Module 2: Operations with Fractions and Multi-Digit Numbers** 6 Topics | 24 Lessons	**Module 2: Operations with Rational Numbers** 5 Topics | 26 Lessons	**Module 2: Rigid Motions and Congruent Figures** 4 Topics | 22 Lessons	**Module 2: Equations and Inequalities in Two Variables** 4 Topics | 24 Lessons
Trimester 2 / Quarter 3	**Module 3: Rational Numbers** 4 Topics | 17 Lessons	**Module 3: Expressions, Equations, and Inequalities** 4 Topics | 23 Lessons	**Module 3: Dilations and Similar Figures** 4 Topics | 17 Lessons	**Module 3: Functions and Their Representations** 4 Topics | 23 Lessons
Trimester 2 / Quarter 3	**Module 4: Expressions and One-Step Equations** 5 Topics | 25 Lessons	**Module 4: Geometry** 5 Topics | 26 Lessons	**Module 4: Linear Equations in One and Two Variables** 6 Topics | 27 Lessons	**Module 4: Quadratic Functions** 4 Topics | 27 Lessons
Trimester 3 / Quarter 4	**Module 5: Area, Surface Area, and Volume** 4 Topics | 19 Lessons	**Module 5: Percent and Applications of Percent** 5 Topics | 24 Lessons	**Module 5: Systems of Linear Equations** 3 Topics | 14 Lessons	**Module 5: Linear and Exponential Functions** 4 Topics | 24 Lessons
Trimester 3 / Quarter 4	**Module 6: Statistics** 4 Topics | 22 Lessons	**Module 6: Probability and Populations** 4 Topics | 19 Lessons	**Module 6: Functions and Bivariate Statistics** 5 Topics | 25 Lessons	**Module 6: Modeling with Functions** 2 Topics | 7 Lessons
	TOTAL: 28 Topics | 133 Lessons	**TOTAL:** 26 Topics | 138 Lessons	**TOTAL:** 27 Topics | 129 Lessons	**TOTAL:** 22 Topics | 128 Lessons

*Some lessons in each grade level are optional, clearly designated in the instructional sequence. Here, they are included in the total number of lessons per grade level.



Directions: As you explore your *Teach* book, think about the following question: What information will support you in teaching a lesson?

Module Structure

Topic Structure

Grade 7 Module 1 Lesson 4

Fluency

Directions: Graph and label each point in the coordinate plane.

