Mathematics Grade-Level Instructional Materials Evaluation Tool

Quality Review

Council of the Great City Schools™

Textbooks and their digital counterparts are vital classroom tools but also a major expense, and it is worth taking time to find the best quality materials for students and teachers. While there is no perfect set of materials or textbooks, this Grade-Level Instructional Materials Evaluation Tool-Quality Review (GIMET-QR) is designed for use by professionals as a framework for evaluating the quality of instructional materials and choosing materials that are best suited to provide a coherent learning experience for students.

The district should begin its textbook adoption process by screening an entire publisher series with the Instructional Materials Evaluation Toolkit (IMET), developed by Student Achievement Partners, to see which ones are worthy of deeper consideration. The GIMET-QR can then be used to evaluate materials *for each individual grade*. But rather than providing an exhaustive list of grade-level standards, GIMET-QR starts with the progression to algebra continuum as the major area of focus, allowing for the in-depth review of a smaller set of mathematical concepts covered in the Common Core State Standards Mathematics (CCSS-M) at each grade level.

The GIMET-QR focuses on both the quality of the *content* and the instructional *design* of materials—with a specific focus on evaluating whether materials contain a balance of the three components of rigor (conceptual understanding, applications, and fluency) called for in CCSS-M. Unlike many tools that evaluate the presence or absence of required content, the GIMET-QR prompts reviewers to ask, "How *well* do the materials and assignments reflect and support the rigor of the CCSS-M?"

To answer this question, GIMET-QR contains Guiding Statements along with references to the CCSS for each statement. In response to each Guiding Statement, reviewers are asked to cite specific supporting evidence from the materials themselves, rather than relying on the table of contents or the topic headings. This supporting evidence can then be used to rate whether and to what degree the criteria have been met so that all students have access to a quality mathematics program.

It is important to keep in mind that quality is not defined as "compliance" or a mere checklist of topics. The GIMET-QR aims to help schools and districts choose materials that will provide the best overall learning experience for their students. The distinctive features of instructional materials, like style and appeal that contribute to engaging students in mathematics, should therefore be considered along with the mathematical content and cognitive demand.

The review process culminates with a summary in which reviewers cite strengths and weaknesses of the product, thus providing explicit details for the overall assessment. The summary may also indicate, prior to making a recommendation for purchase, any areas that district curriculum leaders may need to augment or supplement.

Please note: Acrobat Reader or Adobe Acrobat is required to complete this form electronically and save any data entered by users.

THE STRUCTURE OF GIMET-QR

The GIMET-QR for Mathematics is divided into four sections:

I. "CCSS-M" clusters and standards along the "progression to algebra continuum" for grade seven

This first section focuses on the content of the materials under review and on the quality of the explanations and connections that develop the concepts and skills for the algebra continuum in grade seven. This section features "guiding statements" that require reviewers to examine the quality of the materials, as well as the assignments that address the level of rigor in CCSS-M. The statements about materials and assignments are similar, but their focus is different. While the materials statements ask the reviewer to show evidence about the quality of how concepts and skills are attended to in the text or digital resource under review, the assignments statements ask the reviewer to cite evidence that students are given the opportunity to apply their understanding of those concepts and skills.

The statements in bold print in GIMET-QR refer to the CCSS-M clusters (.e., 7.RP.1-2) for reviewers to use in considering the quality of materials and assignments. The reviewer may notice that the wording of the cluster heading is somewhat different than what is written in CCSS-M. This was done to address what materials and assignments could offer in support of the cluster standards. However, the essential wording of the cluster headings is maintained. The standards indicated within GIMET-QR are listed as written in CCSS-M. In grade seven, the "CCSS progression documents," from the Institute of Mathematics,[1] were used to provide additional specificity and clarity for the reviewers about what to look for in *The Number System 6-8, 6-7 Ratios and Proportional Relationships*, and *6-8 Expressions and Equations*. This progression information within the document is indicated using an indentation and preceded by the symbol (▶).

