LEVELS 6–A1

Eureka Math² ™ Reviewer Rubric

Contents

Eureka Math² Levels 6 – Algebra 1: Alignment at a Glance Criteria of High-Quality, Effective Math Programs	Meets Criteria	
	Yes	No
1. Content and Focus		
A. Curricular materials align with standards and are mathematically accurate. i. Sufficient time and resources are allocated to ensure the materials meet the full intent of grade-level standards.	✓	
B. Curricular materials focus on major work of each grade level.	✓	
C. Curricular materials connect supporting and additional work to major work in meaningful ways. i. Curricular materials make natural connections between different clusters and domains.	✓	
2. Coherence and Instructional Design		
A. Curricular materials use a logical mathematical progression to build on learning from prior content.	✓	
B. Coherent high-yield models are evident within and across grade levels.	✓	
C. Curricular materials include an intentional sequence for developing academic and mathematical language within and across grade-level courses.	✓	
D. Curricular materials utilize a consistent module and lesson structure, including a variety of well-designed teacher-facilitated experiences.	✓	
E. Students' ideas are valued and seen as resources for learning.	✓	
F. Curricular materials build knowledge of not only key ideas in mathematics but also knowledge of the world.	✓	
G. Curricular materials are research-based.	✓	
3. Balance of Rigor		
A. Curricular materials contain a balance of conceptual understanding, procedural skills, and fluency, as well as application of math knowledge.	✓	
B. Curricular materials support the development of students' conceptual understanding with i. simple–to–complex problem sequences, and ii. concrete–pictorial–symbolic progressions and connections.	✓	
C. Curricular materials are designed so that students attain the procedural skills and fluency required by grade-level standards.	✓	
D. Curricular materials are designed to include a variety of frequent, authentic application opportunities.	✓	
4. Standards for Mathematical Practice		
A. Curricular materials support the standards' emphasis on mathematical thinking and reasoning.	✓	

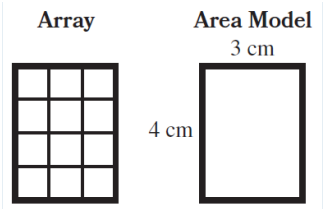
B. Curricular materials provide regular opportunities for students to engage in the full meaning of all the Standards for Mathematical Practice.	✓	
C. Curricular materials support teachers in developing their own understanding of the Standards for Mathematical Practice, the role of the practice standards in lessons, and guidance for implementation.	✓	
D. Curricular materials connect content standards and practice standards in authentic ways.	✓	
5. Accessibility, Differentiation, and Engagement		
A. Curricular materials intentionally promote student engagement, student-to-student discourse, and student ownership of learning.	✓	
B. Curricular materials ensure all students can access grade-level mathematics. i. Lesson tasks provide multiple entry points into mathematics. ii. Curricular materials provide timely supports to assess and to address students' unfinished learning.	✓	
C. Curricular materials are designed with principles of Universal Design for Learning by providing multiple means of engagement, representation, and action and expression.	✓	
D. Curricular materials provide scaffolds and instructional supports for multilingual learners.	✓	
E. Curricular materials provide differentiation suggestions for support and challenge.	✓	
F. Curricular materials attend to social and emotional learning (SEL) competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making.	✓	
G. Curricular materials are inclusive and reflect diverse cultures, ethnicities, and demographics.	✓	
H. Student facing-materials are visually engaging, accessible, and readable.	✓	
6. Assessment Program		
A. Curricular materials include frequent and varied and comprehensive assessments. i. Summative assessments, taken as a whole, include opportunities for students to demonstrate the full intent of grade-level standards. ii. Formative assessments support teachers in determining whether students met the objective(s) of the lessons and topics. iii. Assessment items include a combination of tasks that require students to demonstrate conceptual understanding, procedural skill and fluency, and application. iv. Assessment item types require students to produce a variety of answers and solutions (arguments, explanations, representations, etc.)	✓	
B. Assessment materials provide sufficient guidance for interpreting student performance and guiding instructional decisions.	✓	
7. Teachability and Digital Integration		
A. Curricular materials include embedded and external professional development. i. Materials support teacher learning and understanding of mathematical concepts, the progression of learning, and instructional pedagogy. ii. Materials include standards alignment information and explain the role of the standards in the resources.	✓	
B. Curricular materials include support for implementation. i. The materials are visually engaging, easy to use, and well organized for students and teachers. ii. Materials provide information about how to plan and prepare lessons.	✓	

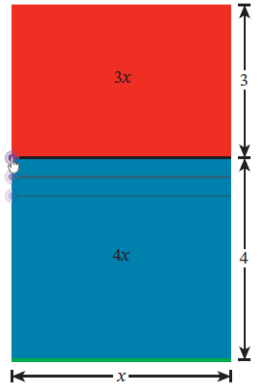
iii. Materials provide guidance for instructional delivery, including questions to prompt student thinking and expected student outcomes.		
C. Curricular materials can be completed within a regular school year, and guidance about the expected timing for lessons and tasks is provided.	✓	
D. Curricular materials provide caregivers with resources to support student academic progress.	✓	
E. A user-friendly online platform provides always-on access to curricular materials and additional resources.	✓	
F. Digital materials and experiences enhance classroom instructional practice, engaging students meaningfully to develop mathematical understanding.	✓	

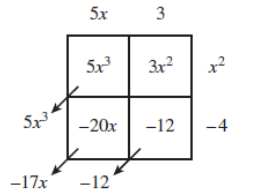
Criteria of High-Quality, Effective Math Programs	Evidence of Alignment from *Eureka Math²* Levels 6–A1		
	Yes	No	Criteria Examples and Reviewer Notes
1. Content and Focus			
A. Curricular materials align with standards and are mathematically accurate. i. Sufficient time and resources are allocated to ensure the materials meet the full intent of grade-level standards.	✓		*Eureka Math²* is designed to align fully with Common Core State Standards for Mathematics (CCSSM). The teacher–writers and mathematicians developed the curriculum by using the seminal *Progressions for the Common Core State Standards in Mathematics*, which lay out the structure of mathematics and research in cognitive development. The national curriculum attends to the CCSSM within and across lessons, topics, and modules. The *Teach* books contain resources for identifying the standards addressed at the lesson and module level. For example, the Standards resource at the end of each module's *Teach* book lists the standards addressed in each module. Standards are also listed on the first page of each lesson. A universal edition (without CCSSM references and alignments), specific state editions, and state alignment guides (demonstrating how each level of *Eureka Math²* aligns with specific state standards) are available.
B. Curricular materials focus on major work of each grade level.	✓		The *Eureka Math²* curriculum prioritizes major work standards by devoting more time to those standards overall and by sequencing modules to teach the major work as early in the school year as possible. Such standards build over the course of the year in accordance with the progressions in the standards so that students have ample opportunity to work with them. For example, • Of the 133 lessons in level 6, 88 lessons (66.2%) focus on the major work of the level. The remaining 45 lessons (33.8%) focus on supporting and additional work. • Of the 138 lessons in level 7, 89 lessons (64.5%) focus on the major work of the level, 16 lessons (11.6%) focus on the supporting work of the grade level, 32 lessons (23.2%) focus on the additional work, and 1 lesson (0.7%) is optional. • Of the 129 lessons in level 8, 108 lessons (83.7%) focus on the major work of the level and 21 lessons (16.3%) focus on supporting and additional work. • Of the 128 lessons in Algebra I, 85 lessons (66.4%) are devoted to the major work of the level. The remaining lessons are devoted to supporting and additional work. Lessons are tagged with the most relevant content standards. However, the coherence of the curriculum means that further understanding of the major work of the grade level is continued through applications in lessons that focus on additional or supporting work. See the next section for examples.

			Refer to the module map, Appendix A.
C. Curricular materials connect supporting and additional work to major work in meaningful ways. i. Curricular materials make natural connections between different clusters and domains.	✓		*Eureka Math²* lessons and materials make natural connections between different clusters and domains. Whenever possible, the major work of the level is naturally embedded in lessons even when the objective targets supporting or additional work. This natural embedding supports students in making meaningful content connections so that they understand mathematics as a coherent discipline rather than as a series of unrelated topics. For example, the objectives in module 5 of level 6 target supporting work that appears in the geometry domain: solve real-world and mathematical problems involving area, surface area, and volume. However, the necessary calculations in finding area, surface area, and volume also gives students the opportunity to apply their understanding of the major work that appears in The Number Systems domain: Apply and extend previous understandings of numbers to the system of rational numbers, as well as in the Expressions and Equations domain: Apply and extend previous understandings of arithmetic to algebraic expressions and reason about and solve one-variable equations and inequalities. At times, conceptual understanding of the major work and additional work is developed simultaneously to make connections between domains. For example, in level 7 module 3 topic B, over the course of four lessons, students learn about angle relationships such as complementary angles, supplementary angles, vertical angles, and angles at a point while concurrently writing and solving progressively more difficult equations to find unknown angle measures. Curriculum materials also intentionally make important connections among two or more clusters in a domain. For example, in level 6, the clusters in the Expressions and Equations domain build upon each other as students write and evaluate numerical expressions and then algebraic expressions. Later, students use this understanding to solve equations and conclude that an inequality has infinitely many solutions.
2. Coherence and Instructional Design			
A. Curricular materials use a logical mathematical progression to build on learning from prior content.	✓		The *Eureka Math²* teacher–writers carefully constructed the curriculum as a logical mathematical story. Rather than separate disjointed skills, the concepts within modules and across levels are intentionally coherent and connected to the larger progression of mathematical concepts over time. Within each lesson, problems and exercises follow an intentional sequence that gradually reduces supports, which promotes student discovery and productive struggle. Through this process, students apply previous knowledge to new learning. A layered approach directs teachers to strategically revisit skills in increasingly complex ways so that students develop proficiency gradually over time. Teacher–writers intentionally sequenced new learning to build on students' conceptual understanding from previous learning. Embedded professional development helps teachers understand these choices and realize how the content builds on itself. For example, the Why section of the level 6 module 2 Overview answers the question, Why is the topic on factors and multiples at the beginning of the module and not at the end? The section explains why the choice was made to introduce this concept first and how teachers can help students build on and apply this learning throughout the school year. Throughout the modules, teachers will find explicit references to learning from previous grade levels. For example, Module Overviews in the *Teach* book contain Before This Module and After This Module features, which connect the module's new learning to that of previous and future modules and grade levels, revealing the coherent structure of the curriculum. For example, in level 8 module 3, students analyze dilations, construct dilations, and learn that similar figures are figures that can be mapped onto one another by using a sequence of rigid motions or dilations. The Before This Module section informs teachers about the work students have already done in level 7 module 1 around scale drawings and in level 8 module 2 around rigid motions. Then, in the After This Module section, the teacher learns how students will use their knowledge of similar triangles to develop an understanding of the slope of a line in level 8 module 4.

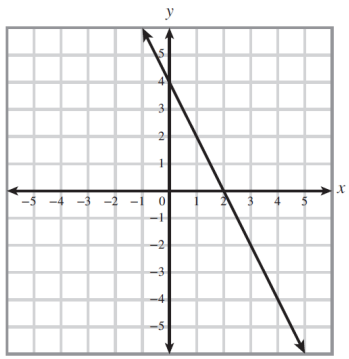
B. Coherent high-leverage models are evident within and across grade levels.	✓		*Eureka Math²* uses a core set of coherent physical and pictorial models within and across grade levels. Many of the familiar models used in levels K–5 evolve to support students with the growing complexities of mathematics in levels 6–A1. These models activate students' memory and emphasize how the same math concepts can apply to new, more complex situations. Here are some examples of the coherence of models: • The area model is used multiply rational numbers and expressions. Once students have knowledge of negative numbers, the area model evolves and students begin referring to it as the tabular model. The tabular model then continues to be utilized to multiply and factor polynomial expressions. The area model is an evolution of arrays that students are familiar with from K–3. • Number lines are used in levels 6–A1 to compare numbers, order numbers, and represent solutions to inequalities. Modeling on the number line is an evolution of early linear models such as counting on hands and number paths students have experienced in K–5. ○ Double number lines are utilized to represent ratio relationships and proportional relationships, solve for unknown values in a ratio relationship or proportional relationship, find unit rates, and solve percent problems. • Tape diagrams, which students are familiar with from K–5, continue to be utilized in 6–A1 to represent word problems and discover a solution path. To take one of these examples, consider how the area model, and related tabular model, is a high-leverage model used throughout the curriculum: Students work extensively with the area model in levels 3–5. For example, in level 3, they use it to find the area of a rectangle. And in level 5, they use it to multiply and divide multi-digit numbers. **Model A** 201 × 32 2 | 402 30 | 6,030 201 × 32 = 402 + 6030 = 6,432 **Model B** 32 × 201 1 | 32 200 | 6,400 32 × 201 = 32 + 6400 = 6,432 In level 6, student use the area model to understand what makes terms like terms and then use it to add and subtract like terms. Once students have experience with negative numbers in level 7, they realize that area cannot be represented with a negative number. They continue to use the area model and begin referring to it as the tabular model. h | -2 6 | $6h$ | -12 $6h - 12$