$A(0,8)$

$B(5,0)$

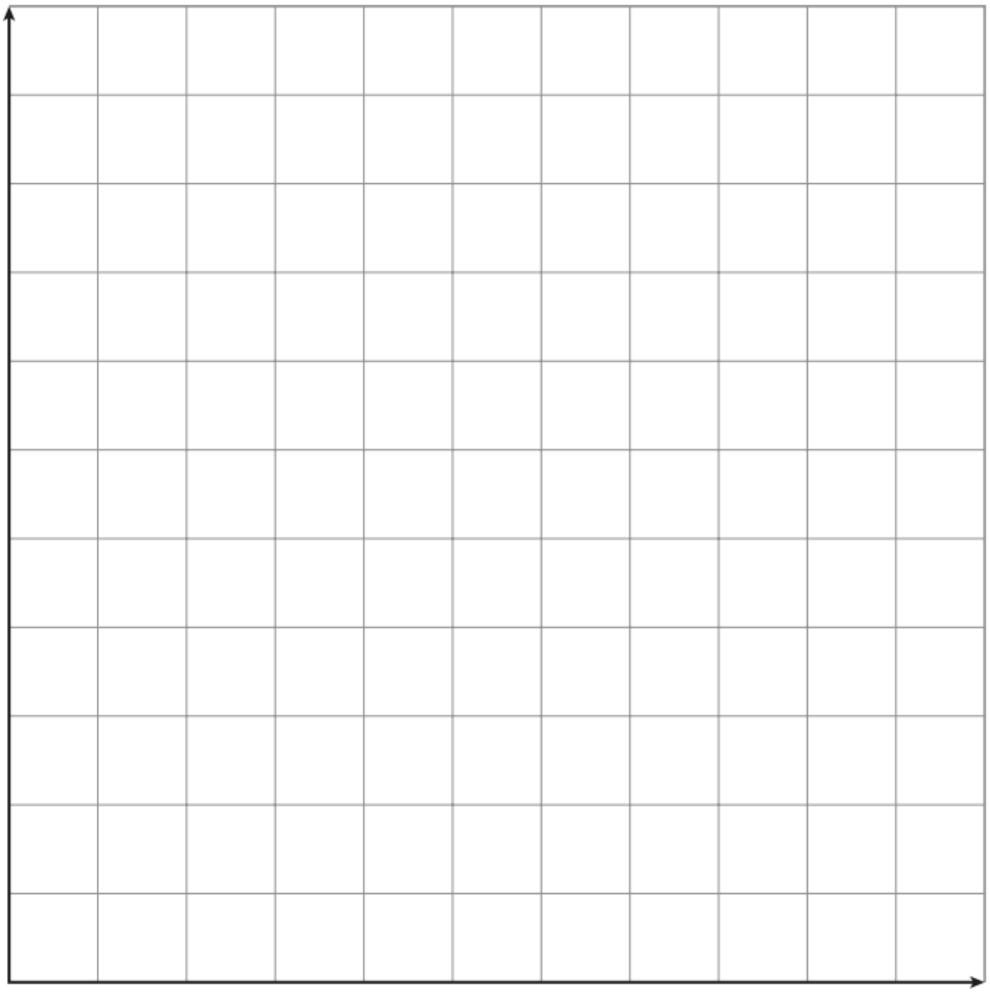
$C(4,7)$

$D\left(2,2\frac{1}{2}\right)$

$E\left(9\frac{1}{2},6\right)$

$F(3,7.25)$

$G(7.75,4)$



Classwork

EUREKA MATH^2 7 ▸ M1 ▸ TA ▸ Lesson 4

LESSON 4

Name Date

Exploring Graphs of Proportional Relationships

1. Sort the tables into two categories: proportional and not proportional.

   What I notice:

Graph Match

2. Match each graph to its table. Examine the graphs of the proportional relationships. What characteristics do they have?

   What I notice:

Analyzing (0, 0)

3. Review each relationship that your group identified as proportional. What does the point (0, 0) mean in each context?

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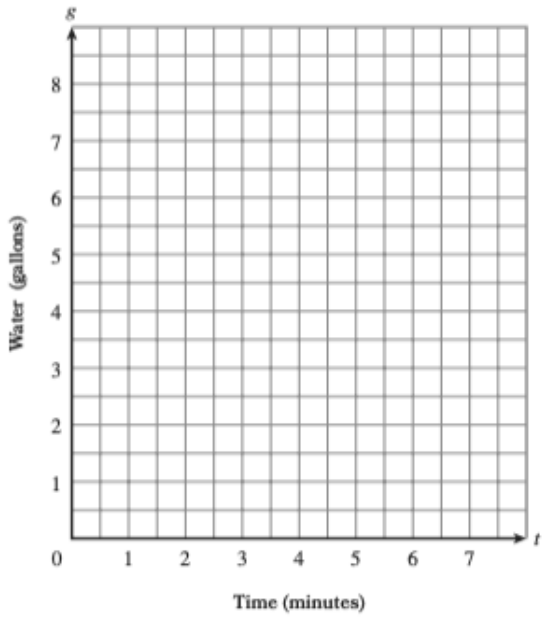
Revisiting the Water Flow Problem

In lesson 2, you identified a proportional relationship between the number of minutes a faucet is turned on and the number of gallons of water that flow from it.