II. Decision Recording Sheets: Quality Criteria for Conceptual Understanding, Applications, and Fluency with an accompanying rubric for high quality/exciting materials and assignments

The second section asks the reviewer to reflect on the findings from the first section to answer the question of how well the materials reflect and support the rigor of the CCSS-M. Reviewers are asked to consider how well the materials support teachers and engage students. Judgments are made after organizing the evidence around each of three dimensions of rigor—**conceptual understanding**, **applications**, and **fluency**. Reviewers assign one of three ratings: **High Quality/Exciting**, **Good Quality** or **Minimal Quality**. The section also includes a rubric which describes high quality/exciting materials and establishes the highest criteria for both materials and assignments.

III. Adoption Committee Recommendation Form

The third section, to be completed after reviewing multiple submissions for adoption, is an *Adoption Committee Recommendation Form*. This provides reviewers with an opportunity to list their top three choices and cite specific strengths and weaknesses for all of the materials being reviewed.

IV. Appendix

The fourth section is an Appendix that includes *The Progression to Algebra Continuum*.

GIMET-QR does not attend to all the grade seven standards but rather only those listed within the progression to algebra continuum. GIMET-QR does not attend to coherence across grade levels but does look for coherence within a grade when considering the quality of materials and assignments. Similar to CCSS-M, GIMET-QR operates at a very fine grain size, while individual lessons and units might work across clusters. GIMET-QR is not a checklist that would fragment the CCSS-M, rather the "fine grain size" deliberately focuses on how well the materials reflect the intent of the CCSS-M.

1 University of Arizona Institute of Mathematics, http://ime.math.arizona.edu/progressions/

GETTING STARTED

Completing the GIMET-QR entails a five-step process. Reviewers are expected to read through each of the steps and their explanations, and locate all the pertinent tables and pages before starting. Then complete each step.

Step one – Individual reviewers will evaluate how well the materials and their accompanying assignments develop the algebra continuum content for each grade level. Use the tables that start on page four to capture the evidence of how and where the materials do this. The purpose for noting specific examples as evidence is to contribute to discussions with other reviewers in steps two through four. Cite specific examples of the explanations, diagrams, and pictorial representations in the materials and assignments that prompt students to show their understanding. Additionally, reviewers should consider the interaction of students with the materials in two areas: 1) students as receptive learners (interactions with the explanations and illustrations in the materials) and 2) students producing and showing their understanding (interacting and completing the assignments in the materials).

Step two – Discuss your findings and evidence with other reviewers. Reviewers should discuss the evidence cited and use it to confirm or assist you (individually) in reviewing and revising your findings.

Step three – Next, reviewers need to consider the interaction of students and teachers with the content of the materials along three dimensions of rigor—**conceptual understanding**, **applications**, and **fluency**—to assign a judgment of quality to each dimension. Reviewers should answer the question: How well do the materials reflect and support the rigor of the CCSS-Mathematics overall? Reviewers will use the guiding questions found in the **Decision Recording Sheet** together with the rubric describing **high quality** to assign ratings. Consider the totality of the collected evidence along the dimensions of rigor, and record your rating at the bottom of each table.

The highest level of quality is described using the words "**High Quality/ Exciting**." We use these words to indicate a high degree of excitement about the materials and the assignments. As the reviewer considers the descriptors, keep in mind that these criteria apply to each dimension of rigor for both the materials and the assignments they present to students. To earn this rating, the evidence must demonstrate grade-level rigor of the CCSS-M in an engaging way.

The other levels represent varying degrees of quality. For example, "**Good Quality**" indicates that the materials and assignments are workable or sufficient. "**Minimal Quality,**" meanwhile, indicates that the materials are sufficient on their own, but would not be conducive to motivating students.

These descriptions will be used for rating the overall quality of the program.