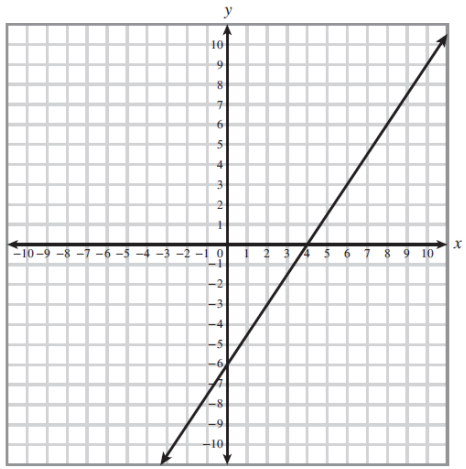




			In Algebra 1, students continue to use the tabular model to multiply and factor polynomial expressions.  $(5x + 3)(x^2 - 4) = 5x^3 - 17x - 12$
C. Curricular materials include an intentional sequence for developing academic and mathematical language within and across grade-level courses.	✓		*Eureka Math²* uses accurate terminology that remains consistent across grade levels. This ensures that younger students are prepared for later grade levels and will recognize concepts they have already learned. The Terminology resource in the *Teach* book of each module lists the specialized language of mathematics that is used throughout a module. The resource includes new and familiar terminology with definitions and descriptions from the module. Items in the New category are domain-specific words that are introduced to students in the module. These items include the definition, description, or illustration as it is presented to students. At times, this resource also includes language for teachers that expands how the words are used with students. This extra guidance is set in italics and follows the term it refers to. Items in the Familiar category are domain-specific words introduced in prior modules or grade levels. Terminology is systematically introduced and developed within lessons by using student-friendly descriptions and definitions. Lessons generally create experiences with the relevant concepts or ideas first before introducing a specific term. New terms are formalized through sample dialogue that models use of the term and its definition or description. When new terms are introduced, instructional recommendations are included either in the teacher guidance of the lesson or in a language support margin note. Examples of these recommendations include constructing or co-constructing a graphic organizer, engaging in a visual representation, or authentically using the word. Students formalize terminology after those experiences so that the new language comes as students need it to describe, reflect on, or name their work. After developing understanding of domain-specific terminology, students are encouraged to attend to precision by using vocabulary correctly. Academic verbs are also identified in the Terminology resource of the module in which they are introduced. The introduction of academic verbs such as *summarize*, *approximate*, and *validate* are intentionally distributed and sequenced across grade levels. When introduced, academic verbs are always paired with student-friendly language to support understanding. The last sentence of the Lesson at a Glance states whether any terminology is introduced in the lesson. New domain-specific terminology is also made bold in the lesson text when it is introduced. Often, terminology has accompanying Language Support notes. Students and caretakers can find new terminology and definitions in the Recap for each relevant lesson in the student's *Learn* book.
D. Curricular materials utilize a consistent module and lesson structure, including a variety of well-designed teacher-facilitated experiences.	✓		Well-designed teacher-facilitated experiences that vary in setting and tempo have the highest capacity for equitably building new knowledge and should therefore be the primary mode of instruction. These experiences should include periods of whole-class engagement, small-group and paired collaborations, and independent reflection and processing to accommodate a variety of learning needs. Facilitation styles and lesson experiences also vary—explicit instruction, inquiry, guided discovery, etc. *Eureka Math²* maintains a consistent structure and design across all grade levels. Each level is composed of six modules, with each module further divided into topics. Inside topics, each lesson consists of the same four components: Fluency, Launch, Learn, and Land. The first component, Fluency, provides distributed practice with previously learned material. Fluency activities are included with each lesson, but they are not accounted for in the overall lesson time. They are meant to be used as bell ringers, or, in a class period longer than 45 minutes. Fluency activities are designed to prepare students for new learning by activating prior knowledge and bridging small learning gaps The second component, Launch, creates an accessible entry point to the day's learning. Low-floor/high-ceiling activities build context and often

			create productive struggle that leads to a need for the learning that follows. Launch closes with a transition statement that makes the learning objective clear to all students. In alignment with Universal Design for Learning guidelines, the transition statement is written in student-friendly language and conveys the goals of the lesson so students can self-monitor their progress toward meeting the lesson objective. The next component, Learn, presents new learning related to the lesson objective, usually through a series of instructional segments. This lesson component fills most of the instructional time. Suggested facilitation styles vary and may include direct instruction, guided instruction, group work, partner activities, interactive video, or digital elements. The final component, Land, is a brief discussion to close the lesson and provides students with an opportunity to complete the Exit Ticket. Suggested questions, including Key Questions related to the objective, help students synthesize the day's learning. The Exit Ticket provides a window into what students understand to inform the teacher's instructional decisions about what they need next.
E. Students' ideas are valued and seen as resources for learning.	✓		Math is a social activity, and everyone benefits from learning interactively about mathematics and from one another's thinking. Lessons support a growth mindset ("I/you can learn mathematics."), provide opportunities for students to engage in productive struggle, and help them feel they belong in the larger community of student-mathematicians. Students come to see that they are capable in mathematics and that what they contribute is valuable to the math community they are a part of. Through rich, relevant, and rigorous tasks and opportunities for discourse, students and educators deepen their understanding of both the mathematics and one another. The math writing team used a wide research base, including Mary Kay Stein and Peg Smith's *5 Practices for Orchestrating Productive Mathematics Discussions,* to support teachers in engaging students with these tasks and conversations. Every lesson offers classroom discussions, partner or group talk, and rich questions to promote student discourse and elevate student metacognition. Many lessons highlight and provide opportunities for students to generate and share multiple solution pathways and representations. The lesson provides support through suggested routines, sample responses, discussion questions, and more to guide teachers through the *5 Practices* framework to anticipate, monitor, select, sequence, and connect student responses.
F. Curricular materials build knowledge of not only key ideas in mathematics but also knowledge of the world.	✓		*Eureka Math²* builds mathematical knowledge in the context of real-world situations. As such, *Eureka Math²* incorporates other disciplines, such as fine art and history, that encourage students explore what math can teach about the world around them. Each module integrates a stunning work of fine art that has a connection to the math learning in the module. The cover art and other carefully curated pieces of art and artists are discussed or analyzed in at least one lesson per module. In addition, each module contains a Math Past resource. Math Past tells the history of a big idea that has shaped the mathematics introduced in the module. The content in each Math Past highlights contributions from cultures around the world. It presents students with history that frames mathematics exploration as a human endeavor by telling the story of the discipline through artifacts and discoveries. Wordless context videos also serve as an engaging format for students to make observations and develop questions. These videos appear frequently and provide access to a mathematical context. Students use the context for their own mathematical wonderings and to generate discourse as they create their own word problems and answer their own questions.
G. Curricular materials are research-based.	✓		Experienced and qualified teacher–writers applied eight years of *Eureka Math* classroom experiences, student data, and current educational research to create *Eureka Math²* . Highly educated mathematicians collaborated during the architecture phase of writing and performed thorough reviews of all curricular materials. Writing editors and math auditors also reviewed all materials. This thorough research informed the instructional design of the curriculum, guiding decisions in each lesson, topic, and module to combine best practices in pedagogy with rigorous math content. The research base includes the *Progressions for the Common Core State Standards in Mathematics* and texts related to mathematics and mathematical strategies, pedagogy and teaching philosophy, history of mathematics, instructional strategies, and coherence among the mathematical concepts. At the end of each module's *Teach* book, a Works Cited section outlines

			the robust knowledge base that underpins the structure and content framework. See Selection of *Eureka Math²* Research Citations in Appendix B.
3. Balance of Rigor			
A. Curricular materials contain a balance of conceptual understanding, procedural skills and fluency, as well as application of math knowledge.	✓		*Eureka Math²* balances the three elements of rigorous mathematics education: conceptual understanding, procedural skill and fluency, and application to real-world contexts. Lessons provide experiences to expand, develop, apply, and practice conceptual understanding, as well as hone procedural and problem-solving skills through joyful fluency exercises and engaging real-world applications. The curriculum sometimes presents the three elements separately but also often combines them, reinforcing the development of students as flexible thinkers on the path to proficiency. *Eureka Math²* addresses these areas with equal intensity, recognizing that all are vital parts of a coherent, effective curriculum. • The Fluency and Practice components provides daily opportunities for students to practice concepts and procedural skills. Mixed practice is provided twice per module. • Activities in Launch and Learn generally include a mix of the three elements of rigorous mathematics education. However, Launch often provides an application opportunity for students to engage in some contextual reasoning and problem solving. • Each segment of Learn, the instructional component of the lesson, often focuses on developing conceptual understanding and is structured to move students from simple problems to more complex problems. • Land provides an opportunity to consolidate student understanding and reflect on their learning through discussion, and it highlights the Key Questions of the lesson. All three elements of rigor are also present in the Practice problems and assessments. For example, in the Algebra 1 module 2 lesson 3 Practice, students are given a set of linear graphs and are asked to write an equation that represents the line (procedural skill and fluency), several word problems (application), and an opportunity to explain their thinking (conceptual understanding). For problems 1–6, write an equation that represents the line. 1. 

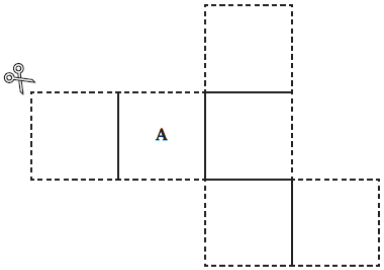
			20. Ji-won walks in a straight line away from his house at a constant rate. After 20 minutes, Ji-won is 1 mile from his house. After 60 minutes, Ji-won is 3 miles from his house. Write an equation to model Ji-won's distance from his house y in miles after x minutes. 21. Emma and Mason each wrote an equation for a graph, as shown. Whose equation is correct? Explain your reasoning. If both equations are correct, use properties and operations to explain why the two equations have the same solution set.  Emma's equation: $-3x + 2y = -12$ Mason's equation: $y = \frac{3}{2}x - 6$
B. Curricular materials support the development of students' conceptual understanding with i. simple–to–complex problem sequences, and ii. concrete–pictorial–symbolic	✓		*Eureka Math²* develops students' conceptual understanding in several critical ways, emphasizing deep knowledge building and ensuring that students understand the "why" rather than just the "how" of math. Concepts progress coherently within and across modules and levels so students build on what they already know. Lessons invite students to engage and respond with a variety of representations: visual, symbolic, verbal, contextual, and physical. Throughout *Eureka Math²*, concepts are developed with a concrete–pictorial–abstract sequence. Students first explore concepts through the hands-on use of manipulatives, or concrete models. The concrete stage is vital to conceptual understanding and is maintained throughout the curriculum when new concepts are introduced. Even when the lessons have progressed to more sophisticated representations, their use is encouraged for students when needed as support or as a representation choice. Students then progress to pictorial models that are connected to the related concrete model, when applicable. These models are often more convenient, further develop student understanding, and expand students' problem-solving toolbox. Lessons support teachers in connecting these pictorial models to their corresponding abstract or symbolic representations, highlighting connections between the two. At the end of the progression, as students are ready, they may need only an abstract representation (or even a visual/mental model). This progression builds a strong

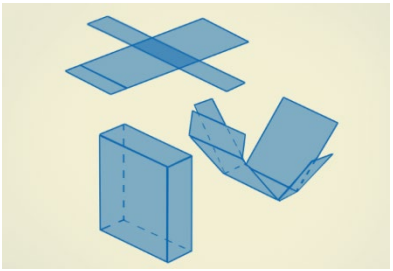
progressions and connections.

foundation of number sense and provides students with a deep conceptual understanding.

Consider this geometry example:

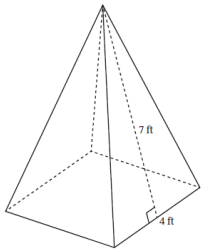
In levels 6 and 7, students use concrete models of solids to understand the properties of three-dimensional objects. They use digital interactives and physical models to experiment with nets for different types of solids.

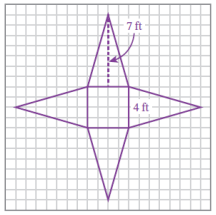


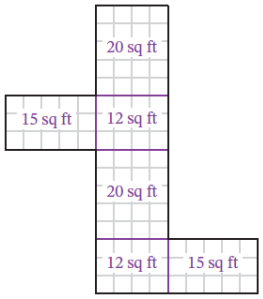


Progressing to a pictorial representation, students draw two-dimensional nets to represent the three-dimensional surfaces of a solid. They use their drawings to find the surface area of the solid by using what they know about composite area.

Noticing similarities in the structures of the nets and in their calculations, students begin to move toward abstract representations of surface are through expressions and formulas.

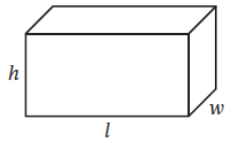






Face	Area	Dimensions	Names of Dimensions
top	20 sq ft	4 ft by 5 ft	$l \times w$ } $2lw$
bottom	20 sq ft	4 ft by 5 ft	$l \times w$
front	12 sq ft	4 ft by 3 ft	$l \times h$ } $2lh$
back	12 sq ft	4 ft by 3 ft	$l \times h$
right	15 sq ft	5 ft by 3 ft	$w \times h$ } $2wh$
left	15 sq ft	5 ft by 3 ft	$w \times h$

6. Write the formula for the surface area of a right rectangular prism with length l, width w, and height h.

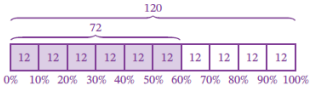
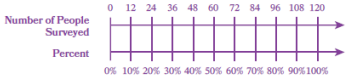


$SA = 2lw + 2lh + 2wh$

When solving word problems, students are encouraged to use both pictorial and abstract representations. They may self-select concrete tools.