Time, t (minutes)	0	1	2	5
Water, g (gallons)	0	1.5	3	7.5

4. Graph the proportional relationship by using the data in the table.



5. Does the graph fit our description of a proportional relationship? Explain why or why not.

Take a Stand

6. Is the statement "Graphed lines represent proportional relationships" always, sometimes, or never true?

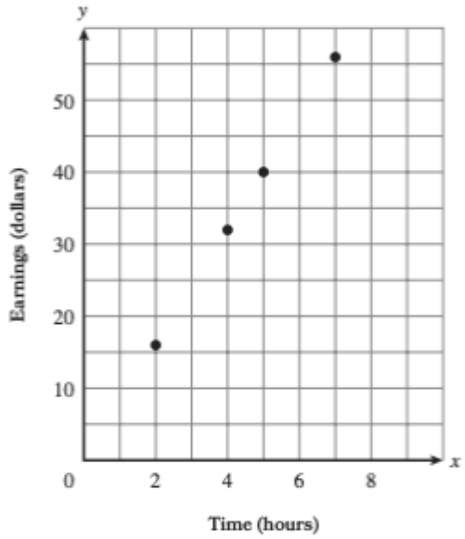
Exit Ticket

EUREKA MATH^2 7 ▸ M1 ▸ TA ▸ Lesson 4

EXIT TICKET 4

Name Date

Pedro earns extra money doing yard work in his neighborhood. He creates a graph showing the number of hours he works and the amount of money he earns.



a. Based on the graph, does the amount of money Pedro earns appear to be proportional to the number of hours he works? Explain how you know.

b. Pedro adds the point (0, 0) to his graph. What does the point (0, 0) mean in this context?

c. How much money does Pedro earn if he only works 1 hour? Explain how you know.

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Practice

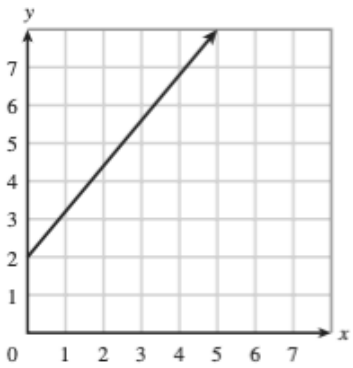
EUREKA MATH^2 7 ▸ M1 ▸ TA ▸ Lesson 4

PRACTICE 4

Name _____ Date _____

For problems 1–3, determine whether each graph represents a proportional relationship. Explain how you know.

1.



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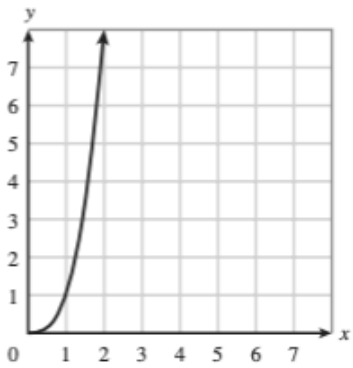

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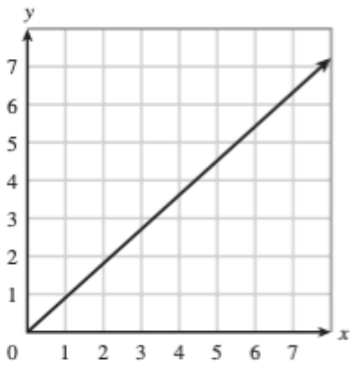

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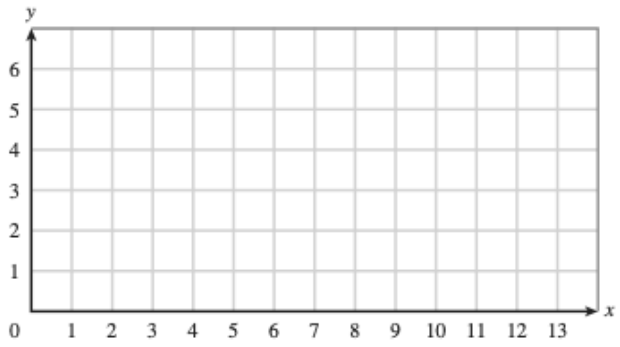
4. Consider the given table.

