Eureka Acceleration Tool: Grade 4
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:

4.OA.A.1: Interpret a multiplication equation as a comparison and represent verbal statements of multiplicative comparisons as multiplication equations, e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7, and 7 times as many as 5.

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

4.NBT.A.1: Recognize that in a multi-digit whole number less than or equal to 1,000,000, a digit in one place represents ten times what it represents in the place to its right. *For example, (1) recognize that 700 ÷ 70 = 10; (2) in the number 7,246, the 2 represents 200, but in the number 7,426 the 2 represents 20, recognizing that 200 is ten times as large as 20, by applying concepts of place value and division.*

4.NBT.A.2: Read and write multi-digit whole numbers less than or equal to 1,000,000 using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

Topic Overview per the Eureka Curriculum

In Topic A, students build the place value chart to 1 million and learn the relationship between each place value as *10 times* the value of the place to the right. Students manipulate numbers to see this relationship, such as 30 hundreds composed as 3 thousands. They decompose numbers to see that 7 thousands is the same as70 hundreds. As students build the place value chart into thousands and up to 1 million, the sequence of three digits is emphasized. They become familiar with the base thousand unit names up to 1 billion. Students fluently write numbers in multiple formats: as digits, in unit form, as words, and in expanded form up to 1 million.

Eureka Acceleration Tool: Grade 4
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.

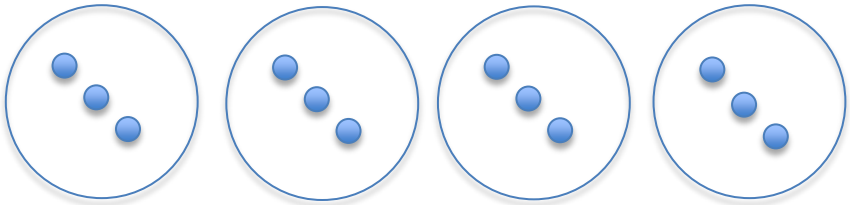
Guidance for Acceleration

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

Part A: 3.OA.A.1:

1. Write a number sentence that could be used to represent the total number of dots in the model below.



2. Draw a model to represent 3×5.

3. Interpret and compute the product 10×10. Use a model to support your answer.

Part B: 2.NBT.A.1:

4. What is the value of the 5 in 345? Draw a model or number bond to support your answer.

5. What is the value of the 5 in 456? Draw a model or number bond to support your answer.

6. What is the value of the 5 in 509? Draw a model or number bond to support your answer.

Part C: 2.NBT.A.3:

7. Write the following number in standard form: seven hundred ninety-five

8. Write the following number in expanded form: 980

9. Write the following number in standard form: 500 + 6

Solutions:

1. 4×3
2. models will vary
3. the total number of objects in 10 groups of 10 objects each; 100 (sample)
4. 5 ones
5. 5 tens (sample)
6. 5 hundreds (sample)
7. 795
8. 900 + 80 (sample)
9. 506

Acceleration Guidance: Grade 4
Eureka Module 1, Topic A

Part A Focus: 3.OA.A.1 Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 × 7*.

Why this is important for current grade level work:
Lesson 1 focusses on interpreting a multiplication equation as a comparison, leading to representing verbal statements of multiplicative comparison as multiplication equations. In order to represent a verbal statement of multiplicative comparison as a multiplication equation, students must recognize that multiplication determines the total number of objects when there are a specific number of groups with the same number of objects in each group. When we have equal groups, multiplication is a more efficient way to find the total than repeated addition. The three problems show student understanding of multiplication and scaffold in difficulty.

Using the Diagnostic Assessment to identify gaps:

Problem 1:
Students who create an addition sentence that accurately models the total number of dots (e.g., $\mathbf{3+3+3+3}$) may not have a complete understanding of multiplication.

Problem 2:
Look for models that show 3 groups of 5 objects in each group. Models that do not show 5 identical objects in each group may be a sign that students have a gap in their fundamental understanding of units, which could lead to greater problems down the road.

Problem 3:
Look for students who do not know what "interpret" means and/or do not provide an interpretation, only a calculation. The understanding displayed in this problem is the same understanding leveraged in Lesson 1 to introduce new place values.

Acceleration Resources for Targeted Instruction:

3rd Grade, Module 1, 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.

Part B Focus: 2.NBT.A.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:

a) 100 can be thought of as a bundle of ten tens—called a "hundred."
b) The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

Why this is important for current grade level work:
In order to extend their understanding of place value related to multiplying and dividing by multiples of 10, students must be familiar with and use place value as they work with numbers. Conceptual understanding of "100" being the same amount as 10 groups of ten as well as 100 ones lays the groundwork for the structure of the base-ten system in future grades. The problems scaffold in difficulty from the ones place to the hundreds place.

Using the Diagnostic Assessment to identify gaps:

Problem 4:
Look for models that correctly represent the value of each digit in the number, e.g., 3 hundreds, 4 tens, and 5 ones.

Problem 5:
Look for students who identify the 5 as representing 50 ones. Although this is not incorrect, it may be a sign of a gap in their understanding of place value.

Problem 6:
Look for students who leave the hundreds place out in the model. It is important for understanding that all places are included.

Acceleration Resources for Targeted Instruction:

2nd Grade, Module 3, Topic A, Lesson 1

Use the Concept Development portion of this Lesson and a sampling of problems from the Problem Set focused on conceptual understanding.

Part C Focus: 2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Why this is important for current grade level work:
Lessons 3 and 4 explicitly build off of this Grade 2 understanding to help students master the Grade 4 expectation or reading and writing numbers to 1,000,000. It is important to note that there is no analogous standard in Grade 3, requiring students to reach back to their understanding developed in Grade 2.

Using the Diagnostic Assessment to identify gaps:

Problem 4:
Look for students who write a four-digit number, treating the "seven" and "hundred" as separate numbers. This shows a gap in their understanding of word form.

Problem 5:
Look for students who misrepresent the place value of each of the given non-zero digits. This may show a gap in students' understanding of and ability to read numbers using number names, connecting them to place value.

Problem 6:
Look for students who write a two-digit number instead of a three-digit number. This may show a gap in students' understanding of expanded form.

Acceleration Resources for Targeted Instruction:

2nd Grade, Module 3, Topic C, Lesson(s) 5 - 7

Use the Concept Development portion of each Lesson and a sampling of problems from the Problem Set focused on conceptual understanding.