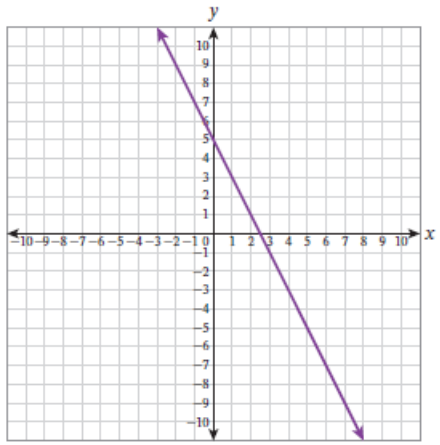
For example, in level 7 module 5, students are encouraged to self-select a strategy for solving percent problems. Students may select from many familiar arithmetic or algebraic strategies including modeling it with a tape diagram or double line, using mental math, or using an equation.

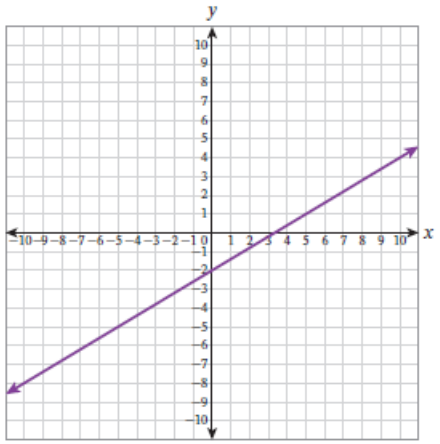
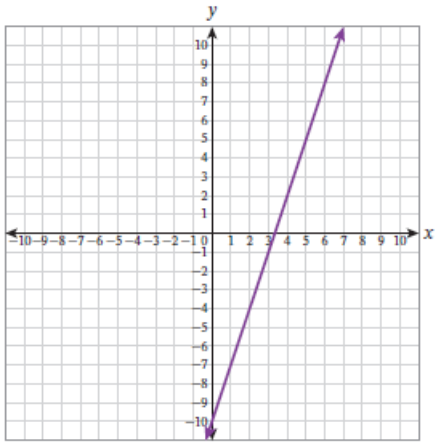
Strategies for Solving a Percent Problem

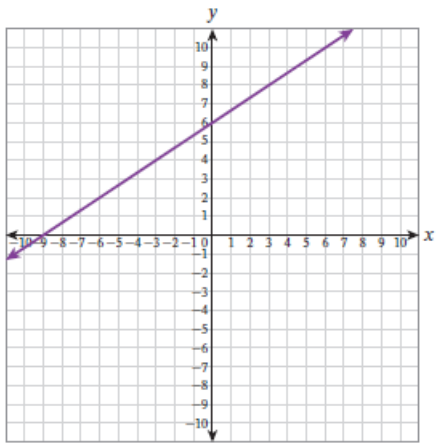
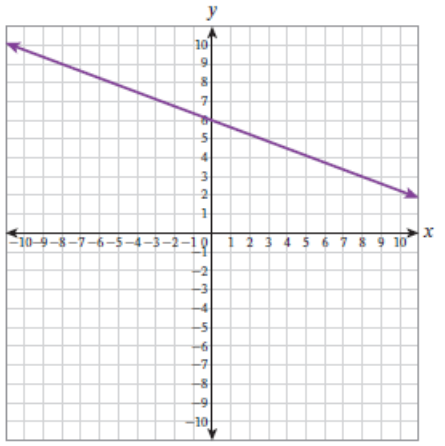
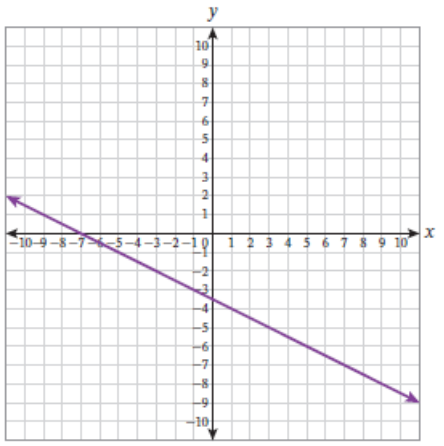
Arithmetic Approaches			Equation
Tape Diagram	**Double Number Line**	**Mental Math**	
		10% of 120 is 12, so 60% of 120 is 6(12), or 72. 72 people prefer carrots to celery.	$y = kx$

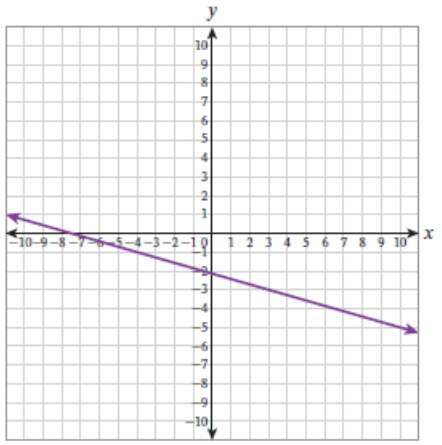
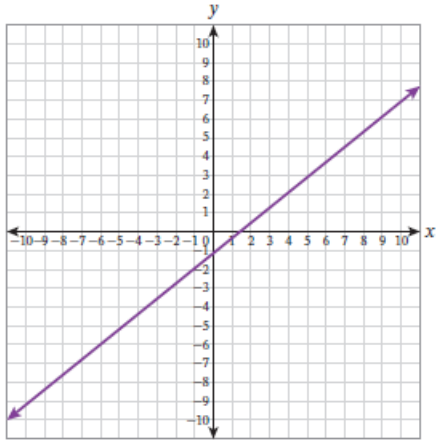
Simple-to-complex problem sequences in lessons and Problem Sets also support students' development of conceptual understanding by incrementally introducing new complexities, building on previous knowledge.

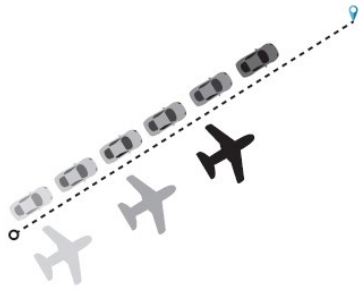
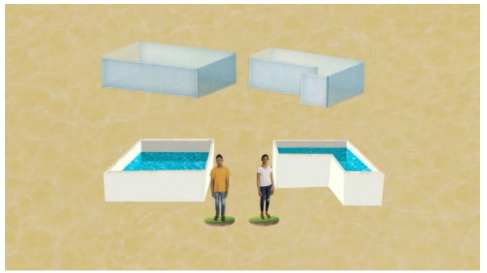
For example, these problems from level 8 module 4 lesson 25, which asks students to graph the equation, progress from simple to complex and include different complexities. These complexities include graphing equations given in different forms (slope-intercept form, point-slope form, and standard form) and graphing lines with positive, negative, and rational number slopes.

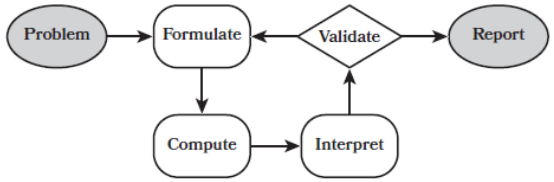
$y = -2x + 5$	

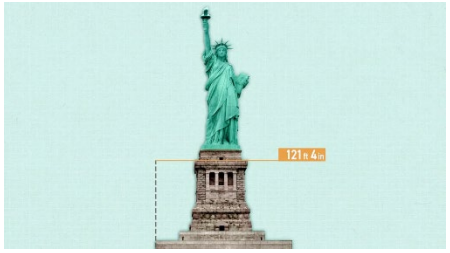
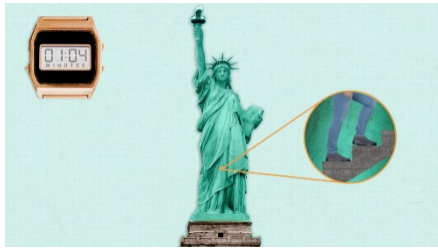
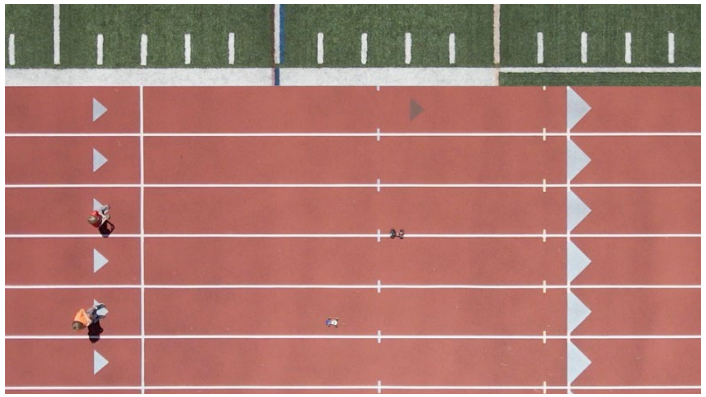
			$y = \frac{3}{5}x - 2$		
			$y - 2 = 3(x - 4)$		

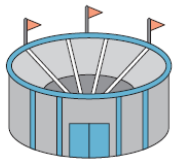
			$2x - 3y = -18$		
			$\frac{3}{4}x + 2y = 12$		
			$y = -0.5x - 3.5$		

			$y + 3 = -\frac{2}{7}(x - 3)$	
			$y - \frac{1}{2} = \frac{4}{5}(x - 2)$	
C. Curricular materials are designed so that students attain the procedural skills and fluency required by grade-level standards.	✓		The materials are designed so that students attain the fluencies and procedural skills required by the content standards. • Lessons include explicit instruction with conceptual understanding to achieve proficiency in procedural skills and to develop strategies for fluency of facts. • The beginning of each lesson has an optional Fluency activity that offers distributed skill practice to prepare students for the lesson. • Each lesson includes a set of practice problems, organized from simple to complex, targeting the lesson objective(s). This set of problems, called Practice, provides students with ample independent practice. • Each Practice includes Remember problems that distribute and interleave previously learned concepts and skills. At a minimum, each key concept returns 10, 30, 60, and 100 days after instruction. These problems provide skills practice that intentionally builds towards grade-level fluency expectations and anticipates upcoming skills or maintains previously learned grade-level skills. • Each module contains two Mixed Practice sets that interleave procedural skills and fluencies from the current and prior grade level.	

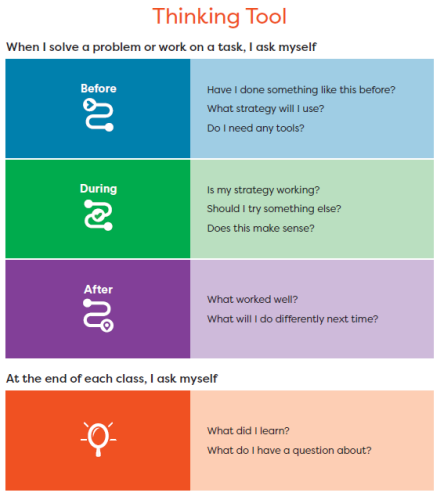
			• Each module also offers a bank of Sprints, which are designed to promote and develop fluency with targeted skills.
D. Curricular materials are designed to include a variety of frequent authentic application opportunities.	✓		Many lessons provide students with application experiences that move math off the page and into the world around them. For example, real-world contexts are used throughout each module both to motivate the learning of a new concept or skill and to provide opportunities to apply new learning. For example, students in level 8 consider the context of planning a trip and use what they know about linear equations to determine whether it will be quicker to fly to drive to their destination.  Throughout levels 6–A1 students are presented with situations that can be modeled with proportional relationships, like constant rate, equivalent measurements, batching, and percent. Wordless context videos present a real-world mathematical situation and create student-driven problem solving. This format provides opportunities for authentic problem-solving and helps students understand unfamiliar contexts. For example, these images from a video in level 6 portray two characters filling differently shaped pools with water. Students wonder which pool holds more water and use what they know about volume and composite volume to find the answer.   Students are familiar with the Read–Draw–Write process from K–5. This process evolves to the Read–Represent–Solve–Summarize process, which supports students in 6–8 as they make sense of word problems, choose and apply mathematics, solve, and summarize: Read the problem all the way through. Ask yourself: • What is this problem asking me to find? Then reread a chunk at a time. As you reread, ask yourself: • What do I know? Model the situation, possibly with tables, graphs, diagrams, and equations. Represent the problem by using your chosen model. Ask yourself: • What labels do I use on the table, graph, or diagram? • How should I define the variables? As you work, ask yourself: • Are the known and the unknown clear in the model?

			Add to or revise your model as necessary. Solve the problem. Determine whether your result appears to be a correct solution. Ask yourself: • Does my answer make sense? • Does my result answer the question? If not, revise your model or create a new one. Then ask yourself these questions again using your new result. Summarize your result and be ready to justify your reasoning. As students enter high school, the Read–Represent–Solve–Summarize process develops into the modeling cycle in Algebra I. Each of the labels in the chart summarizes a stage of the cycle. The fluid nature of the modeling cycle allows students to move through the cycle and repeat stages as needed to model and solve a problem.  Identify variables in the situation and select those that represent essential features. Formulate a model by creating and selecting geometric, graphical, tabular, algebraic, or statistical representations that describe relationships between the variables. Analyze and perform operations on these relationships to draw conclusions. Interpret the results of the mathematics in terms of the original situation. Validate the conclusions by comparing them to the situation, and then either improve the model or, if it is acceptable, Report on the conclusions and the reasoning behind them. Additionally, students often apply reasoning and mathematical thinking in open-ended modeling lessons. These tasks push students to ask questions, create models to represent real-world problems, and solve problems using self-selected tools and strategies. Modeling lessons in levels 6–A1 follow a similar structure. They begin by presenting a context, image, or video for students to notice and wonder about. Then, students generate questions. Narrowing in on a focus question, students consider what they know, and what they need to make assumptions about to answer the question. Students then work in groups to develop a model and apply their learning to answer the question. Tasks are open-ended and students are expected to approach the task in different ways. Students are given the opportunity to share their thinking and review how other groups went about answering the focus question. Groups are encouraged to share about any obstacles they encountered, and how they handled them. Honoring different approaches to problems and roadblocks provides for richer discussions about the concept and a more holistic understanding of the math. Example of these types of focus questions include the following:

				What is the elevation above ground level of the viewing platform in the crown of the Statue of Liberty?	 
				How much larger is the larger bike than the smaller bike?	 
				Whose car do you think will win the race?	