x	y
3	1
6	2
9	3
12	4

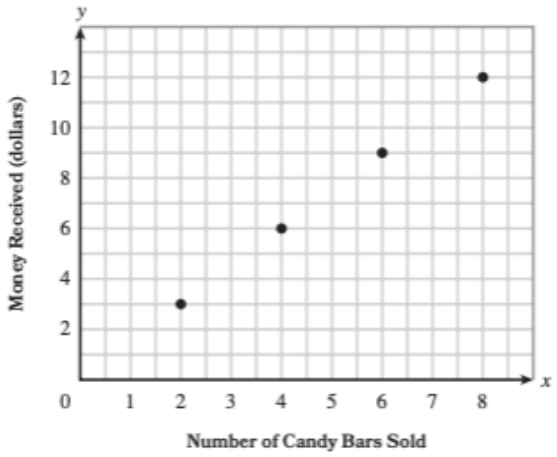
a. Graph the relationship.



b. Is the relationship between y and x proportional? Justify your thinking by using the table and graph.

c. Describe a proportional situation that could be modeled by this table and graph.

5. The graph shows the number of candy bars sold and the money received.



a. Does the graph appear to represent a proportional relationship between the amount of money received and the number of candy bars sold? Explain how you know.

b. Create a table of values based on the graph.

Number of Candy Bars Sold, x	Money Received, y (dollars)

c. Use the values from the table to justify that the relationship between the amount of money received and the number of candy bars sold is proportional.

d. What does the point (0, 0) mean in this context?

6. Logan and Shawn recorded how much money they earned working at a local restaurant over a 5-hour shift. Use the tables shown for parts (a) and (b).

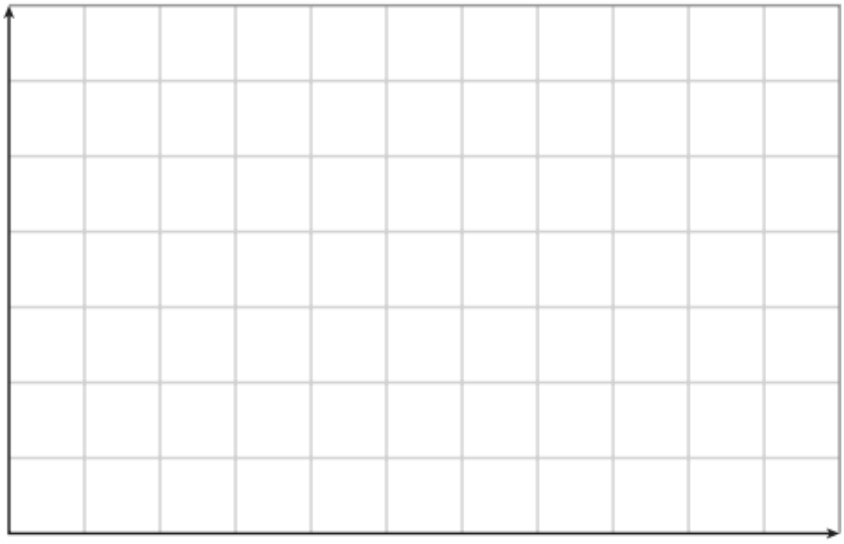
Money Logan Earned

Number of Hours Worked	1	2	3	4	5
Money Earned (dollars)	10	16	31	48	57

Money Shawn Earned

Number of Hours Worked	1	2	3	4	5
Money Earned (dollars)	9.50	19	28.50	38	47.50

a. Graph both sets of data in the same coordinate plane. Choose an appropriate scale and label your axes.



b. Describe the similarities and differences between Shawn's and Logan's earnings. Use the graphs to support your thinking.

Remember

For problems 7–10, multiply.

7. $\frac{2}{3} \cdot \frac{2}{5}$

8. $\frac{3}{4} \cdot \frac{4}{5}$

9. $\frac{2}{3} \cdot \frac{5}{6}$

10. $\frac{4}{5} \cdot \frac{5}{6}$

11. The table shows costs in dollars for different quantities of baseballs. Do the corresponding values in the table represent a proportional relationship between the cost and the number of baseballs? Explain how you know.

