Eureka Remediation Tool: Grade 7
Module 1, Topic A

To become mathematically proficient, students **must** access on-grade-level content. This document aims to help teachers who use the Eureka curriculum to target remediation for students needing extra support before and **during** approaching on-grade-level work, creating opportunities for on-time remediation directly connected to the new learning.

About this Topic

Focus Standards:

7.RP.A.2: Recognize and represent proportional relationships between quantities.

> a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.

Topic Overview per the Eureka Curriculum

In Lesson 1 of Topic A, students are reintroduced to the meanings of value of a ratio, equivalent ratios, rate, and unit rate through a collaborative work task where they record their rates choosing an appropriate unit of rate measurement. In Lesson 2, students conceptualize that two quantities are proportional to each other when there exists a constant such that each measure in the first quantity multiplied by this constant gives the corresponding measure in the second quantity (**7.RP.A.2**).

They then apply this basic understanding in Lessons 3–6 by examining situations to decide whether two quantities are in a proportional or non-proportional relationship by first checking for a constant multiple between measures of the two quantities, when given a table, and then by graphing on a coordinate plane. Students recognize that the graph of a proportional relationship must be a straight line through the origin (**7.RP.A.2a**).

DEPARTMENT of EDUCATION
louisiana Believes

Overview

Eureka Remediation Tools include:

1. a diagnostic assessment to help teachers determine the misunderstandings or gaps in mathematical knowledge related to a specific Topic in the Eureka curriculum
2. guidance for teachers to analyze student work on the diagnostic assessment
3. suggested materials for targeted remedial instruction

> Note: The use of this guidance is not intended to delay students' engagement with on-grade-level learning. On-grade-level learning should be the focus of instructional time and be treated as an opportunity for students to "finish" learning previous skills and deepen conceptual understanding.

Diagnostic Assessment

The diagnostic assessment is designed to be administered to targeted students prior to beginning instruction on the given Topic. When appropriate, it is broken into parts (Part A, Part B, and so on); each part addresses a different prerequisite standard and contains three problems. If a student correctly answers at least 2 out of the 3 problems, it can be assumed that he/she is ready to engage with the new content of the Topic with little to no support needed prior to engaging with the Topic. The diagnostic assessment is designed in this way so that teachers can determine the "entry point" to remedial instruction and/or opportunities for unfinished learning within the context of the new learning. The entry points and opportunities for unfinished learning will vary between students.

Guidance for Remediation

The Remediation Guidance is designed for teacher use. It is also broken into parts (Part A, Part B, and so on) and correlates to the parts on the diagnostic assessment. Each part contains the following:

1. **The focus standard**: The focus standards are strategically chosen to address prerequisite skills and are purposefully arranged in the order that students typically master the skills and knowledge.
2. **Why this is important for current grade level work**: This section describes how the work of the prerequisite standard relates to the standard(s) addressed in the Topic of instruction.
3. **Using the diagnostic assessment to identify gaps**: This section identifies common errors students make on the diagnostic assessment items.
4. **Remediation Resources for Targeted Instruction**: The resources pinpoint specific Eureka lessons and parts of lessons for teachers to use to address gaps in mathematical knowledge. Using Eureka materials to address remediation ensures alignment to the standards, consistency in approach to learning, and similarities in strategies for solving problems.

Part A: 6.RP.A.1:

1. While eating lunch Cary notices that 16 students in her class chose to eat a hot dog, while 12 students in her class chose to eat a hamburger. What is the ratio of students who chose to eat a hot dog to those who chose to eat a hamburger?

2. A local theater sells tickets at different prices for adults, senior citizens, and children. A total of 300 tickets are sold at the theater. Senior citizens purchased 35 tickets, 200 were purchased for children, and 65 adult tickets were purchased. What is the ratio of the number of adult tickets sold to the total number of tickets sold?

3. Sarah sold Girl Scout cookies as a fundraiser. She sold 35 boxes in Thin Mints® and 28 boxes of Samoas®. What is the ratio of the number of boxes of Thin Mints® sold to the total number of boxes sold?