			Do you think Dave's Doughnuts should try to set a world record?	People attempt to set world records in a variety of categories. Some examples of records set include the largest pizza, the most decimals of pi memorized, the most hula hoops spun at the same time, and the largest gathering of people dressed as penguins. Sometimes companies or charities sponsor these record-setting events to promote a product or cause.  To introduce a new doughnut, Dave's Doughnuts has hired a marketing company. The company suggests holding an event to set a world record for the number of doughnuts covering a floor in a single layer in one location. The event would be held in an arena with a circular floor.  You work for the marketing company and must prepare a report to help determine whether this is a reasonable idea to present to the doughnut shop. Your report must include an estimate of the number of doughnuts needed and the total cost to make the doughnuts. Also include mathematical evidence such as tables, graphs, equations, and a clear explanation of your work.

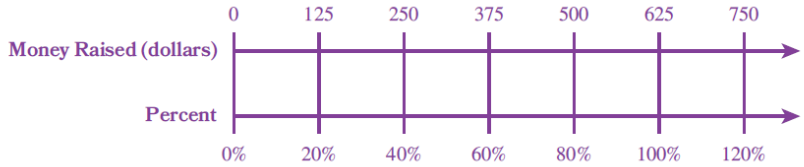
The Thinking Tool is an additional resource to guide student critical thinking and problem-solving strategies. The Thinking Tool is a scaffold to support students in developing and applying critical thinking and metacognitive skills. It provides a set of questions students can ask themselves before, during, and after engaging in a task, encouraging them to analyze their own thinking processes and strategies in real-time. Furthermore, the After prompts in the Thinking Tool challenge students to set goals for revising or refining their strategies and processes next time. Students refer to the Thinking Tool as the teacher models self-talk and self-questioning as part of a think-aloud.

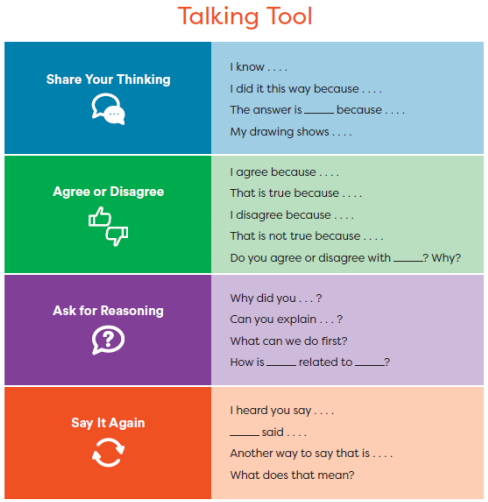


4. Standards for Mathematical Practice

A. Curricular materials support the standards' emphasis on mathematical thinking and reasoning.	✓		*Eureka Math*^{2} prioritizes attention to the Standards for Mathematical Practice (MPs) over the course of each year, addressing all eight MPs in each module. The MPs are practices necessary for students to reason mathematically, communicate conceptual understanding, and represent and solve problems. Rich tasks, development of flexible thinking, and frequent opportunities for student discourse encourage students to engage with the MPs during all lesson components. The Standards for Mathematical Practice (MPs) are intentionally woven into each lesson. Through explicit instruction and student-driven tasks, students consistently apply MPs to their daily work to build an enduring understanding of math. Curricular materials support the standards' emphasis on mathematical thinking and reasoning.

			Materials were designed to identify each practice standard in all six modules of each level or course. Every lesson includes at least one Standards for Mathematical Practice margin note that highlights an opportunity to promote the MPs and identifies how the activities or problems in the lesson meet the practice standard. In addition to citing an aligned practice, the callout provides student prompts that help teachers promote the practice. Because of the interconnected nature of the Mathematical Practices, engagement with one MP often leads to engagement with others. For example, students who are reasoning about the quantities in a problem (MP2) need to understand the meaning of the problem and the relationship of those quantities (MP1). Though a lesson typically engages students in multiple practices, usually only the one with the strongest alignment with lesson content is noted and promoted. Collectively, the instances in a level or course identifying student engagement in a particular math practice attend to the full meaning of the practice standard.
B. Curricular materials provide regular opportunities for students to engage in the full meaning of all the Standards for Mathematical Practice.	✓		The Promoting the Standards for Mathematical Practice margin notes in each lesson were intentionally crafted to attend to the full meaning of the practice standards and to build the habits of mind, such as problem solving, reasoning, and modeling, that the MP intends to shape or support. The bulleted questions in each MP margin note promote engagement in the practice, are written in grade-level appropriate language, and are coherent across grade levels. The following set of margin notes illustrate the coherence of MP3 across grade levels, which requires students to construct viable arguments and to critique the reasoning of others. **Promoting the Standards for Mathematical Practice** When students take a stand and decide which floor design appears bluer, and then listen to their classmates justify why they made their choice, they are constructing viable arguments and critiquing the reasoning of others (MP3). Ask the following questions to promote MP3: • Why does your strategy work? Convince classmates who made a different choice than you. • What questions can you ask a classmate who made a different choice to make sure you understand the classmate's reasoning? **Promoting the Standards for Mathematical Practice** When students justify each step of solving percent problems and listen to their peers' explanations, they are constructing viable arguments and critiquing the reasoning of others (MP3). Ask the following questions to promote MP3: • What parts of your partner's justification do you question? Why? • How would you change your partner's justification to make it more accurate? • Why does your strategy work? Convince your partner. **Promoting the Standards for Mathematical Practice** When students justify matching a graph to a context or analyze their partner's justification during collaboration, they are constructing viable arguments and critiquing the reasoning of others (MP3). Ask the following questions to promote MP3: • What parts of the context or graph do you question? Why? • What questions can you ask your partner to make sure you understand the reason they matched the graphs and contexts the way they did? • Why does your matching work? Convince your partner. **Promoting the Standards for Mathematical Practice** When students describe the error made by Lucas in the missing term problem and explain how to fix it, they are critiquing the reasoning of others (MP3). Ask the following questions to promote MP3: • What parts of Lucas's solution strategy do you question? Why? • Is your description of the error made by Lucas a guess, or do you know for sure? Explain. • How would you change Lucas's work to make it more accurate?
C. Curricular materials support teachers in developing their own understanding of the Standards for Mathematical Practice, the role of the practice standards in lessons, and guidance for implementation.	✓		Promoting the Standards for Mathematical Practice margin notes point out places in the lesson where teachers can enhance engagement and encourage student progress. Although most lessons offer opportunities for students to engage with more than one MP, each lesson identifies at least one focus MP. The notes provide lesson-specific information, ideas, and questions that teachers can use to deepen students' engagement with the focus MP. Often, the suggested questions for a particular MP intentionally repeat to support students' exposure to and understanding of the MPs within different contexts. The opening of each MP margin note supports teachers' understanding of the role of the practice standard in the designated part of the lesson by providing lesson-specific information about how the content aligns with the given standard.

D. Curricular materials connect content standards and practice standards in authentic ways.	✓		Lessons were written with content and practice standards in mind. At least one segment of every lesson includes the opportunity for students to engage in a MP. The connection between the practice standard and the content standard is made explicit through the margin notes, purpose statements, and facilitation guidance. For example, in level 6 module 1 lesson 25, students connect 6.RP.A.3c (Find a percent of a quantity as a rate per 100; solve problems involving finding the whole, given a part and the percent.) to MP1 (Make sense of problems and persevere in solving them) as they gather information and make a plan to solve a complex problem. **Promoting the Standards for Mathematical Practice** When students figure out what information is given and what is being asked and then find an entry point to solve multi-step percent problems, they are making sense of problems and persevering in solving them (MP1). Ask the following questions to promote MP1: • What do you think the problem is asking? • What steps can you take to start solving the problem? • What can you figure out about the whole by looking at a tape diagram or a double number line? 5. Lisa has raised \$750.00 for her favorite charity. This is 120% of her goal. How much extra money has Lisa raised so far?  Percent of goal: $120 \div 6 = 20$ and $20 \times 5 = 100$ Number of dollars raised: $750 \div 6 = 125$ and $125 \times 5 = 625$ Extra money raised: $750 - 625 = 125$ Lisa has raised an extra \$125.00.
5. Accessibility, Differentiation, and Engagement			
A. Curricular materials intentionally promote student engagement, student-to-student discourse, and student ownership of learning.	✓		Student engagement and mathematical discourse is promoted throughout *Eureka Math²* in various ways, including the following: In each lesson, Launch creates a need for the day's learning through sample student work, images, videos, instructional routines, or real-world problems. Throughout the lesson, students have access to materials and tools that promote engagement. For example, the *Learn* book contains removables, or pages meant to be removed from the student book, to insert in a whiteboard or use in group activities. These activities are designed for *Learn* also includes lesson pages that relate to the content so that students can fully participate in their own learning. Finally, if the lesson does not already use a pictorial or physical model, teacher notes often point out where students may choose from familiar tools to discover efficiencies, differences in precision, and new applications of tools to support their own learning. Rather than being completely made up of teacher-directed work, lessons help teachers facilitate student-driven learning. Many lessons and lesson segments have meaningful tasks that integrate students' interests, driving engagement and discourse, followed by a sharing of student understandings and work. The sample dialogue provides teachers with sample student responses as well as probing, assessing, and advancing questions to facilitate these discussions.

			Curricular materials provide opportunities for students to collaborate in a variety of ways, including a mix of whole group interactions, dynamic pairings and groupings, and independent work. Additionally, lessons use the 10/2 principle: for every 10 minutes of teacher-directed content, students are given time for processing and student-to-student discourse. Often this involves a think–pair–share or turn and talk. Digital lessons are engaging classroom experiences that provide students with the opportunity to get feedback from their peers, teachers, and the technology. These lesson center around eliciting and sharing student thinking and synthesizing knowledge in class discussions. Students work through activities on their devices, interacting with manipulatives, answering informal prompts, and testing their answers. Teachers thus get responses from all students as they monitor via the teacher dashboard (and in the classroom space). With this repository of student thinking represented at once, the teacher has the power to facilitate a rich discussion in the classroom and bring a variety of voices and ideas from their students, while still driving at the key math concepts of the lesson. Lessons employ instructional routines to support all students in engaging with and discussing mathematics with peers. These instructional routines foster a positive classroom community and provide a predictable environment for students to participate in mathematical discourse. The mathematical discourse and engagement with peers that the routines offer optimizes access, confidence, and belonging. Each routine presents a teachable set of steps that become familiar so that students develop comfort with these structures, allowing for gradual release of responsibility, even when working with new content. In addition to discussion-focused instructional routines, *Eureka Math²* provides support for student discourse and collaboration through the Talking Tool. The Talking Tool provides grade-level appropriate sentence frames to guide students as they engage in meaningful discussion with other students. The Talking Tool provides a point of entry for students to reflect on the class discussion and respond thoughtfully by explaining their thought process, expressing agreement or disagreement, asking for more explanation, or summarizing. The Talking Tool appears on the inside cover of the student-facing *Learn* books. The *Teach* book frequently also refers to the Talking Tool, recommending it as a scaffold for multilingual learners in Language Support margin notes. 
B. Curricular materials ensure all students can access grade-level mathematics. i. Lesson tasks provide	✓		Lesson components are designed with multiple points of entry, including low-floor, high-ceiling tasks, to promote engagement for all students. Fluency activities prepare students for the learning of the day and anticipate the learning of future lessons. Launch is often used to motivate the learning of new content. At times, Launch is used to explicitly connect prior knowledge to the day's learning. Launch is often crafted to be low-floor and high-ceiling, which provides access to learners at all levels. Lessons anticipate a variety of skill levels and background knowledge by using a variety of instructional approaches to reach all learners: a wordless video to reduce language barriers, an

multiple entry points into mathematics. ii. Curricular materials provide timely supports to assess and to address students' unfinished learning.			instructional routine that encourages discourse and debate, analysis of sample work to either identify an error or make connections among models, or an interesting real-world problem or image. *Eureka Math² Equip*™ ensures that teachers have the insight and resources to give all students access to grade-level content while bridging any gaps in prerequisite knowledge. Pre-Module Assessments are designed to identify gaps in foundational knowledge that could interfere with a student's success in the module. Each item on a Pre-Module Assessment assesses one piece of essential foundational knowledge for the module. When students use the digital version of the Pre-Module Assessment, the platform automatically generates class-level and student-level reports. The class-level report includes the names of students who need each piece of supporting content. Item-aligned supporting activities provide just-in-time short bursts of instruction to support the foundational knowledge gap identified by a Pre-Module Assessment item. Supporting activities are intended to be sprinkled into instruction just before students need the foundational knowledge. These activities can be used during or outside the math period. Because the targeted instruction is incorporated in the lesson, students make connections between previous learning and new content. These connections enrich the depth of the learning and ensure its permanence.
C. Curricular materials are designed with principles of Universal Design for Learning by providing multiple means of engagement, representation, and action and expression.	✓		*Eureka Math²* prioritizes equitable access for all students by using a teaching approach that provides every student an entry point to grade-level learning. Teacher–writers designed the curriculum around Universal Design for Learning (UDL) principles to provide multiple means of engagement, representation, and action and expression. CAST's Universal Design for Learning Guidelines (2018b) help educators design instruction that proactively reduces barriers to learning by designing for the predictable variability of all learners. Options that address learner variability are built into the lesson design and suggested at point of use in margin notes. Here is an overview of each guiding principle, its instructional implications, and an example from the curricular materials. Provide Multiple Means of Engagement: Learners differ markedly in the ways they can be engaged or motivated to learn. Therefore, we use a variety of methods to engage students. For example, lesson activities provide choice, address student interest, and arrange for students to monitor their own learning, such as with goal setting, self-assessment, and reflection. • According to CAST, "individuals are engaged by information and activities that are relevant and valuable to their interests and goals."[1] In a level 8 lesson, students compare the heights of different objects to begin a discussion about the powers of ten and scientific notation. Information is provided about several of the objects shown, and a margin note encourages teachers to select objects that spark student interest and use the information provided about the object to facilitate student conversations. Adjusting the exploration to focus on objects that are interesting to students provides options for recruiting interest by personalizing and contextualizing the content. • According to CAST, "feedback that orients students toward mastery and that emphasizes the role of effort and practice rather than 'intelligence' or inherent 'ability' is an important factor in guiding students toward successful long-term habits of mind."[2] In a level 7 lesson, students work on a problem with a partner by writing the expression as an equivalent addition expression and decomposing the mixed number. A margin note prompts teachers to provide feedback that focuses on students' application of strategies as they work. Offering timely, relevant, consequential, practical feedback and asking students to explain their choices provides options for sustaining effort and persistence. • According to CAST, "the ability to self-regulate … is a critical aspect of human development. While many individuals develop self-