Number of Baseballs	2	5	8	12
Cost (dollars)	5.50	12.50	20	24

12. Liam uses 3 cups of milk to make 4 batches of muffins. How many cups of milk does he need to make just 1 batch of muffins?

See It in the *Teach* Book—Lesson Structure

Directions: Read grade 7 module 1 lesson 4 and consider the role of each component outlined in the table. Find examples from the lesson that support the role of each component.

Lesson Component	Role
Fluency	• Provides distributed practice • Activates prior knowledge • Bridges small learning gaps • Builds confidence and develops skills
Launch	• Creates an accessible entry point into the day's learning • Activates prior knowledge • Builds context • Provides rationale for learning • Often a low-floor, high-ceiling design
Learn	• Presents new learning related to the objective • Incorporates a variety of learning experiences • Rich in discourse and metacognition • Opportunity for practice
Land	• Helps students synthesize the day's learning • Includes key questions related to the larger knowledge takeaways • Includes the Exit Ticket

Directions: Review the grade 7 module 1 lesson 4 Lesson Overview.

- What do you notice? What do you wonder?

Explore Your Module 1

Directions: Examine your lesson.

- How does each component prepare students for what will happen next?

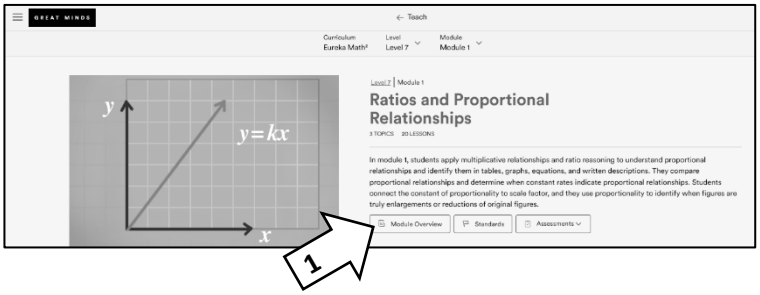
- What will this lesson structure mean for you? For your students?

Introduction to the Digital Platform

Directions: Discover the ways in which the structure and format of the *Teach* book and the digital platform are similar and different by using the following steps. After completing these steps, answer the reflection question at the bottom of the page.

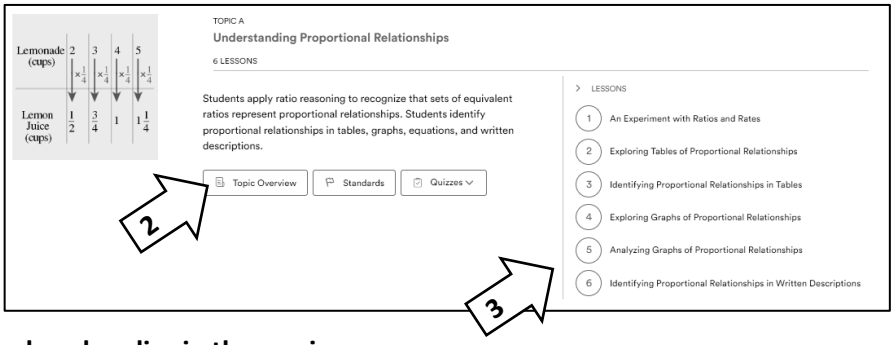
1. **On the digital platform, navigate to module 1 for your grade level. Click on the Module Overview button and explore.**

   How is this content the same as you saw it in print? How is it different?



2. **Click the Topic Overview button and explore.**

   How is this content the same as you saw it in print? How is it different?