Step four – Discuss your findings and conclusions with other reviewers. Include the following questions as a part of the discussion:

- What are the top three strengths of the texts?
- What areas need improvement?
- What additional supports would be needed to implement the textbook series or digital materials?

Step five – After discussion, reach consensus and make final recommendations on the **Adoption Committee Recommendation Form.**

I. CCSS-M CLUSTERS AND STANDARDS

GUIDING STATEMENTS	SPECIFIC EVIDENCE FROM THE TEXT/MATERIALS
7.RP.1-3. Materials demonstrate how to analyze proportional relationships and use them to solve real-world and mathematical problems by: ■ Showing how to solve problems that include computing unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units. *For example, if a person walks ½ mile in each ¼ hour, compute the unit rate as the complex fraction* $\frac{1/2}{1/4}$ *miles per hour, equivalently 2 miles per hour.* ▶ Defining a proportional relationship and using the definition to determine if a relationship is proportional. ■ Showing proportional relationships between quantities. ▶ Showing how to examine situations carefully to determine the existence of a proportional relationship. ▶ Attending to typical student misconceptions. For example, if it takes 2 people 5 hours to paint a fence, how long will it take 4 people to paint a fence of the same size (assuming all the people work at the same steady rate)? This problem cannot be solved with the proportion 2/5 = 4/H because it is not the case that for every 2 people, 5 hours of work are needed to paint the fence. When more people work, it will take fewer hours. ▶ Attending to both structure and language, which includes prompting students to look for and understand the roles of "for every," "for each," and "per." Similarly, a common error in setting up proportions is placing numbers in incorrect locations. This is especially true when the order in which quantitates are stated in the problem is switched with the problem statements. For example, the second of the following two problem statements is more difficult than the first because of the reversal: 1) If a factory produces 5 cans of dog food for every 3 cans of cat food, when the company produces 600 cans of dog food, how many cans of cat food will it produce? 2) If a factory produces 5 cans of dog food for every 3 cans of cat food, then how many cans of cat food will the company produce when it produces 600 cans of dog food? ▶ Illustrating correspondences between representations (tables, equations, graphs, diagrams, and a verbal description) of a proportional relationship. For example, testing for equivalent ratios in a table or graphing on a coordinate plane, and showing how the unit rate appears in each representation. ■ Using proportional relationships to show how to solve multi-step ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error, and recipes.*	

GUIDING STATEMENTS	SPECIFIC EVIDENCE FROM THE TEXT/MATERIALS
7.RP.1-3. Assignments ask students to analyze proportional relationships and use them to solve real-world and mathematical problems by: ■ Computing unit rates, associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units. *For example, if a person walks ½ mile in each ¼ hour, compute the unit rate as the complex fraction* $\frac{½}{¼}$ *miles per hour, equivalently 2 miles per hour.* ■ Deciding whether and explaining why 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. ■ Identifying the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. ■ Representing proportional relationship 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.* ■ Explaining 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. ■ Using proportional relationships to solve multi-step ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error, and recipes.*	

GUIDING STATEMENTS	SPECIFIC EVIDENCE FROM THE TEXT/MATERIALS
7.NS.1-3. Materials explicitly show how previous understandings of operations with fractions extend to adding, subtracting, multiplying, and dividing rational numbers by showing how to: ■ Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. ▶ Extending and representing addition and subtraction on a horizontal or vertical number line. Previously, addition was represented by linking line segments. Now the line segments have directions, and therefore a beginning and an end. When linking these directed line segments, we start the second line segment at the end of the first one. If the second line segment is going in the opposite direction to the first, it can backtrack over the first, effectively cancelling part or all of it out. ■ Apply and extend previous understandings of multiplication, division, and fractions to multiply and divide rational numbers. ■ Solve real-world and mathematical problems involving the four operations with rational numbers (including complex fractions).	