[1] CAST.org, UDL Guidelines, Engagement, Checkpoint 7.2

[2] CAST.org, UDL Guidelines, Engagement, Research for Checkpoint 8.4

			regulatory skills on their own, many others have significant difficulties in developing these skills."[3] In a level 6 lesson, students evaluate expressions with addition, subtraction, multiplication, division, and exponents. Working with a partner, students utilize and make connections between different strategies. A margin note encourages teacher to provide feedback that promotes students' belief in themselves and emphasizes how finding and understanding errors can help students learn. Provide Multiple Means of Representation: Learners differ in the ways they perceive and comprehend information that is presented to them. To address this variance, *Eureka Math²* uses a variety of strategies, instructional tools, and methods when presenting information and content. • According to CAST, "information conveyed solely through sound is not equally accessible to all learners and is especially inaccessible for learners with hearing disabilities, for learners who need more time to process information, or for learners who have memory difficulties … . To ensure that all learners have access to learning, options should be available for any information, including emphasis, presented aurally."[4] In a level 8 lesson, students factor and use the properties of exponents to simplify numerical expressions and write exponential expressions by using the fewest number of prime bases. A margin note encourages teachers to display a chart of common squares and cubes to activate prior knowledge. Posting the chart provides options for perception by offering alternatives for auditory information and presenting the information in more than one mode. • According to CAST, "classroom materials are often dominated by information in text. But text is a weak format for presenting many concepts and for explicating most processes. Furthermore, text is a particularly weak form of presentation for learners who have text- or language-related disabilities."[5] In a level 6 lesson, students write ratios and find rates by using multiple representations of ratio relationships including with ratio tables and double number lines. Working with a partner, students analyze the representation to determine what information the representation provides. Then students use the representation to solve the problem. Visual representations are an example of an evidence-based practice, helpful for many students, particularly those with learning disabilities. • According to CAST, "learning can be cognitively inaccessible when it requires the ability to select and prioritize among many elements or sources, and where there are no options for individuals who differ in that capability. One of the most effective ways to make information more accessible is to provide explicit cues or prompts that assist individuals in attending to those features that matter most while avoiding those that matter least."[6] In an Algebra I lesson, students use a graphic organizer to highlight the relationships associated with the addition property of inequality and the multiplication property of inequality. Throughout the lesson, students complete each section of the graphic organizer by adding examples. Graphic organizers are another example of the evidence-based practice of using visual representations (IRIS Center 2021), as they provide options for comprehension by emphasizing key ideas and relationships. Provide Multiple Means of Action & Expression: Learners differ in the ways they can navigate a learning environment and express what they know. *Eureka Math²* offers students a variety of strategies and instructional tools that allow for multiple ways to demonstrate new understanding. • According to CAST, "learners differ widely in their capacity to navigate their physical environment. To reduce barriers to learning that would be introduced by the motor demands of a task, provide alternative means for response, selection, and composition."[7] In a level 7 lesson, students use a dot plot to record data. Margin notes in this lesson suggest providing a template with the title and number line prelabeled to reduce the fine motor demands of creating the dot plot. • According to CAST, "there is a tendency in schooling to focus on traditional tools rather than contemporary ones. This tendency has

[3] CAST.org, UDL Guidelines, Engagement, Guideline 9
[4] CAST.org, UDL Guidelines, Representation, Checkpoint 2
[5] CAST.org, UDL Guidelines, Representation, Checkpoint 2.5
[6] CAST.org, UDL Guidelines, Representation, Research for Checkpoint 3.2
[7] CAST.org, UDL Guidelines, Action & Expression, Checkpoint 4.1)

<table>
<tr>
<td></td>
<td></td>
<td></td>
<td>several liabilities: 1) it does not prepare learners for their future; 2) it limits the range of content and teaching methods that can be implemented; 3) it restricts learners' ability to express knowledge about content (assessment); and, most importantly, 4) it constricts the kinds of learners who can be successful. Current media tools provide a more flexible and accessible toolkit with which learners can more successfully take part in their learning and articulate what they know."[8] In an Algebra 1 lesson, students study an animation of a person jumping on an in-ground trampoline. Using the digital platform, students sketch a graph that models the elevation of the person as a function of time. Then they compare their sketch to the actual graph. Using the digital tool provides options for expression and communication by allowing students to show what they know in a flexible and nontraditional way.

• According to CAST, "learning can be inaccessible when it requires planning and strategy development, and where there are no options for individuals who differ in such executive functions. Young children, older students in a new domain, or any student with one of the disabilities that compromise executive functions (e.g., ADHD, ADD, Autism Spectrum Disorders) often are weak at planning and strategy development and impulsive trial and error dominates their learning."[9] In an Algebra 1 lesson, students graph a linear inequality by graphing the boundary line and then testing to identify the half-plane that contains the solutions. A margin note prompts teachers to provide guiding questions to support students in planning, monitoring, and evaluating their progress.</td>
</tr>
<tr>
<td>D. Curricular materials provide scaffolds and instructional supports for multilingual learners.</td>
<td>✓</td>
<td></td>
<td>*Eureka Math²* writers relied on language development research to outline and build in language support needs for multilingual learners to engage with the language-rich lessons. With the goal of supporting the clear, concise, and precise use of reading, writing, speaking, and listening in English, *Eureka Math²* supports multilingual learners through each lesson's instructional design. It does this by including instructional best practices, support for mathematical discourse, as well as support for the different tiers of terminology. Additionally, Language Support margin notes provide just-in-time, targeted instructional recommendations to support multilingual learners.

Instructional Best Practices in *Eureka Math²*

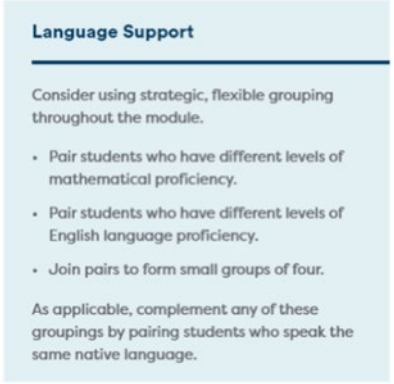
<table>
<tr><th>Practice</th><th>*Eureka Math²*</th></tr>
<tr><td>Activate prior knowledge (mathematics content, terminology, contexts)</td><td>The daily Fluency and Launch lesson components activate prior knowledge to prepare students for new learning. Context videos demonstrate math concepts in a concrete or real-world context.</td></tr>
<tr><td>Provide multiple entry points to the mathematics</td><td>Recurring Notice and Wonder routines and frequent open-middle tasks and open-ended modeling lessons provide multiple points of entry for students to participate. The inclusion of fine art and Math Past history components engages students with math in the real world.</td></tr>
<tr><td>Use clear, concise student-facing language</td><td>Readability guidelines ensure that words are never an obstacle to math learning.</td></tr>
<tr><td>Provide strategic active processing time</td><td>Frequent mathematical discourse, core instructional routines, and the 10/2 principle expand opportunities for students to synthesize and process new information.</td></tr>
</table>
</td>
</tr>
</table>

[8] CAST.org, UDL Guidelines, Action & Expression, Checkpoint 5.2

[9] CAST.org, UDL Guidelines, Action & Expression, Research for Checkpoint 6.2

Illustrate multiple modes and formats	Varied physical and visual models, such as digital interactives, context videos, and graphic organizers, help students make connections and deepen understanding.
Provide opportunities for strategic review	Daily fluency activities, distributed practice Remember problems, Exit Tickets, and comprehensive assessments provide frequent opportunities for strategic review.

A Language Support margin note appears at the first lesson of every module to prompts teachers to consider using strategic, flexible grouping in each activity of the entire module to support multilingual learners. These grouping suggestions invite teachers to use students' funds of knowledge and home language by pairing students in different ways. Each of these different ways of pairing students has different benefits for multilingual learners.



Mathematical Discourse

To support multilingual learners, lessons provide ample authentic and engaging opportunities for students to read, write, speak, and listen. *Eureka Math²* supports teachers to create language-rich classrooms by modeling teacher–student discourse and by providing suggestions for supported student-to-student discourse. Since curricula in general have an abundance of receptive language experiences (reading and listening), *Eureka Math²* focuses specific supports on language production (speaking and writing) in mathematics.

The core instructional routines that promote discourse are aligned with Stanford's Language Design Principles of supporting sense-making, optimizing output, cultivating conversation, and maximizing linguistic and cognitive meta-awareness.[10]

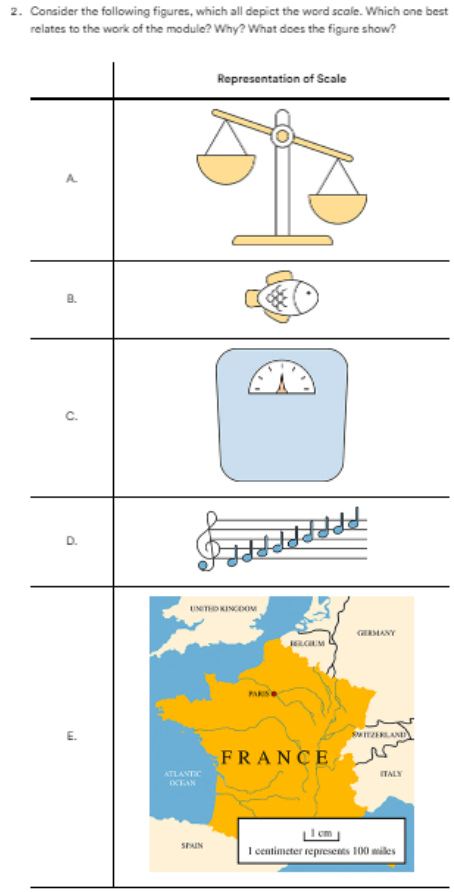
Eureka Math² periodically includes Language Support notes that suggest sentence frames and sentence starters to support multilingual learners in student-to-student discussions, such as those used in instructional routines. In addition, the Talking Tool contains general sentence frames and sentence starters. The Talking Tool is referred to in Language Support margin notes during times of student-to-student discourse.

Terminology

Eureka Math² lessons give students experience with a new mathematical concept before naming it with a precise mathematical term. Students may see a mathematical concept come to life in a digital interactive, participate in an activity like a card sort in groups, or use an instructional routine to engage in mathematical discourse before the teacher gives that concept a name. In addition, teachers are provided with educative guidance, either in the body of the lesson or in a Language Support margin note, to support students with pairing the written term with a visual representation.