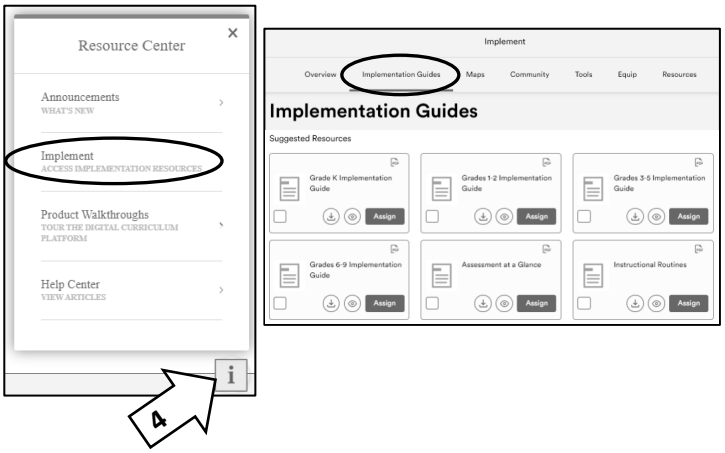


3. **Click the lesson you explored earlier in the session.**

   How is this lesson the same as you saw it in print? How is it different?

4. **Click on the information button at the bottom right of the screen. In the pop-up window, click on Implement and then navigate to the Implementation Guide for your grade level.**

   Read the Inside *Teach* portion.



Reflection: In what ways does the digital platform enhance the teachability of *Eureka Math*^{2}? How do you envision using the digital platform to support your instruction?

Supports for Learning

Context Videos

What might a student do to solve this problem?

[illegible] 18 [illegible] 1.75 [illegible]
[illegible] 9.99 [illegible] 1 [illegible] How much [illegible] in all?

Instructional Routines

The Launch, Learn, and Land lesson components intentionally include routines that

- promote student engagement in the Standards for Mathematical Practice;
- promote student-to-student dialogue and integrate reading, writing, and listening;
- align to Social Emotional Learning (SEL) core competencies; and
- align to Stanford Language Design Principles.

Although lessons embed many routines, the following routines consistently appear by name within lessons across grade levels.* This helps students recognize them and develop ownership over the routines.

Which One Doesn't Belong?	Promotes metacognition and mathematical discourse as students use precise language to compare different examples
Math Chat	Creates open-ended space for sharing mental math strategies and developing number sense, flexibility, efficiency, and accuracy
Five Framing Questions	Supports students in analyzing a work sample or solution strategy by guiding them through stages of discovery
Numbered Heads	Helps groups build consensus and holds each student accountable for the material
Co-construction	Provides structure for contextualizing and decontextualizing problems, which helps students build abstract reasoning
Take a Stand	Supports students in making arguments and critiquing the reasoning of others
Critique a Flawed Response	Promotes effective communication techniques for critiquing others' work, correcting errors, and clarifying meaning
Always Sometimes Never	Promotes sense-making and mathematical discussion as students support a claim with examples and nonexamples
Stronger, Clearer Each Time	Provides a structured, interactive opportunity for students to revise and refine their written language through rehearsal

* Which One Doesn't Belong? is introduced in prekindergarten. Two more routines are introduced in kindergarten: Math Chat and Five Framing Questions. Four are introduced in grade 1: Numbered Heads, Co-construction, Take a Stand, and Critique a Flawed Response. Two are introduced in grade 2: Always Sometimes Never and Stronger, Clearer Each Time. Once introduced, the routines are used throughout subsequent grades.

Explore Your Module 1 [Instructional Routines]

Directions:

- Select at least one of the following lessons from your grade. Be ready to share your discoveries during a small-group discussion.
    - Grade 6:
        - Lesson 13 Launch (Which One Doesn't Belong?)
        - Lesson 14 Learn: Tiles (Take a Stand)
    - Grade 7:
        - Lesson 8 Launch (Co-construction)
        - Lesson 20 Learn: Scaling Scale Drawings (Numbered Heads)
    - Grade 8:
        - Lesson 8 Learn: Quotients of Powers (Five Framing Questions)
        - Lesson 24 Learn: Revisiting Equations of the Form $x^3 = p$ (Critique a Flawed Response)
    - Algebra I:
        - Lesson 7 Learn: Sharing Work Samples (Five Framing Questions)
        - Lesson 13 Launch (Always, Sometimes, Never)

- Using your *Teach* book or the digital platform, review the lesson component and its instructional routine.

- What do you notice? What does this mean for your students? What does this mean for you?