GUIDING STATEMENTS	SPECIFIC EVIDENCE FROM THE TEXT/MATERIALS
7.NS.1-3. Assignments prompt students to apply and extend previous understandings of operations with fractions to adding, subtracting, multiplying, and dividing rational numbers by asking them to: ■ Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers. This includes representing addition and subtraction on a horizontal or vertical number line diagram. ● Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.* ● Show how $p + q$ is the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. ● Show how subtraction of rational numbers is adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. ● Apply properties of operations as strategies to add and subtract rational numbers. ■ Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. ● Show how multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (-1)(-1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. ● Show how integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts. ● Apply properties of operations as strategies to multiply and divide rational numbers. ● Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0's or eventually repeats. ■ Solve real-world and mathematical problems involving the four operations with rational numbers.	

GUIDING STATEMENTS	SPECIFIC EVIDENCE FROM THE TEXT/MATERIALS
7.EE.1-2. Materials show how the properties of operations can be used to generate equivalent expressions by illustrating how to: ■ Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. ▶ Simplify general linear expressions with rational coefficients. Extend the work from grade six, where students used the orders of operations and applied properties of operations to transform simple expressions such as 2(3 + 8x) or 10 - 2*p*. Students now encounter linear expressions with more operations and whose transformation may require an understanding of the rules for multiplying negative numbers, such as 7 - 2(3 - 8*x*). ▶ Attend to typical student misconceptions in simplifying expressions. For example, a student might come up with answers for 7 - 2(3 - 8*x*), such as: 5(3-8x), mistakenly detaching the 2 from the indicated multiplication; 7 - 2(-5x), through a determination to perform the computation in parentheses, first, even though no simplification is possible; or 6 - 6 - 16x, through an imperfect understanding of the way the distributive law works or of the rules for multiplying negative numbers. ■ Rewrite an expression in different forms in a problem context in order to shed light on the problem and how the quantities in it are related. For example, *a + 0.05a = 1.05a* means that "*increase by 5%*" is the same as "*multiply by 1.05*".	

GUIDING STATEMENTS	SPECIFIC EVIDENCE FROM THE TEXT/MATERIALS
7.EE.1-2. Assignments ask students to apply the properties of operations to generate equivalent expressions by: ■ Applying properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. ■ Showing how rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a +0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*	
7.EE.3-4. Materials show how to solve real-life and mathematical problems using numerical and algebraic expressions and equations by showing how to: ■ Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. ■ Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. ■ Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. ■ Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers.	

GUIDING STATEMENTS	SPECIFIC EVIDENCE FROM THE TEXT/MATERIALS
7.EE.3-4. Assignments prompt students to solve real-life and mathematical problems using numerical and algebraic expressions and equations by asking them to: ■ Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. ■ Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50 for a new salary of $27.50. If you want to place a towel bar 9¾ inches long in the center of a door that is 27½ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used to check on the exact solution.* ■ Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. ■ Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?* ■ Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. *For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.*	

II. DECISION RECORDING SHEET

Completed by: _____ Date: _____

Use the evidence that you collected for grade seven to begin judging the overall quality of the program. Begin by answering the overarching question: ***How well do the materials reflect and support the rigor of the CCSS-M?*** *Use the accompanying rubric which describes the criteria for high quality/exciting materials and assignments that engage both students and teachers.*

Rigor requirement (balance): A program that emphasizes only fluency is not rigorous. Likewise, a program that only focuses on applications or conceptual understanding is not rigorous. For a program to be rigorous, there must be a balance of all three (conceptual understanding, applications, and fluency) as indicated in the grade level standards. By the end of grade seven, there are specific fluency requirements for students (solving equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are given and x is unknown), and standards addressing procedural skill (procedural skill refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing procedures flexibly, accurately, and efficiently).