Eureka Math² highlights domain-specific terms from previous lessons in the current lesson, along with instructional recommendations for supporting those terms. These instructional recommendations focus on previewing the meaning of the terms before students are expected to interact with them in the mathematics of the lesson. Additionally, domain-specific terms from previous lessons are also supported by pairing the

[10] Zwiers et al. 2017.

			written term with a visual representation. For each grade level, teacher–writers considered the academic verbs needed to engage with the mathematics. Each level in *Eureka Math²* offers a list of small, targeted academic verbs that appear in the lessons for students to preview before they are expected to understand and use the language. For example, before students are asked to *prove* in level 9 or *validate* in Algebra 1, lessons preview the meaning of each academic verb, supporting the meaning of the term in a class discussion emphasizing the use of synonyms of that term. Multiple-meaning terms encompass homophones like *very* and *vary,* and homographs, like *scale* and *scale*, and other pronunciation-based challenges, like the difference between *approximate* (as an adjective, as in, What is the *approximate* value?) and *approximate* (as a verb, as in, *Approximate* the sum.). The teacher–writers of *Eureka Math²* examined lessons for multiple-meaning terms that could affect multilingual learners' understanding of the mathematics and included Language Support notes to preview the meaning of such terms in the lesson. These previews include pairing a term with a visual, with real items, with a video, or with differentiated usages, to highlight the different meanings of the term and emphasize the specific meaning used in the lesson. 
E.	Curricular materials provide differentiation suggestions for support and challenge.	✓	*Eureka Math²* embeds differentiation through the simple-to-complex sequencing of lesson and practice problems. This logical sequence gradually reduces supports and builds in complexity, allowing teachers to differentiate assignments for either individual or small-group work. For all students, the gradual reduction of supports and increase in complexity builds independent thinking and encourages productive struggle. Toward the end of the Learn segment, for example, problems are often multi-step application problems at Depth of Knowledge (DOK) levels 3 and 4 and integrate two or more standards and/or MPs. Lessons provide differentiation suggestions at the point of instruction to support a wide variety of learners. Differentiation margin notes found in the *Teach* book offer guidance for adapting instruction so that all students can successfully access grade-level content. There are two types of Differentiation margin notes: Support and Challenge. Support boxes recommend scaffolds to support the learning of striving students, while Challenge boxes suggest ways to keep more advanced students engaged by providing opportunities for extending the concepts in the lesson.
F.	Curricular materials attend to social and	✓	High-quality rigorous mathematics instruction incorporates social-emotional competencies in student learning and engagement. *Eureka Math²* intentionally promotes the five core competencies of social and emotional learning (SEL): self-awareness, self-management, social

emotional learning (SEL) competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making.			awareness, relationship skills, and responsible decision-making. Core social and emotional learning competencies can help students develop as learners, classroom community members, and mathematicians as well as become college- and career-ready. *Learn*, the student edition, provides each student with a Thinking Tool and Talking Tool to support them as they work toward independently solving problems, metacognitively evaluating their progress and understanding, and interacting with others productively during collaborative work and class discussions. Each of the core instructional routines is aligned with the SELs: • Math Chat: Self-awareness, self-management, social awareness, responsible decision-making • Always Sometimes Never: Self-awareness, self-management, social awareness, relationship skills, responsible decision-making • Which One Doesn't Belong? : Self-awareness, self-management, social awareness, responsible decision-making • Co-Construction: Self-awareness, self-management, social awareness, relationship skills, responsible decision-making • Critique a Flawed Response: Self-awareness, self-management, social awareness, relationship skills, responsible decision-making • Take a Stand: Self-awareness, self-management, social awareness, relationship skills, responsible decision-making • Five Framing Questions: Self-awareness, self-management, social awareness, responsible decision-making • Stronger Clearer Each Time: Self-awareness, self-management, social awareness, relationship skills, responsible decision-making • Numbered Heads: Self-awareness, social awareness, relationship skills, responsible decision-making The curriculum makes clear connections among SEL competencies and the skills called for by the Standards for Mathematical Practices. For example, when students make sense of problems and persevere in solving them (MP1), they must be aware of their own strengths and knowledge to look for an entry point (self-awareness), regulate their behavior to consider solution pathways before solving (self-management), appraise their work and time as they evaluate their progress (self-management), and listen to and respond to others' approaches (social awareness). See section 4 of this rubric for more information on MPs.
G. Curricular materials are inclusive and reflect diverse cultures, ethnicities, and demographics.	✓		At Great Minds, we know that every child is capable of greatness, and we want all students to visualize themselves as mathematicians in their classrooms, today and throughout their future. Teacher–writers from across the country wrote *Eureka Math*^{2} to reflect the diverse experiences and backgrounds of students in today's classrooms. *Eureka Math*^{2} is an inclusive mathematics curriculum that represents diverse doers of math. The curriculum's images, fine art, and pictures of people represent diversity, and problems and exercises relate to real-life experiences, perspectives, and contributions of people from various cultures, ethnicities, and gender identities. These representations reject the stereotypes and biases that have excluded many students from mathematical learning and instead champion a more robust and inclusive view of what a mathematician can look and act like. Representing a diverse array of doers of mathematics in the curriculum inspires all students to think of themselves as mathematicians. For example, *Eureka Math*^{2} includes various mathematical activities that involve counting on hands or simulating a number line with one's fingers. In images throughout the curriculum, care was taken to include different skin tones and body types to model these gestures and movements. Additionally, students of various abilities are depicted throughout the curriculum.

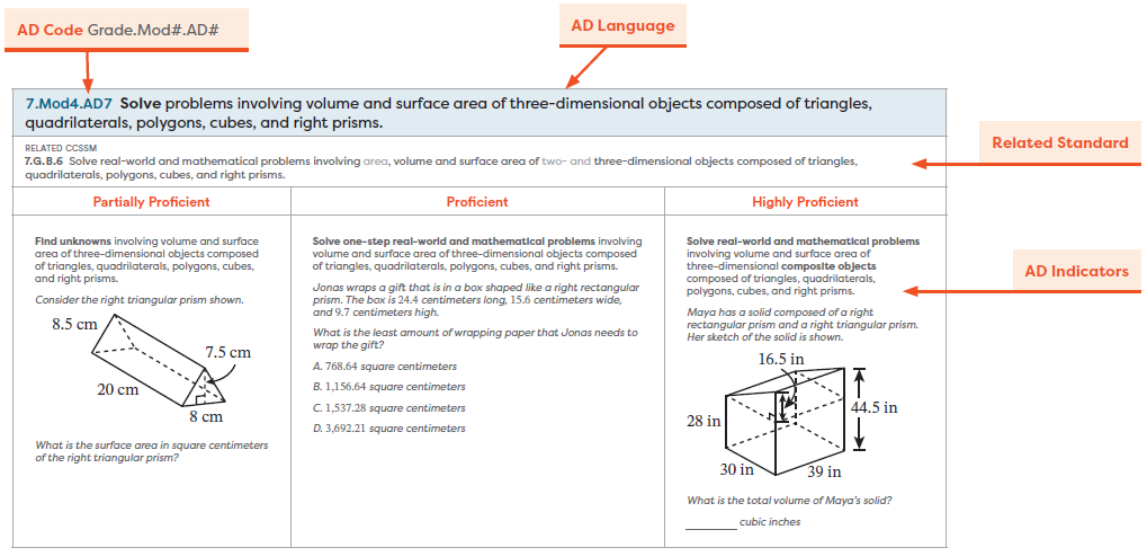
			 The context videos feature unique characters that students will get to know, relate to, and ultimately see themselves in. Students observe the characters as they experience struggle, curiosity, achievement, pride, and even joy in the act of being mathematicians. When creating the characters for the videos, the *Eureka Math²* writers asked, How can we help students engage in and relate to the mathematics in this lesson? Who needs to see themselves represented? Who needs to see themselves as a mathematician? The presence of realistic characters in a mathematical context helps students visualize the act of math in everyday life. Students come to more readily realize that they too are mathematicians, and that math surrounds them. Further, the names used in word problems and as sample students in the lesson sample dialogue are intentionally diverse to represent the wide variety of students who use the curriculum. The names in student-facing word problems are also designed for readability to ensure that they are not a barrier to accessing the math. To honor the contributions of many cultures to the development of math and to help all students see mathematicians of diverse cultures, identities, and abilities who look like them, *Eureka Math²* includes an exciting new curriculum component, Math Past. Math Past explores the history of big ideas that helped shape the mathematics in each module. It frames mathematics as a human endeavor by telling the story of the discipline through artifacts, discoveries, and other contributions from cultures around the world. Math Past counters the traditional Eurocentric perspective and celebrates the many contributions of Black, Indigenous, and People of Color communities to the history of mathematics. Students draw on their own experiences in discussion. Each lesson invites students to participate in whole group dialogue, drawing on familiar experiences to inform their responses. Engaging word problems, accessible and engaging tasks, and videos throughout the curriculum relate mathematics to the experiences of students' own lives. Contexts are limited to those that are often relatable by most students, and new or less relatable contexts are supported through images, videos, or margin notes.
H. Student facing-materials are visually engaging, accessible, and readable.	✓		At Great Minds®, we believe that all students should see themselves as mathematicians and be able to engage with math text such as problem directions and word problems. Curricular materials are developed to be rigorous as well as readable and accessible so that all learners can focus on building math knowledge and understanding. Students who are reading below level, readers with dyslexia, multilingual learners, students with processing challenges, and students overwhelmed by dense print, among others, all benefit from the increased accessibility and readability of the text. *Eureka Math²* teacher–writers followed these guidelines to ensure the curriculum provides support for striving readers: • Use concise text with shorter sentence lengths. • Avoid contexts with less familiar multiple-meaning words (e.g., *consume*, *yield*, *log*, *revolutions*) and similar-sounding words (e.g., *sale*, *sail*). • Introduce content-critical terminology in context to help students build understanding. • Limit the introduction of new terminology that is not related to content. When language support for a new nonmath content term is needed, an image or video accompanies the problem. • Repeat use of familiar contexts and terminology so students spend less time making sense of context and more time on the math. • Repeat decodable names throughout the curriculum. • Optimize multiple layout components to optimize the student experience, including chunked blocks of text; images; increased white

			space; bullets, tables, and headings; and easily readable fonts and font sizes. • Use a readable font in print materials. • Include plenty of white space for students to work and show their thinking through numbers, pictures, or words.
6. Assessment Program			
A. Curricular materials include frequent and varied and comprehensive assessments. i. Summative assessments, taken as a whole, include opportunities for students to demonstrate the full intent of grade-level standards. ii. Formative assessments support teachers in determining whether students met the objective(s) of the lessons and topics. iii. Assessment items include a combination of tasks that require students to demonstrate conceptual understanding, procedural skill and fluency, and application.	✓		All *Eureka Math²* assessments formative because the assessments are intended to inform instruction. Assessments may also be summative to produce a grade or report that becomes part of a student, school, or district record. On its own, a single assessment does not show a complete picture of student progress. For example, a short assessment might use a single question to assess part of a standard, thus producing a limited perspective. A combination of assessments and data can be used to generate a complete picture of student learning or to produce a grade for the subject or course. Each assessment is aligned with module-level Achievement Descriptors (see criteria 6.B) which encapsulate either all or part of a grade-level standard. This alignment ensures that the assessments reflect the balance of the standards as presented in the materials. The assessment system helps teachers understand student learning (what they know and can do) by generating data from many perspectives. The system at levels 6 through Algebra 1 includes • lesson-embedded Exit Tickets, • Topic Quizzes, • Pre-Module Assessments, • Module Assessments, and • Benchmark Assessments. Exit Tickets are short, paper-based assessments that close lessons. They use at least one problem, question, or writing prompt to assess whether a student learned the basic skills and ideas needed for success in upcoming lessons. Items reflect the minimum proficiency that students must demonstrate to meet the lesson objective(s). Typical Topic Quizzes consist of four to six items that assess proficiency in the major concepts from the topic. Topic Quizzes include Depth of Knowledge (DOK) 1 and 2 items. Each Topic Quiz has three analogous digital versions; unused versions can be used for extra practice and/or retakes. Typical Module Assessments consist of six to ten items that assess proficiency with the major concepts, skills, and applications taught in the module. The concepts on Module Assessments represent the primary content, but they may not assess all the standards taught in the module. Module Assessments include DOK 1, 2, and 3 items. Each Module Assessment in levels 6 through Algebra 1 as two analogous digital versions; unused versions can be used for extra practice and retakes. Each Benchmark Assessment covers the content of two modules and provides insight about students' proficiency with the content over time. Three Benchmark Assessments are available for each level. Every Benchmark Assessment addresses all the Achievement Descriptors, or ADs, from the two covered modules. The second and third Benchmark Assessments include additional items that address a selected set of ADs from the previous two modules. The selected set of ADs is composed of standards that align with the major work of the level. Digital assessment items include a variety of item types, including selected response (e.g., multiple choice, choice matrix, drop-down list), technology-enhanced (drag-and-drop, hotspot, graphing, plotting), and constructed response items. Paper-based assessments in levels 1 and 2 also

iv. Assessment item types require students to produce a variety of answers and solutions (arguments, explanations, representations, etc.)			have a variety of question types including short answer, open-ended, and multiple select. Answer keys offer distractor rationales for multiple choice and multiple select items, giving teachers insight into possible reasons for a student to choose an incorrect response. Before developing curriculum assessments, assessment writers conducted thorough research into the item types and assessment architecture used in the PARCC and Smarter Balanced assessments and SATs, as well as in many state-level standardized tests. Additionally, items and assessment sequencing are aligned with the Cognitive Complexity Framework.
B. Assessment materials provide sufficient guidance for interpreting student performance and guiding instructional decisions.	✓		*Eureka Math*^{2} features a new resource called Achievement Descriptors (ADs). ADs are standards-aligned descriptions that detail what students should know and be able to do based on the point of instruction. ADs are written using portions of standards to form a clear, concise description of the learning covered in each module. Each module has its own set of ADs; together, the sets of ADs describe what students should accomplish by the end of the year. ADs support teachers in interpreting student work in both assessments and through informal observations. The Achievement Descriptors Overview in the *Teach* resource describes the ADs and the standard(s) addressed in each module. At the end of each module's *Teach* book, the Standards resources contain Achievement Descriptors graphics with Proficiency Indicators that describe the Achievement Descriptor, the standard with which it aligns, and indicators that a student is partially proficient, proficient, or highly proficient in that standard. At the lesson level, the Lesson at a Glance on the first page of every lesson in the *Teach* book includes an Achievement Descriptors section that cites the Achievement Descriptors and standards that are addressed in that day's lesson.

