Eureka Acceleration Tool:
Grade 6 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 ensure readiness for students before and during on-grade-level work, creating opportunities for timely support directly connected to the new learning.

About this Topic

Focus Standards:

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."*

6.RP.A.3: Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

Topic Overview per the Eureka Curriculum

In Topic A, students are introduced to the concepts of ratios. Their previous experience solving problems involving multiplicative comparisons, such as *Max has three times as many toy cars as Jack* (**4.OA.A.2**), serves as the conceptual foundation for understanding ratios as a multiplicative comparison of two or more numbers used in quantities or measurements (**6.RP.A.1**). In the first two lessons, students develop fluidity in using multiple forms of ratio language and ratio notation as they read about or watch video clips about ratio relationships and then discuss and model the described relationships. Students are prompted to think of, describe, and model ratio relationships from their own experience. Similarly, Lessons 3 and 4 explore the idea of equivalent ratios. Students read about or watch video clips about situations that call for establishing an equivalent ratio. Students discuss and model the situations to solve simple problems of finding one or more equivalent ratios.

The complexity of problems increases as students are challenged to find values of quantities in a ratio given the total desired quantity or given the difference between the two quantities. *For example, If the ratio of boys to girls in the school is* 2: 3*, find the number of girls if there are* 300 *more girls than boys.* As the first topic comes to a close, students develop a precise definition of the *value of a ratio a*:*b*, where $b \neq 0$, as the value $\frac{a}{b}$, applying previous understanding of fraction as division (**5.NF.B.3**). Students are then challenged to express their understanding of ratio equivalence using the newly defined term, value of a ratio. They conclude that equivalent ratios are ratios having the same value.

This Eureka Acceleration Tool is considered a "living" document as we believe that teachers and other educators will find ways to improve the document as they use it. Please send feedback to STEM@la.gov so that we can use your input when updating this guide.

DEPARTMENT of EDUCATION
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Diagnostic Assessment: Grade 6
Eureka Module 1, Topic A

Overview

Eureka Acceleration 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 Acceleration

The Acceleration 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. **Acceleration 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 acceleration ensures alignment to the standards, consistency in approach to learning, and similarities in strategies for solving problems.

Part A: 4.OA.A.2:

1. A small strawberry smoothie costs $5. An X-large smoothie cost twice as much. How much, in dollars, does the X-large smoothie cost?

2. Steven has 20 tickets to use at the carnival. Jared has 4 tickets to use at the carnival. How many times as much is the amount of tickets Steven has than Jared?

3. Sarah sold 12 boxes of Girl Scout cookies. If Sarah sold 3 times as many boxes of cookies as Amiah, how many cookies did Amiah sell?

Part B: 5.NF.B.3:

4. Mackenzie has one candy bar to share equally with her best friend. What portion of the candy bar does Mackenzie give to her best friend?

5. Laquita divides 3 pizzas equally among her 5 children. How much pizza does each child receive?

6. If 3 classrooms have 4 boxes of markers to share, what fraction of a box will each classroom receive?

Solutions:

1. 10
2. 5
3. 4
4. $\frac{1}{2}$
5. $\frac{3}{5}$
6. $\frac{4}{3}$ (sample)

Acceleration Guidance: Grade 6
Eureka Module 1, Topic A

Part A Focus: 4.OA.A.2: Multiply or divide to solve word problems involving multiplicative comparisons by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

Why this is important for current grade level work:
This Topic leverages students' previous experience solving problems involving multiplicative comparisons, such as *Max has three times as many toy cars as Jack*, to serve as the conceptual foundation for understanding ratios as a multiplicative comparison of two or more numbers used in quantities or measurements. Moreover, as students begin using ratio reasoning to solve real-world and mathematical problems, students will use their foundation in solving problems involving multiplicative comparisons to engage with new problems.

Using the Diagnostic Assessment to identify gaps:

Problem 1:
It is possible that a student may use an additive strategy and still get the problem correct. The student may recognize the term "twice" as doubling.

Problem 2:
Students should use multiplication as a more efficient method. If he/she uses an additive method to determine the answer, therefore getting the answer '16', they may not understand the difference between an additive comparison (how many more) and a multiplicative one (how many times more).

Problem 3:
The student should recognize that division and/or solving for an unknown can help determine the answer. If the student multiplies 12 and 3, they may not understand division as the inverse of multiplication.

Acceleration Resources for Targeted Instruction:

4th Grade, Module 3, Topic A, Lesson(s) 1 - 3

Use the Concept Development portion of each Lesson and a sampling of problems from the Problem Set focused on conceptual understanding and application. Lessons 2 and 3 focus on the target standard but require understanding from Lesson 1.

Part B Focus: 5.NF.B.3: Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to an answer in the form of fractions or mixed numbers, e.g. by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*

Why this is important for current grade level work:
As Topic A comes to a close, students develop a precise definition of the value of a ratio *a*:*b*, where *b*≠ 0, as the value $\frac{a}{b}$, applying previous understanding of fractions as division. These items will not only show the teachers if students understand factions as division, they will also show teachers how well students can engage with application. These problems serve as the foundation or finding the value of a ratio, a concept that will extend far beyond Topic A.

Using the Diagnostic Assessment to identify gaps:

Problem 4:
Take note if this is the only problem the student gets correct. The student may write the answer in word form, "half". If this is the case, the student may not understand that 1 ÷ 2 is the same as ½. They may not be connecting the conceptual understanding of half of a whole to that of a fraction being a form of division.

Problem 5:
The student may draw a visual model to solve this problem. This student may not have made the connection that a fraction is a division problem.
Look to see if the student sets up the problem as 5 ÷ 3. If so, the student may not believe that a smaller number can be divided by a larger number.

Problem 6:
In addition to gaps that could be identified in problems 4 and 5, look to see if this student expresses his/her answer as a mixed number. If not, he/she may not understand that when a larger number is divided by a smaller number, the answer should be greater than one.

Acceleration Resources for Targeted Instruction:

5th Grade, Module 4, Topic B, Lesson(s) 2 - 5

Use the Concept Development 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.