Criteria for Rigor and Quality in Conceptual Understanding, Applications, and Fluency

CONCEPTUAL UNDERSTANDING: **CONNECTIONS**	
Materials: ■ How well do the materials develop conceptual understanding of operations and algebraic thinking as defined in the CCSS-M and in the *Progression to Algebra (Appendix A)*? ■ How well do the materials connect to and extend prior knowledge? ● The materials present and describe explicit connections to prior knowledge, connections among mathematical ideas, and connections among different mathematical representations, using appropriate academic language. ■ How well do the materials develop academic language (including words, phrases, and sentences using symbols, graphs, and diagrams)?	**Assignments:** How well do the assignments prompt students to produce explanations and viable arguments? ● The set of assignments challenge students to use their mathematical knowledge, academic language, and skills to solve problems and formulate mathematical models in a variety of contexts. ■ How well do the assignments ask students to make explicit connections to prior knowledge, connections among mathematical ideas, and connections among different mathematical representations?

CONNECTIONS: CRITERIA FOR MEETING THE RATING OF **"HIGH QUALITY/EXCITING"**		
	Materials *The materials present and describe explicit connections to prior knowledge, connections among mathematical ideas, and connections among different mathematical representations, using appropriate academic language.*	**Assignments** *The assignments in the materials encourage and challenge students to use their mathematical knowledge, academic language, and skills to solve problems and formulate mathematical models in a variety of contexts.*
Student	*Using high quality/exciting materials, my students will:* ■ comprehend the concepts and connections in the materials. ■ make sense of the mathematics. ■ be excited to try the problems and learn from working on them. ■ want to learn the mathematical concepts and gain confidence that effort to learn will pay off.	*Using high quality/exciting assignments, my students will:* ■ engage in the challenge of comprehension and discussion. ■ make sense of the mathematics. ■ be excited to try the problems and learn from working on them. ■ want to learn the mathematical concepts and gain confidence that their effort to learn will pay off.
Teacher	*Using high quality/exciting materials will help me:* ■ see and understand the mathematical goals of the lesson/unit. ■ understand better the mathematics that I am teaching, learn more mathematics from the materials, and want to learn more from interacting with students. ■ be excited about teaching the lessons and see how students respond to the connections in the lesson/unit. ■ focus students' efforts on the mathematical connections and give them feedback on how to do better. ■ anticipate typical misconceptions, missing connections, and which struggles will be most productive for students. ■ be confident students will be motivated to learn from and connect the mathematics, as well as gain confidence that their efforts to learn will pay off.	*Using high quality/exciting assignments will help me:* ■ want to learn more from interacting with students, analyzing their work on assignments, and re-engaging them in the concepts related to the assignments. ■ use students' responses to focus their efforts on the mathematical connections and give them feedback on how to do better. ■ anticipate typical misconceptions, missing connections, and which struggles will be most productive for students. ■ know students will be motivated to learn from and connect the mathematics as well as gain confidence that their efforts to learn will pay off.

RATING – Compared to the criteria listed above, the materials I have just reviewed would be considered:

☐ 3) High Quality/Exciting ☐ 2) Good Quality ☐ 1) Minimal Quality

CONCEPTUAL UNDERSTANDING: **EXPLANATIONS**	
Materials: ■ How well do the materials provide example explanations connecting different representations to show why a statement or steps in an argument or solution is true and under what conditions it is true? ● The materials provide example explanations, using appropriate concepts and academic language for the grade level, to show how a way of thinking about a problem makes sense using several representations and explicitly identifying correspondences across representations. ■ How well do the materials use abstractions and generalizations to communicate the mathematical structure that organizes seemingly scattered individual events or results?	**Assignments:** How well do the assignments require that student provide explanations using appropriate content and grade-level academic language? ● The set of assignments requires students to use appropriate content and grade-level academic language to explain why reasons and justifications for steps in a solution or an argument are valid and how the mathematical structure represents generalizations about a problem situation (context) mathematically to their peers and the teacher. ■ How well do the assignments ask students to use the mathematical structure to organize individual, seemingly scattered statements or results to represent generalizations mathematically to their peers and the teacher?