ADs have the following parts:

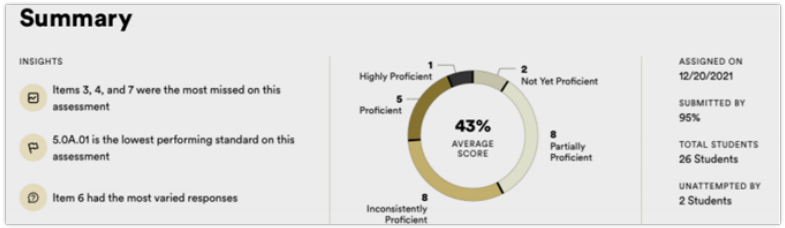
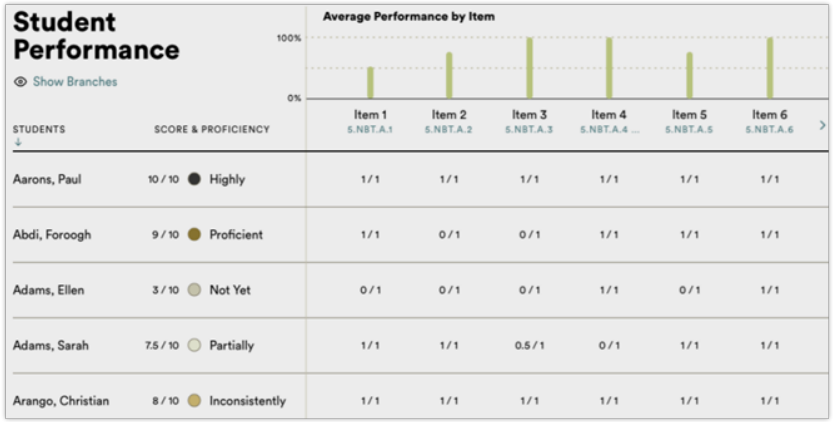
- **AD Code:** The code indicates the grade level and the module number and then lists the ADs in no particular order. For example, the first AD for grade 7 module 1 is coded as 7.Mod1.AD1.
- **AD Language:** The language is crafted from standards and concisely describes what will be assessed.
- **AD Indicators:** The indicators describe the precise expectations of the AD for the given proficiency category.
- **Related Standard:** This identifies the standard or parts of standards from the Common Core State Standards that the AD addresses.



Furthermore, *Eureka Math*^{2} includes tools for analyzing and interpreting assessment data to measure student progress and guide lesson planning decisions. Assessment Reports interpret results, providing analysis such as the most missed items, the lowest performing standard, and the item with the most varied responses. The digital assessment reporting platform offers the following reporting features:

Teacher Reports

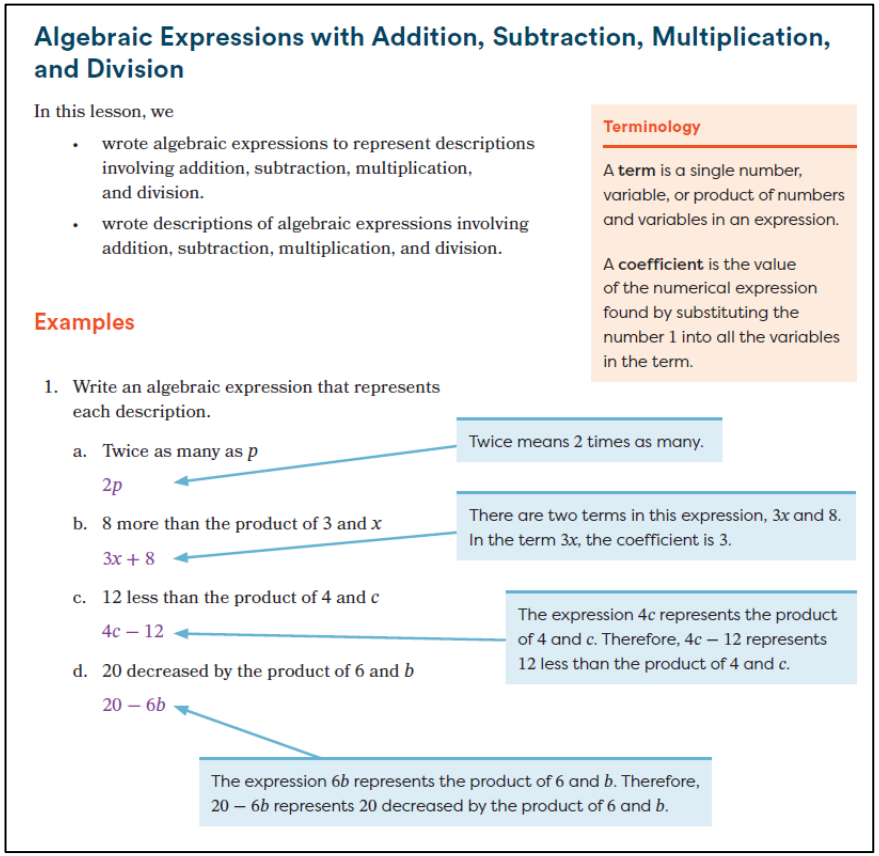
- Class-Level Reports include reporting on the recent assessments completed by a particular class and assessment performance by class.
- Single Assessment Reports show which students have completed the assessment, average score, average performance by item, and a student-level breakdown of performance by item.
- Standards Mastery Reports show students' performance on all standards that have been assessed. The teacher can filter for a specific assessment or a group of assessments/all assessments for a view of overall student mastery of standards over time.

			• Student Performance Reports provide details on an individual student's assessment performance compared to the class average.  Student Reports • Students have access to reports and can review their responses, scores, and any feedback provided by the teacher. • Student-level reports can be downloaded and sent to parents.  Administrator Reports • These reports allow administrators to view school- and district-level performance data. When items must be hand-scored, whether they are given digitally or in a paper-and-pencil format, guidance is provided in the assessments' Sample Solutions and Scoring Guide. Practice problems allow students the opportunity to self-assess and provide teachers the opportunity to informally assess students' conceptual understanding, procedural skill and fluency, and application skills.
7. Teachability and Digital Integration			
A. Curricular materials include embedded and external professional development.	✓		Professional Development is available to *Eureka Math²* implementers in many forms, including embedded supports in *Teach,* digital resources, coaching and implementation services, and many professional development sessions. One of the great strengths of *Eureka Math²* is its educative nature and its usefulness as point-of-use professional development. Extensive teacher notes throughout the curriculum provide explanations of important mathematical concepts and discussions about pedagogy, language, notation,

i. Materials support teacher learning and understanding of mathematical concepts, the progression of learning, and instructional pedagogy. ii. Materials include standards alignment information and explain the role of the standards in the resources.			lesson planning, and common student misconceptions. The *Teach* book includes module and lesson study tools for teachers. The Module Overview explains the development of the mathematics in each topic of the module and highlights connections to work that occurs before and after the module, helping teachers to understand the module's place in the overall development of learning in and across grade levels. The Module Overview also includes a Why section. This section highlights and explains elements of the mathematics in the module. It also gives insight into the pedagogical decisions the authors made. The Why section helps teachers understand the underlying structure of the module, including the flow and coherence of the content. Each topic begins with a Topic Overview. The Topic Overview explains the mathematics and the major learning in the topic, and it typically includes information about how learning connects to previous or upcoming content. Lesson Progressions charts highlight student work and language aligned with each objective. Modeled student–teacher sample dialogue and sample student responses in each component of each lesson provide teachers with a picture of how the lesson might look and sound while creating a clear conceptual understanding of the pedagogical content knowledge for the teacher. This sample dialogue is intended as a helpful guide, not a script. The Standards resource lists the content standards associated with each module as well as the Standards for Mathematical Practice. Achievement Descriptors (ADs) provided for each module are standards-aligned descriptions that detail what students should know and be able to do based on instruction they receive.
B. Curricular materials include support for implementation. i. The materials are visually engaging, easy to use, and well organized for students and teachers. ii. Materials provide information about how to plan and prepare lessons. iii. Materials provide	✓		The *Teach* and *Learn p*rinted books help teachers facilitate student learning both inside and outside the classroom. The *Teach* book and accompanying digital resources contain all the information a teacher needs to study and prepare for instruction. Similarly, the *Learn* book and accompanying digital resources have all the resources a student needs to be successful when learning grade-level concepts. The Great Minds® Digital Platform grants teachers access to the full *Eureka Math²* experience, including the contents of *Teach* and *Learn* and additional resources like *Equip* and the assessments. This collection of resources uses consistent naming to assist with navigation. For example, all levels have six modules which are broken into topics and lessons. The visual design of the resources is consistent, engaging, and focused. The *Teach* book is spiral-bound. Quality color images are used throughout in visuals, models, and sample solutions. The Overview in each *Teach* book is a summary of the module by topic. It shows the development of learning over the module. The Overview identifies connections to work that occurs before the module and after the module, which supports the understanding of the module's place in the overall development of learning in and across the grade levels. The Why section of the Overview gives teachers insight into the decisions that authors made when writing the module. This insight helps teachers understand the underlying structure, flow of content, and coherence of content between modules and grade levels. The Topic Overview is a summary of the development of learning over each topic. It typically includes information about how learning connects to previous or upcoming content. It also includes a Progression of Lessons table that shows how students engage with each lesson objective over the course of the topic. Each lesson begins with two pages of information to help teachers prepare to teach the lesson. To guide lesson planning and instructional delivery, each lesson begins with a lesson overview that includes the Lesson at a Glance, a snapshot of the lesson framed through what students should

guidance for instructional delivery, including questions to prompt student thinking and expected student outcomes.			know, understand, and do while engaging with the lesson. The lesson overview also features one or more Key Questions, which encapsulate the key learning of the lesson and develop coherence or connections to other concepts or a deeper understanding of a strategy or model. These questions help teachers focus instruction and guide classroom discourse, and students discuss them to synthesize their learning during the Land section of the lesson. In addition, each lesson includes at least one student objective and the lesson overview defines clear student outcomes for each lesson by including a preview of the Exit Ticket and the Achievement Descriptors. The lesson overview also details which teacher and student materials are needed for delivery of the lesson, as well as what teachers must prepare in advance of teaching the lesson. The module's Materials resource lists items that teachers and students need for the module facilitating module and year-long planning. Each lesson's facilitation includes sample dialogue that represents how the teacher and students in a classroom might explore concepts and problems and gives a sense of how instruction might look and feel. The sample dialogue helps teachers identify lines of questioning that advance students toward the objective(s), determine when and how to use precise terminology, or navigate content that might be new or challenging to teach or learn. The sample student responses given in the lesson facilitation give teachers guidance about possible student ways of thinking and the variety of possible student responses. Six types of instructional guidance appear in the margin of lessons. Teacher Notes communicate information that helps with lesson implementation (e.g., enhance mathematical understanding, explain pedagogical choices, give background information, support student thinking). Margin notes also have information related to Universal Design for Learning (UDL), Language Support, Differentiation, Standards for Mathematical Practice, and Math Past. The *Eureka Math²* Implementation Guide™, a free digital resource, is Great Minds' comprehensive guide for teaching the curriculum. The resource provides a detailed lesson preparation method to help teachers connect all lesson components organically and to anticipate any classroom challenges. It provides a detailed overview of all curriculum components, as well as guidance for lesson preparation, sample dialogue, best practices for classroom culture, effective delivery of instructional routines, pacing guidance, and assessment overviews. Digital resources are intuitive and easy to use. They include a Help Center that contains articles that support teachers with navigating the digital and print resources.
C. Curricular materials can be completed within a regular school year and guidance about the amount of time lessons and tasks may take is provided.	✓		Each grade level in *Eureka Math²* is organized into six modules that contain a total of about 130 lessons, along with 30 more days for assessment and responsive teaching. Optional lessons are included in the total number of lessons and are clearly designated. Lessons may be optional for the following reasons: • The lesson is primarily for enrichment. • The lesson offers more practice with skills, concepts, or applications. • The lesson bridges gaps between standards. Lessons are designed for the average length of an instructional period, 45 minutes. All lessons are designed for one instructional period. To provide pacing guidance in the lesson, the Lesson at a Glance in the *Teach* book contains an Agenda for each lesson, detailing the amount of time each lesson component should take. Furthermore, the *Eureka Math²* Implementation Guides contain a Year at a Glance section which outlines the modules and lessons in a year at each grade level and provides pacing suggestions for each grade-level band.
D. Curricular materials provide caregivers with resources to	✓		Great Minds realizes that parents and family members are students' biggest advocates and therefore works to keep them engaged in the learning process. Each lesson in students Learn book contains a Recap. The Recap lists the keys ideas from the lesson, definitions for any new content terminology

support student academic progress.			and relevant formulas. It also includes worked out problems that are similar to those in the Practice with call out boxes throughout that help students understand the solution. The lesson Recaps serve as a useful review tool for students, as well as a guide for caregivers who are supporting their student at home. In addition, this resource supports students in their at-home learning and are useful for anyone supporting the child's learning including family members, tutors, and special educators.
E. A user-friendly online platform provides always-on access to curricular materials and additional resources.	✓		The Great Minds Digital Platform grants teachers access to the full *Eureka Math²* experience. The *Teach* and *Learn* print books help teachers facilitate student learning both inside and outside the classroom. A streamlined, interactive digital platform makes it simple to access and navigate *Eureka Math²* teacher and student materials and resources online. The Great Minds Digital Platform supports effective planning, instruction, and assessment throughout the school year. Educators can view and access all levels of the *Eureka Math²* curriculum via the platform. For each level, all the resources in the print *Teach* book are in a digital format that offers additional features not available in print. While planning and reflecting, educators can highlight and take notes in the digital version of *Teach* to note customizations for individuals or groups or to reflect on for future years. In addition to accessing all lesson plans and resources, teachers can assign student pages as PDFs, launch digital assessments, access assessment reports, and provide student feedback. The platform also includes lesson presentation slides that include images, student pages, videos, and digital interactives. Digital resources for teachers include the following:



Algebraic Expressions with Addition, Subtraction, Multiplication, and Division

In this lesson, we

- wrote algebraic expressions to represent descriptions involving addition, subtraction, multiplication, and division.
- wrote descriptions of algebraic expressions involving addition, subtraction, multiplication, and division.

