# Eureka Remediation Tool: Grade 7
# Module 1, Topic B

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.2b: Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

7.RP.A.2c: Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.*

7.RP.A.2d: Explain what a point (*x*,*y*) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, *r*) where *r* is the unit rate.

**Topic Overview per the Eureka Curriculum**

With the concept of ratio equivalence formally defined, students explore collections of equivalent ratios in real-world contexts in Topic B. In Lessons 9 and 10, students build ratio tables and study and articulate their additive and multiplicative structure (**6.RP.A.3a**). In Lesson 11, students answer comparative questions about two distinct ratios using reasoning with ratio tables. Students continue to apply reasoning to solve ratio problems while they explore other representations of collections of equivalent ratios and relate those representations to their experience working with the ratio table (**6.RP.A.3**).

Building on their experience with number lines, students represent collections of equivalent ratios with a double number line model in Lesson 12. In Lesson 13, they relate ratio tables to equations using the value of a ratio defined in Topic A. Finally, students expand their experience with the coordinate plane (**5.G.A.1**, **5.G.A.2**) as they represent collections of equivalent ratios by plotting the pairs of values on the coordinate plane in Lesson 14. In the final lesson of this topic, students begin to synthesize their experience of the various representations by working a variety of ratio problems and choosing the representation that best represents their thinking. They continue to apply their understanding of the representations as they apply them to rate and percent problems in Topics C and D.

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## 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.

# Diagnostic Assessment: Grade 7
# Eureka Module 1, Topic B

Part A: 6.RP.A.2

1. Kyle's pancake recipe calls for a ratio of three tablespoons of sugar for every two cups of flour. How many tablespoons of sugar are needed per cup of flour? Show your work and/or explain your answer.

2. 2007 was the first year that Americans sent and received more text messages per month than phone calls. Providers were offering monthly plans of $20 for 1,000 text messages, sent or received. What was the cost per text message, sent or received? Show your work and/or explain your answer.

3. Parish Press, a local coffee shop, purchases 500 cups for $15. How much does Parish Press pay per cup? Show your work and/or explain your answer.

Part B: 6.RP.A.3a

4. Jack and his sister Jill have planned their training for running a 5K race. Since Jack is taller than Jill, Jill must take 5 strides for every 3 strides that Jack takes. Construct a table to represent this situation, showing five different ratios of strides.

5. During her morning workout, Brennaugh does a circuit of sit-ups followed by burpees. She does four burpees after every 10 sit-ups she completes to make one round of her circuit. Her goal is to completes as many rounds as possible within seven minutes. Construct a table to represent this situation, showing five different ratios of burpees to sit-ups.

6. Malakai's dad owns a car dealership. On his car lot, he keeps a ratio of 20 cars for every eight trucks. Construct a table to represent this situation, showing five different ratios of cars to trucks.

Part C: 6.RP.A.3b

7. Cherie is training to run a half-marathon. For the first three weeks of her training, her coach suggests that she practices cycles of running for 10 minutes followed by walking for 2 minute. If Cherie is supposed to run for a total of 60 minutes, for how many minutes will she walk? Show your work and/or explain your answer.

8. Brielle used seven apples to make two apple pies. At that rate, how many apples would Brielle need to make seven pies? Show your work and/or explain your answer.

9. A local cupcake shop sells a dozen (i.e., twelve) cupcakes of one flavor or assorted flavors for $18. At that rate, how much would it cost to purchase 70 cupcakes? Show your work and/or explain your answer.

Solutions:

1. $1\frac{1}{2}$ (tablespoons of sugar per cup of flour)
2. $0.02 (per text message, sent or received)
3. $0.03 (per cup)
4. (Sample)

| | | | | | |
|---|---|---|---|---|---|
| Jack's strides | 3 | 6 | 9 | 12 | 15 |
| Jill's strides | 5 | 10 | 15 | 20 | 25 |

5. (Sample)

| | | | | | |
|---|---|---|---|---|---|
| Sit-ups | 10 | 20 | 30 | 40 | 50 |
| Burpees | 4 | 8 | 12 | 16 | 20 |

6. (Sample)

| | | | | | |
|---|---|---|---|---|---|
| Cars | 10 | 20 | 40 | 60 | 80 |
| Trucks | 4 | 8 | 16 | 24 | 32 |

7. 12 (minutes)
8. $24\frac{1}{2}$ (apples)
9. $105

# Remediation Guidance: Grade 7
# Eureka Module 1, Topic B

**Part A Focus:** 6.RP.A.2: Understand the concept of a unit rate a/b associated with a ratio *a*:*b* with $b \neq 0$, 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:**

Whereas Topic A focused on extending ratio relationships from Grade 6 to proportional relationships, Topic B focuses on extending students work with rates and unit rates from Grade 6 to constant of proportionality. While much of this new learning is a shifting of language, students should have solid understanding of unit rates prior to beginning the target Topic. None of the problems use the term unit rate; rather, the problems use rate language to ask for a unit rate in the context of each problem. Students may engage with the items in a variety of ways (e.g., using tape diagrams, tables of equivalent ratios, double number line diagrams, or equations). The focus should not be on the students' method, but, instead, the focus should be on the students' ability to engage with rate language and accurately answer the question. The arithmetic should be accessible enough so as not to distract from the focus of the problem set.