EXPLANATIONS: CRITERIA FOR MEETING THE RATING OF **"HIGH QUALITY/EXCITING"**		
	Materials *The materials provide example explanations, using appropriate concepts and academic language for the grade level, to show how a way of thinking about a problem makes sense using several representations and explicitly identifying correspondences across representations.*	**Assignments** *The assignments require students to use appropriate grade-level concepts and academic language to explain why reasons and justifications for steps in a solution or an argument are valid and how the mathematical structure represents generalizations about a problem situation (context) mathematically to their peers and the teacher.*
Student	*Using high quality/exciting materials, my students will:* ■ comprehend the explanations presented in the materials. ■ make sense of the mathematics of the lesson/unit. ■ be excited to try the problems and learn from working on them. ■ want to learn the related mathematical concepts and gain confidence that their effort to learn will pay off.	*Using high quality/exciting materials, my students will:* ■ engage in the challenge of comprehension and explanation with their peers and with me. ■ make sense of the mathematics of the lesson/unit. ■ be excited to try the problems and learn from working on them. ■ want to learn the related mathematical concepts and gain confidence that their effort to learn will pay off.

Teacher	*Using high quality/exciting materials will help me:* ■ see and understand the mathematical goals of the lesson/unit. ■ understand better the mathematics that I am teaching, learn more mathematics from the materials, and want to learn more from interacting with students. ■ be excited about teaching the lessons and see how students respond to the explanations in the lesson/unit. ■ focus students' efforts on the mathematical explanations and give them feedback on how to do better. ■ anticipate typical misconceptions, struggles that are most productive for students, and ways to help students to revise their explanation.	*Using high quality/exciting materials will help me:* ■ want to learn more from interacting with students, analyzing their work on assignments, and re-engaging them on the concepts related to the assignments. ■ use students' responses to focus their efforts on the mathematical connections and give them feedback on how to do better. ■ anticipate typical misconceptions, struggles that are most productive for students, and ways to help students revise their explanations. ■ know students will be motivated to learn from and connect the mathematics as well as gain confidence that their efforts to learn will pay off. ■ prompt students to make their mathematical explanations clear in a way that others can understand and critique them.

RATING – Compared to the criteria listed above, the materials I have just reviewed would be considered:

☐ 3) High Quality/Exciting ☐ 2) Good Quality ☐ 1) Minimal Quality

APPLICATIONS

Materials

How well do the materials develop students' expertise in the application of concepts appropriate for this grade level?

- The materials show how to use mathematics to analyze problem situations, appropriate for the grade level, and provide examples of deploying the Standards for Mathematical Practice to make sense of problems.

■ How well do the materials support students' understanding of how to analyze problem situations, showing how to use mathematics to help make sense of problems?

Assignments

How well do the assignments develop the application of grade-level concepts?

- The assignments prompt students to use mathematics and the Standards for Mathematical Practice to help them make sense of a variety of problems and formulate mathematical models of real-world phenomena appropriate for this grade level.

■ How well do the assignments support students' understanding of how to formulate mathematical models of real-world phenomena, including explaining assumptions and explaining why the model serves its purpose in a reasonable way?