Terminology

A **term** is a single number, variable, or product of numbers and variables in an expression.

A **coefficient** is the value of the numerical expression found by substituting the number 1 into all the variables in the term.

Examples

1. Write an algebraic expression that represents each description.

a. Twice as many as p

$2p$

Twice means 2 times as many.

b. 8 more than the product of 3 and x

$3x + 8$

There are two terms in this expression, $3x$ and 8. In the term $3x$, the coefficient is 3.

c. 12 less than the product of 4 and c

$4c - 12$

The expression $4c$ represents the product of 4 and c. Therefore, $4c - 12$ represents 12 less than the product of 4 and c.

d. 20 decreased by the product of 6 and b

$20 - 6b$

The expression $6b$ represents the product of 6 and b. Therefore, $20 - 6b$ represents 20 decreased by the product of 6 and b.

			• *Teach*: Digital Teacher Edition
			  ○ Curriculum Map
			  ○ Grade-level modules
			  ○ Module resources
			  ○ Topic resources
			  ○ Assessments
			  ○ Lesson resources including:
			  • Digital lessons
			  • Presentation slides that may contain the following:
			  • Fluency activities
			  • Images and text for lesson facilitation
			  • Digital interactives and demonstrations to spark student curiosity, illustrate mathematical concepts, and fuel discussions
			  • Context videos
			• Assign: Assign and manage any of the student facing resources in the *Learn* and *Apply* books to full classes or individual students. Monitor student progress on assignments, score and leave feedback on completed assignments, and access and edit past and upcoming assignments.
			• Assess: Use filters to search for available digital assessment in the assessment library. Assign assessments to full classes or to individual students.
			• Analyze: View assessment reports to quantitatively measure student understanding. Administrator- and teacher-facing reports provide visibility into individual and class performance on assessments and standards.
			Resource Center
			• Announcements: Find important announcements from the *Eureka Math²* and Great Minds teams. Look specifically for the What's New articles, which detail platform updates and feature releases.
			• Prototypes: Access available prototypes for user testing and feedback. The collected feedback informs further development of the product.
			• Guides: Access all walkthrough platform guidance for quick recall.
			• Help Center: View articles and videos to get answers to frequently asked platform and curriculum and implementation questions. These articles and videos are updated regularly.
			• Implementation Guides: Navigate directly to the implementation guides for the *Eureka Math²* curriculum.
			• Great Minds blog: Visit the Great Minds Aha! Blog to read articles to support with implementation of *Eureka Math²*.

F. Digital materials and experiences enhance	✓		The student digital experience is designed to enhance the overall mathematical content learning experience. *Eureka Math²* digital tools empower the teacher and invite more students into classroom discourse. Digital materials such as digital lessons, context videos, digital interactives, and

classroom instructional practice, engaging students meaningfully to develop mathematical understanding.			access to online virtual manipulatives provide opportunities for students to communicate ideas and collaborate with each other. Every module contains digital lessons accessed on the digital platform. These lessons fit into the existing sequence of lessons and are engaging classroom experiences centered around peer feedback and sharing student thinking. Digital lessons contain interactive slides that students access on their device. These slides allow students to engage with mathematical concepts and provide meaningful feedback. Digital lessons also allow the teacher to see responses from all students and use selected responses to facilitate rich discussions that drive the key concepts of the lesson. In addition, other lessons provide teacher guidance for the use of embedded technology to support and enhance student learning. Digital resources for students include the following: • Annotation tools to complete digital assignments. • Tools for completing digital assessments, including various accessibility tools. • Access to presentation slides including context videos and digital interactives. • A student “locker” that contains all previously completed assignments and assessments, as well as scores and feedback left by the teacher on those assignments and assessments. • Access to virtual manipulatives though our partner Didax.

Appendix A

EUREKA MATH²

greatminds.org/eurekamathsquared

Year-Long Curriculum Overview: Level 6–Algebra I

		STORY OF RATIOS			STORY OF FUNCTIONS
		Level 6 Ratios and Rates	**Level 7** Ratios and Proportionality	**Level 8** Ratios and Linearity	**Algebra I** Modeling with Functions
Trimester 1	Quarter 1	**Module 1: Ratios, Rates, and Percents** 5 Topics | 26 Lessons	**Module 1: Ratios and Proportional Relationships** 3 Topics | 20 Lessons	**Module 1: Scientific Notation, Exponents, and Irrational Numbers** 5 Topics | 24 Lessons	**Module 1: Expressions, Equations, and Inequalities in One Variable** 4 Topics | 23 Lessons
	Quarter 2	**Module 2: Operations with Fractions and Multi-Digit Numbers** 6 Topics | 24 Lessons	**Module 2: Operations with Rational Numbers** 5 Topics | 26 Lessons	**Module 2: Rigid Motions and Congruent Figures** 4 Topics | 22 Lessons	**Module 2: Equations and Inequalities in Two Variables** 4 Topics | 24 Lessons
Trimester 2	Quarter 3	**Module 3: Rational Numbers** 4 Topics | 17 Lessons	**Module 3: Expressions, Equations, and Inequalities** 4 Topics | 23 Lessons	**Module 3: Dilations and Similar Figures** 4 Topics | 17 Lessons	**Module 3: Functions and Their Representations** 4 Topics | 23 Lessons
		Module 4: Expressions and One-Step Equations 5 Topics | 25 Lessons	**Module 4: Geometry** 5 Topics | 26 Lessons	**Module 4: Linear Equations in One and Two Variables** 6 Topics | 27 Lessons	**Module 4: Quadratic Functions** 4 Topics | 27 Lessons
Trimester 3	Quarter 4	**Module 5: Area, Surface Area, and Volume** 4 Topics | 19 Lessons	**Module 5: Percent and Applications of Percent** 5 Topics | 24 Lessons	**Module 5: Systems of Linear Equations** 3 Topics | 14 Lessons	**Module 5: Linear and Exponential Functions** 4 Topics | 24 Lessons
		Module 6: Statistics 4 Topics | 22 Lessons	**Module 6: Probability and Populations** 4 Topics | 19 Lessons	**Module 6: Functions and Bivariate Statistics** 5 Topics | 25 Lessons	**Module 6: Modeling with Functions** 2 Topics | 7 Lessons
		TOTAL: **28 Topics | 133 Lessons**	**TOTAL:** **26 Topics | 138 Lessons**	**TOTAL:** **27 Topics | 129 Lessons**	**TOTAL:** **22 Topics | 128 Lessons**

Trimester and quarter indicators are provided as a guide for pacing. A few optional lessons in each grade level/course are included in the total number of lessons. About thirty additional days are allotted at each level for assessment and responsive teaching.

012022

Appendix B: Selection of *Eureka Math²* Research Citations

Berlinghoff, W. P. and F. Q. Gouvêa. *Math through the Ages: A Gentle History for Teachers and Others*. Farmington, ME: Oxton House Publishers, 2002.

Boaler, Jo, and Lang Chen. "Why Kids Should Use Their Fingers in Math Class." *The Atlantic.* April 13, 2016.

Brown, Peter C., Henry L Roediger III, and Mark A. McDaniel. *Make It Stick: The Science of Successful Learning*. 1st ed. Cambridge, MA: Belknap Press of Harvard University Press, 2014.

Carpenter, Thomas P., Megan L. Franke, and Linda Levi. *Thinking Mathematically: Integrating Arithmetic and Algebra in Elementary School.* Portsmouth, NH: Heinemann, 2003.

Carpenter, Thomas P., Megan L. Franke, Nicholas C. Johnson, Angela C. Turrou, Anita A. Wager. *Young Children's Mathematics: Cognitively Guided Instruction in Early Childhood Education*. Portsmouth, NH: Heinemann, 2017.

CAST. *Universal Design for Learning Guidelines,* version 2.2. Retrieved from http://udlguidelines.cast.org, 2018.

Clements, Douglas H. and Julie Sarama. *Learning and Teaching Early Math: The Learning Trajectories Approach*. New York: Routledge, 2014.

Common Core Standards Writing Team. *Progressions for the Common Core State Standards in Mathematics.* Tucson, AZ: Institute for Mathematics and Education, University of Arizona, 2011–2015.

Danielson, Christopher. *Which One Doesn't Belong?: A Teacher's Guide*. Portland, ME: Stenhouse, 2016.

Echevarria, Jana J. and Anne Graves. *Sheltered Content Instruction: Teaching English Learners with Diverse Abilities*. 4th edition. New York: Pearson, 2010.

Empson, Susan B. and Linda Levi. *Extending Children's Mathematics: Fractions and Decimals*. Portsmouth, NH: Heinemann, 2011.

Flynn, Mike. *Beyond Answers: Exploring Mathematical Practices with Young Children*. Portsmouth, NH: Stenhouse, 2017.

Franke, Megan L., Elham Kazemi, and Angela Chan Turrou. *Choral Counting and Counting Collections: Transforming the PreK–5 Math Classroom*. Portsmouth, NH: Stenhouse, 2018.

Hattie, John, Douglas Fisher, and Nancy Frey. *Visible Learning for Mathematics, Grades K–12: What Works Best to Optimize Student Learning*. Thousand Oaks, CA: Corwin Mathematics, 2017.

Huinker, DeAnn and Victoria Bill. *Taking Action: Implementing Effective Mathematics Teaching Practices in K–5*. Edited by Margaret S. Smith. Reston, VA: National Council of Teachers of Mathematics, 2017.

Illustrative Mathematics. *Standards for Mathematical Practice: Commentary and Elaborations for K–5*. Tucson, AZ. 2014.

Kelemanik, Grace, Amy Lucenta, and Susan Janssen Creighton. *Routines for Reasoning: Fostering the Mathematical Practices in All Students*. Portsmouth, NH: Heinemann, 2016.

Ma, Liping. *Knowing and Teaching Elementary Mathematics: Teachers' Understanding of Fundamental Mathematics in China and the United States*. New York, NY: Routledge, 2010.

Marzano, Robert J. and Debra J. Pickering. *Building Academic Vocabulary: Teacher's Manual*. Alexandria, VA: ASCD, 2005. National Council of Teachers of Mathematics. *Developing an Essential Understanding of Multiplication and Division for Teaching Mathematics in Grades 3–5*. Reston, VA: National Council of Teachers of Mathematics, 2011.

National Council of Teachers of Mathematics. *Developing an Essential Understanding of Multiplication and Division for Teaching Mathematics in Grades 3–5*. Reston, VA: National Council of Teachers of Mathematics, 2011.

National Council of Teachers of Mathematics. *Catalyzing Change in Early Childhood and Elementary Mathematics*. Reston, VA: National Council of Teachers of Mathematics, 2020.

National Governors Association Center for Best Practices, Council of Chief State School Officers (NGA Center and CCSSO). *Common Core State Standards for Mathematics.* Washington, DC: National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010.

National Research Council. *Adding It Up: Helping Children Learn Mathematics*. Washington, DC: The National Academies Press, 2001.

National Research Council. *Mathematics Learning in Early Childhood: Paths Toward Excellence and Equity*. Washington, DC: The National Academies Press, 2009.

Parker, Thomas and Scott Baldridge. *Elementary Mathematics for Teachers*. Portland, OR: Sefton-Ash, 2004.

Ramirez, Nora and Sylvia Celedon-Pattichis. *Beyond Good Teaching: Advancing Mathematics Education for ELLs*. National Council of Teachers of Mathematics, 2012.

Shumway, Jessica F. *Number Sense Routines: Building Mathematical Understanding Every Day in Grades 3–5*. Portland, ME: Stenhouse, 2018.

Smith, Margaret S., Victoria Bill, and Miriam Gamoran Sherin. *The 5 Practices in Practice: Successfully Orchestrating Mathematics Discussions in Your Elementary Classroom*. 2nd ed. Thousand Oaks, CA: Corwin Mathematics; Reston, VA: National Council of Teachers of Mathematics, 2018.

Van de Walle, John A., Karen S. Karp, Louann H. Levin, and Jennifer M. Bay-Williams. *Teaching Student-Centered Mathematics*. Vol. II, *Grades 3–5*. 3rd ed. New York: Pearson, 2018.

Van de Walle, John A. *Elementary and Middle School Mathematics: Teaching Developmentally*. New York: Pearson, 2004.

Willingham, Daniel T. *Why Don't Students Like School?: A Cognitive Scientist Answers Questions About How the Mind Works and What It Means for the Classroom*. 2nd ed. San Francisco: Jossey-Bass, 2021.

Zwiers, Jeff, Jack Dieckmann, Sara Rutherford-Quach, Vinci Daro, Renae Skarin, Steven Weiss, and James Malamut. *Principles for the Design of Mathematics Curricula: Promoting Language and Content Development*. Retrieved from Stanford University, UL/SCALE website: http://ell.stanford.edu/content/mathematics-resources-additional-resources, 2017.