**Using the Diagnostic Assessment to identify gaps:**

**Problem 1:**

A student may use $\frac{3}{2}$ as their answer and still be considered ready for the target Topic. Any answer equivalent to 1.5 should be accepted.

**Problem 2:**

Look for students who know the answer is equivalent to $\frac{20}{1{,}000}$ but are unable to produce a reasonable answer to the question as this shows understanding of the foundational standard but a gap associated with fractions and decimals. Such a gap may be addressed while engaging with the new learning of the target Topic.

**Problem 3:**

Similar to problem 2, look for students who produce an unreasonable answer of $3 or $0.30 and challenge such students to check their answer in the context of the problem. Unreasonable answers such as these point to a gap in understanding/skill with fractions and decimals. Such a gap may be addressed while engaging with the new learning of the target Topic.

**Remediation Resources for Targeted Instruction:**

6th Grade, Module 1, Topic C, Lesson(s) 16 – 19

Use the Classwork portion of each Lesson and a sampling of problems from the Problem Set that focus on conceptual understanding.

# Diagnostic Assessment: Grade 7
# Eureka Module 1, Topic B

**Part B 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.

<table>
<tr>
<td>Why this is important for current grade level work:<br>All of the lessons in the target Topic involve in some way a table of equivalent ratios. In many cases students are having to create the table from scratch, which is the focus of this problem set. Students will use tables to identify and/or calculate the unit rate (called constant of proportionality), to create equivalent ratios to be plotted on the coordinate plane, and to solve real-world problems involving proportional relationships. Since tables are used throughout the target Topic, it is important that students feel confident representing ratio relationships in a table, allowing them to focus on the new learning. Since the relationships are not necessarily dependent relationships, students can arrange their tables with either quantity first and still be considered ready for the target Topic. The most important look-for is the accuracy of the tables.</td>
<td rowspan="2">Remediation Resources for Targeted Instruction:<br><br>6th Grade, Module 1, Topic B, Lesson(s) 9 – 10<br><br>Use the Classwork portion of each Lesson and a sampling of problems from the Problem Set that focus on conceptual understanding.</td>
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<tr>
<td>Using the Diagnostic Assessment to identify gaps:<br><br>Problems 4-6:<br>Look for students who use an additive comparison between the two given quantities to complete their table as this shows a gap in their understanding of ratio relationships. Students do not have to know the multiplicative relationship between the pair of quantities (i.e., the unit rate or constant of proportionality) to be considered ready for the target Topic; rather, they simply need to be able to create accurate tables of equivalent ratios for each problem.</td>
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# Diagnostic Assessment: Grade 7
# Eureka Module 1, Topic B

**Part C 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:**

The diagnostic scaffolds from identifying unit rates in Part A to creating tables of equivalent ratios in Part B to being able to use those understandings and skills to solve real-world problems. Similar to the problem set in Part A, students may engage with the items in a variety of ways (e.g., using tape diagrams, tables of equivalent ratios, double number line diagrams, or equations). The difference between the items here as compared to those in Part A is that students are not simply finding the unit rate; rather, they are using the unit rate to solve a larger problem. Problems such as these are spread throughout the target Topic; however, if students struggle with this problem set, such a gap can be viewed as an opportunity for unfinished learning, noting the need for additional supports while engaging with analogous problems in the target Topic.

**Using the Diagnostic Assessment to identify gaps:**

**Problem 7:**

Look for students who think the answer is 10 minutes, instead of the correct answer of 12 minutes, as this likely shows the student did not use ratio and rate reasoning but simple arithmetic to solve the problem. Such a student may not be ready for the complexity of the target Topic as not all problems can be solved through simple arithmetic.

**Problem 8:**

Students may round the number of apples to 25 and still be considered ready for the target Topic if they can support their answer with appropriate reasoning (e.g., you can't purchase $24\frac{1}{2}$ apples, so you need 25 apples).

**Problem 9:**

Look for students who interpret the problem to mean the cupcake shop only sells cupcakes by the dozen, not recognizing that a unit price can be calculated and used to answer the question. If a student makes said mistake, clarify for him/her that you can purchase cupcakes individually, too, and let him/her reengage with the problem, seeing if he/she can answer the question with that point of clarity before determining if a gap exists.

**Remediation Resources for Targeted Instruction:**

6th Grade, Module 1, Topic C, Lesson(s) 20 – 23

Use the Classwork portion of each Lesson and a sampling of problems from the Problem Set that focus on application.