APPLICATIONS: CRITERIA FOR MEETING THE RATING OF **"HIGH QUALITY/EXCITING"**		
	Materials *The materials show how to use mathematics to analyze problem situations appropriate for the grade level and provide examples of deploying the Standards for Mathematical Practice to make sense of problems.*	**Assignments** *The assignments prompt students to use mathematics and the mathematical practice standards to help them make sense of a variety of problems, appropriate for this grade level, by asking students to formulate mathematical models.*
Student	*Using high quality/exciting materials, my students will:* ■ apply the concepts and connect them to each other and their different representations. ■ make sense of the mathematics of the lesson/unit. ■ be excited to try the problems and learn from working on them. ■ understand how to formulate and model problem situations mathematically. ■ gain confidence that their effort to learn will pay off.	*Using high quality/exciting assignments, my students will:* ■ be challenged to use their mathematics to comprehend, analyze, and make sense of the problem situation. ■ make sense of quantities and their relationship in the math problem. ■ represent the problem concretely and pictorially and represent it as an equation and explain how the two representations relate to each other. ■ identify important quantities in a practical situation and map their relationships using such tools as concrete models, diagrams, and equations. ■ formulate and model problem situations mathematically. ■ engage in discussions with their peers and the teacher to make sense of the problem and learn from them. ■ be excited to try the problems and learn from working on them. ■ gain confidence that their effort to learn will pay off.
Teacher	*Using high quality/exciting materials will help me:* ■ see and understand the mathematical goal of the lesson/unit. ■ understand better the mathematics that I am teaching, learn more mathematics from the materials, and want to learn more from interacting with students. ■ be excited about teaching the lessons and see how students respond to the problems/tasks in the lesson/unit. ■ be confident I can focus students' efforts on the mathematical tasks/problems and give them feedback on how to do better. ■ anticipate typical misconceptions, missing connections, and which struggles will be most productive for students. ■ be confident students will be motivated to learn.	*Using high quality/exciting assignments will help me:* ■ prompt students to make their mathematical thinking clear in a way that others can understand and critique it. ■ want to learn more from interacting with students, analyzing their work on problems/tasks, and re-engaging them on making use of concepts related to them. ■ use the student's responses to focus their efforts on strategic thinking and give them feedback on generalizing to other related applications. ■ anticipate typical misconceptions, missing strategies, and which productive struggles will be most beneficial for students. ■ gain confidence that their efforts to learn will pay off.

RATING – Compared to the criteria listed above, the materials I have just reviewed would be considered:

☐ 3) High Quality/Exciting ☐ 2) Good Quality ☐ 1) Minimal Quality

FLUENCY

Materials:

- How well do the materials focus on developing critical procedural skills and fluency in solving equations of the form $px + q = r$; and $p(x + q) = r$, where p, q, and r are given and x is unknown, by the end of grade seven?
  - *Materials show how procedural skills and the standard for fluency for this grade level (*solving equations of the form $px + q = r$; and $p(x + q) = r$, where p, q, and r are given and x is unknown*) work and provide consistent opportunities for students to practice.*

Assignments:

- How well does the set of assignments focus on developing critical procedural skills and fluency?
  - *The set of assignments prompts students to develop and demonstrate fluency in solving equations of the form $px + q = r$; and $p(x + q) = r$, where p, q, and r are given and x is unknown, by the end of grade seven.*

FLUENCY: CRITERIA FOR MEETING THE RATING OF "HIGH QUALITY/EXCITING"

	Materials *Materials show how the standard for fluency (solving equations of the form $px + q = r$; and $p(x + q) = r$, where p, q, and r are given and x is unknown) works and provides opportunities for students to practice.*	**Assignments** *The set of assignments prompts students to develop and demonstrate fluency when solving equations of the form $px + q = r$; and $p(x + q) = r$, where p, q, and r are given and x is unknown, by the end of grade seven.*
Student	*Using high quality/exciting materials, my students will:* ■ have a variety of different ways to practice using an algorithm, procedure, or formula to develop fluency. ■ self-assess areas of weakness and strengths in solving equations of the form $px + q = r$; and $p(x + q) = r$, where p, q, and r are given and x is unknown, and receive feedback on which area(s) to improve.	*Using high quality/exciting assignments, my students will:* ■ build skills in solving equations of the form $px + q = r$; and $p(x + q) = r$, where p, q, and r are given and x is unknown, flexibly, accurately, efficiently, and appropriately. ■ gain confidence that their efforts to learn will pay off.
Teacher	*Using high quality/exciting materials will help me:* ■ see and understand how the work on procedural fluency supports the mathematical goal of the lesson/unit. ■ be confident that I can focus students' efforts on building fluency, and help students understand and correct their mistakes. ■ be confident students will be motivated to learn.	*Using high quality/exciting assignments will help me:* ■ want to learn more from interacting with students. ■ use students' responses to focus their efforts on building fluency and give them feedback on how to do better. ■ see how to help students understand and correct their mistakes. ■ be confident students will be motivated to learn.