Part B: 6.RP.A.2:

4. Keisha and her mom want to make a cookie recipe that calls for a ratio of 2 cups of sugar to 3 cups of flour. How many cups of sugar are needed for each cup of flour? Use a tape diagram, double number line, or other model to support your answer.

5. Your local grocery store is selling 2 dozen eggs for $4.80. What is the rate, in dollars per egg, the grocery store is selling eggs? Use a tape diagram, double number line, or other model to support your answer.

6. April typed a 5-page report in 50 minutes. Each page had 500 words. At what rate is April typing? Use a tape diagram, double number line, or other model to support your answer.

Part C: 6.RP.A.3a:

Marsha and Jan babysit in order to earn money. The tables below show the amount that each girl earned for a given time period.

Marsha	hours worked	4	6	8	?
	dollars earned	?	42	56	70
Jan	hours worked	2	?	6	8
	dollars earned	22	44	?	88

7. Find the missing values in the table.

8. Plot the pairs of values for Marsh and Jan on the coordinate plane. Label and scale your axes appropriately, and be sure to identify to whom each coordinate belongs.
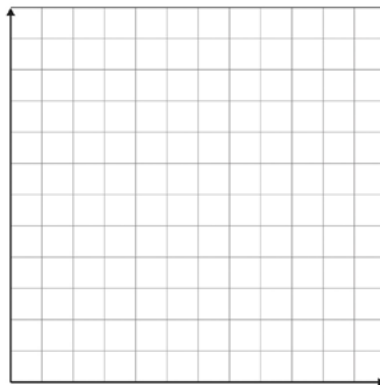
9. Which girl earns money at a greater rate? Use the table or graph to support your answer.

Part D: 6.RP.A.3b:

10. Bob rides his bike at a constant speed of 10 miles per hour. How far, in miles, will Bob have ridden if he rides for $2\frac{1}{2}$ hours? Use a tape diagram, double number line, or other model to support your answer.

11. An airplane flies 720 miles in 90 minutes at a constant speed. At what speed is the plane flying? Use a tape diagram, double number line, or other model to support your answer.

12. D'tallion and his mom are going on a trip during spring break. After driving 378 miles, they have used 14 gallons of gas. They have 243 miles left to drive on the trip. How much gas will they need to finish the trip? Use a tape diagram, double number line, or other model to support your answer.

Solutions:

1. 16 : 12

2. 65 : 300

3. 35 : 63

4. $\dfrac{2}{3}$

5. 0.20

6. 50 words per minute (sample)

7. Marsha: 28 (dollars), 10 (hours)

   Jan: 4 (hours), 66 (dollars)

8. Answers will vary depending on scale

9. Jan earns money at a greater rate. For example, Jan earns $44 for 4 hours of work, while Marsha only earn $28 for 4 hours of work. (sample)

10. 25

11. 480 miles per hour (sample)

12. 9

Part A Focus: 6.RP.A.1: Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*

Why this is important for current grade level work: In order for students to be able to master 7RP.A.2, they must be able to identify ratio relationships from a given description and write ratio relationships between two quantities. The three problems will show whether or not students understand ratio relationships, which is requisite understanding for proportional relationships.	**Remediation Resources for Targeted Instruction:** 6th Grade, Module 1, Topic A, Lesson(s) 1 - 2 Use the Classwork portion of each Lesson and a sampling of problems from the Problem Set focused on conceptual understanding.

Using the Diagnostic Assessment to identify gaps:

Problem 1:	**Problem 2:**	**Problem 3:**
A student who creates ratios using the given numbers, as opposed to creating equivalent ratios using smaller numbers, should still be considered ready for on grade-level work.	Look for students who either reverse the ratio relationship or incorrectly create an equivalent ratio using smaller numbers. The latter mistake would show a student who understand the concept of a ratio but may lack the arithmetic skills to accurately create equivalent ratios.	Look for students who create a ratio using the given numbers instead of calculating the total, potentially showing a gap in a student's understanding of ratio relationships.