Lesson ____	Lesson ____

Explore Your Module 1 [Engagement Strategies and Peer Support]

Directions:

- Select at least one of the following lessons from your grade. Be ready to share your discoveries during a small-group discussion.
    - Grade 6:
        - Lesson 5 Learn: Using Equivalent Ratios to Solve Problems (Solve and Seek)
        - Lesson 10 Learn: Ratio Stations (stations)
    - Grade 7:
        - Lesson 5 Learn: Foursquare Task and Gallery Walk (gallery walk, group work)
        - Lesson 11 Launch (Read–Represent–Solve–Summarize)
    - Grade 8:
        - Lesson 3 Learn: Another Way to Represent Numbers (Language Support margin box: Talking Tool)
        - Lesson 16 Learn: Which Category? (card sort)
    - Algebra I:
        - Lesson 2 Learn: Defining Equivalent Expressions (graphic organizer)
        - Lesson 16 Launch and Learn (physical movement, partner work)

- Using your *Teach* book or the digital platform, review the engagement strategy.

- What do you notice? What does this mean for your students? What does this mean for you?

Lesson ____	Lesson ____

Digital Supports

Lesson Exploration

Directions: Log in to the digital platform and navigate to the lesson you explored in your *Teach* book in part A. After reviewing your lesson, look for other supports that exist on the digital platform.

- How are the supports for learning (margin boxes, instructional routines, engagement strategies, etc.) represented?

- What other supports exist on the digital platform?

The Student Experience: The Patterns, the Pops, and the Pastries

Directions: On the digital platform, navigate to grade 8 module 4 lesson 24. In the first slide, select the three vertical dots, and select Interact. Complete the interactive with a partner.

EUREKA MATH^2 8 ▸ M4 ▸ TF ▸ Lesson 24

LESSON 24

Name _____ Date _____

The Patterns, the Pops, and the Pastries

Stage 1

Challenge	What Information Is Given?	Equation	Form of the Equation
1			
2			
3			
4			
5			
6			
7			
8			

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Stage 2

Challenge	What Information Is Given?	Equation	Form of the Equation
9			
10			

Stage 3

Challenge	What Information Is Given?	Equation	Form of the Equation
11			
12			
13			

6–A1 Assessment Overview

ASSESSMENT TYPE	FREQUENCY	LOCATION	NOTES
Exit Ticket	1 per lesson	*Learn*; digital platform	
Topic Quiz	1 per topic	Digital platform	Print (PDF) and digital formats; 3 analogous versions
Module Assessment	1 per module	Digital platform	Print (PDF) and digital formats; 2 analogous versions
Eureka Math² Equip™ Pre-Module Assessment*	4 per year	Digital platform	Print (PDF) and digital formats
Benchmark Assessments*	3 per year	Digital platform	Print (PDF) and digital formats; 3 analogous versions

**Eureka Math² Equip* Pre-Module Assessments and Benchmark Assessments are part of the premium assessment package.

Additional Features of the Digital Platform

Digital Platform Feature	Notes and Questions
Teacher Dashboard	
Slides	
Demos	
Planning	

Practice Navigating the Digital Platform

Directions: In your groups, work together to practice navigating the digital platform.

I can …	Digital Platform
interact with slides in a lesson.	❒
add notes to a lesson.	❒
highlight in a lesson.	❒
find the Exit Ticket and classwork for a lesson.	❒
explore beyond the Teach tab. **Assign** **Assess** **Analyze** **Manage**	 ❒ ❒ ❒ ❒

Practice Navigating the Module and Topic Resources

Directions: In your groups, work together to practice navigating the digital platform.

I can …	Digital Platform
explore Module Resources.	❒
find Module Assessments.	❒
explore Topic Resources.	❒
find the Topic Quizzes.	❒

Reflect: In what ways does the digital platform contribute to the teachability, accessibility, and engagement of *Eureka Math*^{2}?

Credits

Works Cited

CAST. *Universal Design for Learning Guidelines version 2.2.* Retrieved from https://udlguidelines.cast.org, 2018.

Great Minds. *Eureka Math*^{2}®. Washington, DC: Great Minds, 2021. https://greatminds.org/math.