RATING – Compared to the criteria listed above, the materials I have just reviewed would be considered:

☐ 3) High Quality/Exciting ☐ 2) Good Quality ☐ 1) Minimal Quality

III. ADOPTION COMMITTEE RECOMMENDATION FORM

Based on the substantial evidence collected, please rank all the grade seven materials you reviewed in the order in which you would recommend them for adoption. The program or materials with your highest recommendation should be listed as number one below. Please provide any comments you deem pertinent. Include answers to the following questions based on the evidence cited in your materials review:

- **What are the top three strengths of this text?**
- **What areas need improvement?**
- **What additional supports would be needed to implement the textbook series or digital materials?**

RECOMMENDED		
	PROGRAM NAME/EDITION:	COMMENTS:
1		
2		
3		

continued >

NOT RECOMMENDED		
	PROGRAM NAME/EDITION:	COMMENTS:
1		
2		
3		

Completed by: _____ Date: _____

IV. APPENDIX: PROGRESS TO ALGEBRA IN GRADES K–8

K	1	2	3	4	5	6	7	8
Know number names and the count sequence Count to tell the number of objects Compare numbers Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from Work with numbers 11-19 to gain foundations for place value	Represent and solve problems involving addition and subtraction Understand and apply properties of operations and the relationship between addition and subtraction Add and subtract within 20 Work with addition and subtraction equations Extend the counting sequence Understand place value Use place value understanding and properties of operations to add and subtract Measure lengths indirectly and by iterating length units	Represent and solve problems involving addition and subtraction Add and subtract within 20 Understand place value Use place value understanding and properties of operations to add and subtract Measure and estimate lengths in standard units Relate addition and subtraction to length	Represent & solve problems involving multiplication and division Understand properties of multiplication and the relationship between multiplication and division Multiply & divide within 100 Solve problems involving the four operations, and identify & explain patterns in arithmetic Develop understanding of fractions as numbers Solve problems involving measurement and estimation of intervals of time, liquid volumes, & masses of objects Geometric measurement: understand concepts of area and relate area to multiplication and to addition	Use the four operations with whole numbers to solve problems Generalize place value understanding for multi-digit whole numbers Use place value understanding and properties of operations to perform multi-digit arithmetic Extend understanding of fraction equivalence and ordering Build fractions from unit fractions by applying and extending previous understandings of operations Understand decimal notation for fractions, and compare decimal fractions	Understand the place value system Perform operations with multi-digit whole numbers and decimals to hundredths Use equivalent fractions as a strategy to add and subtract fractions Apply and extend previous understandings of multiplication and division to multiply and divide fractions Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition Graph points in the coordinate plane to solve real-world and mathematical problems*	Apply and extend previous understandings of multiplication and division to divide fractions by fractions Apply and extend previous understandings of numbers to the system of rational numbers Understand ratio concepts and use ratio reasoning to solve problems Apply and extend previous understandings of arithmetic to algebraic expressions Reason about and solve one-variable equations and inequalities Represent and analyze quantitative relationships between dependent and independent variables	Apply and extend previous understanding of operations with fractions to add, subtract, multiply, and divide rational numbers Analyze proportional relationships and use them to solve real-world and mathematical problems Use properties of operations to generate equivalent expressions Solve real-life and mathematical problems using numerical and algebraic expressions and equations	Work with radical and integer exponents Understand the connections between proportional relationships, lines, and linear equations Analyze and solve linear equations and pairs of simultaneous linear equations Define, evaluate, and compare functions Use functions to model relationships between quantities*

From the K, Counting and Cardinality; K–5, Operations and Algebraic Thinking Progression p. 9