Part B Focus: 6.RP.A.2: Understand the concept of a unit rate a/b associated with a ratio *a:b* with *b* ≠ 0, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."*

Why this is important for current grade level work: In Lesson 1 of Topic A, students are reintroduced to the meanings of value of a ratio, equivalent ratios, rate, and unit rate through a collaborative work task where they record their rates choosing an appropriate unit of rate measurement. In Lesson 2, students conceptualize that two quantities are proportional to each other when there exists a constant such that each measure in the first quantity multiplied by this constant gives the corresponding measure in the second quantity. The three problems will help identify students who may be able to skip Lesson 1 and begin with Lesson 2.	**Remediation Resources for Targeted Instruction:** 6th Grade, Module 1, Topic C, Lesson(s) 16 - 18 Use the Classwork portion of each Lesson and a sampling of problems from the Problem Set focused on conceptual understanding.

Using the Diagnostic Assessment to identify gaps:

Problem 4:
Look for students who reverse the relationship (i.e., calculate the number of cups of flour needed for one cup of sugar) and/or students who do not understand a fraction as division, reporting an unreasonable answer.

Problem 5:
Look for students who produce an unreasonable answer. Such students potentially have not mastered performing arithmetic with decimals and will need additional support around 6.NS.B.4.

Problem 6:
A student may choose to represent the rate in pages per minute and be considered ready for on grade-level work. Encourage these students to also represent the rate in words per minute to determine how well they can work with units.

Part C Focus: 6.RP.A.3a: Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

Why this is important for current grade level work:			Remediation Resources for Targeted Instruction:
As Topic A comes to a close, students are asked to identify proportional and non-proportional relationships from a graph of the relationship. This will require students to understand the connection between ratios and the coordinate plane, as well as, the ability to create equivalent ratios. The problems scaffold to help teachers identify the specific gap, if any, in understanding needed to engage in on grade-level work.			
Using the Diagnostic Assessment to identify gaps:			6th Grade, Module 1, Topic B, Lesson(s) 9 - 11
Problem 7: Look for students who use an additive relationship between hours worked and dollars earned as opposed to a multiplicative relationship. Such a student is most likely not ready to engage with on grade-level work.	**Problem 8:** The most important look for is the accuracy of the plotted coordinates. The ability to accurately plot coordinates is essential for representing proportional relationships on the coordinate plane.	**Problem 9:** In addition to an accurate comparison (i.e., Jan earns more money), be sure to analyze the supporting evidence to determine the level of understanding each student has for comparing ratios. Also, you may want students to analyze the evidence from multiple student responses to gauge the accuracy of each.	Use the Classwork portion of each Lesson and a sampling of problems from the Problem Set focused on conceptual understanding and application. Lesson 5 is solely devoted to application, using items analogous to items 4-6 on the diagnostic.

Part D Focus: 6.RP.A.3b: Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what unit rate were lawns being mowed?*

Why this is important for current grade level work: In Topic A students will spend a large portion of their time determining if two quantities are in a proportional relationship by first checking for a constant multiple between measures of the two quantities, i.e., a unit rate. These problems are all based on proportional relationships and require the foundational understanding and skills needed to engage in the work of Topic A. The problems scaffold in difficulty and, in some cases, allow for flexibility in the answer.	**Remediation Resources for Targeted Instruction:** 6th Grade, Module 1, Topic C, Lesson(s) 19 - 22 Use the Classwork portion of each Lesson and a sampling of problems from the Problem Set focused on conceptual understanding and application. Lesson 5 is solely devoted to application, using items analogous to items 4-6 on the diagnostic.

Using the Diagnostic Assessment to identify gaps:

Problem 10:
Look for students who have trouble with the fractional part of an hour and analyze the usefulness of their visual model.

Problem 11:
A student may choose to represent the speed in miles per minute and be considered ready for on grade-level work. Encourage these students to also represent the speed in miles per hour to determine how well they can work with units.

Problem 12:
Look for students who overanalyze the problem and calculate the total number of gallons needed to finish the drive to their destination plus the number of gallons needed for the return drive. Such a student should be considered ready for on grade-level work but may need additional support interpreting word problems.