October 2020

Houghton Mifflin Go Math! 6-8 Program Summary

Section 1. Texas Essential Knowledge and Skills (TEKS) and English Language Proficiency Standards (ELPS) Alignment

Grade	TEKS Student %	TEKS Teacher %	ELPS Student %	ELPS Teacher %
Grade 6	100%	100%	100%	100%
Grade 7	100%	100%	100%	100%
Grade 8	100%	100%	100%	100%

Section 2. Concept Development and Rigor

- Materials concentrate on the development of the primary focal areas outlined in the TEKS.
- Concepts sequence from concrete to representational to abstract (CRA), and materials provide some support to teachers in understanding and developing students' progression along the CRA continuum.
- Materials support coherence and connections between and within content at the grade-level but not across grade levels; resources build vertical content knowledge by accessing prior knowledge and understanding of concept progression.
- Tasks are rigorous, of high-quality, and engage students; however, they do not always reach grade-level depth and complexity.
- Students have opportunities to apply mathematical knowledge and skills to solve problems in new contexts, including those arising in everyday life and society.

Section 3. Integration of Process Skills

- Materials provide students with a problem-solving model that is transferable across problem types and grounded in the TEKS; however, students' abilities to use and apply the model frequently are not developed.
- Students have opportunities to develop their self efficacy and mathematical identity by sharing strategies and approaches to tasks and selecting appropriate tools for the work, concept development, and grade (e.g., calculator, graphing program, virtual tools).

- Materials sometimes prompt students to effectively communicate and justify mathematical ideas, reasoning, and their implications in multiple representations.

Section 4. Progress Monitoring

- Materials include limited developmentally appropriate diagnostic tools and guidance for teachers and students to monitor progress.
- Guidance is not provided for teachers and administrators to analyze and respond to data for planning further instruction.
- Materials provide some integrated formative assessment opportunities and routine progress monitoring opportunities.

Section 5. Supports for All Learners

- Materials include guidance, scaffolds, supports, and extensions that maximize student learning potential. Targeted instruction and activities are provided for students who struggle with content mastery; however, limited resources to maximize student potential are provided to students who have mastered the content.
- Instructional methods appeal to various learning interests and needs; however, various strategies and activities remain minimal.
- Materials include supports for English Learners (ELs); however, limited accommodations are commensurate with various levels of English language proficiency.

Section 6. Implementation

- Materials include a cohesive, year-long plan with practice and review opportunities that support instruction.
- Materials are designed in a way that allows Local Education Agencies some ability to incorporate the curriculum into district, campus, and teacher design and considerations. However, there is no specific guidance for implementation that ensures the sequence of content is taught in an order consistent with developmental progression of mathematical concepts and skills.
- The visual design of student and teacher materials is neither distracting nor chaotic.

Section 7. Additional Information

- The publisher submitted the technology, cost, and professional learning support worksheets.

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2.1 Materials concentrate on the development of the primary focal area(s) for the grade-level.

- Materials spend the majority of concept development of the primary focal areas for the grade-level as outlined in the TEKS.
- Materials strategically and systematically develop students' content knowledge as appropriate for the concept and grade-level as outlined in the TEKS.
- Materials provide practice opportunities for students to master the content.

Meets 4/4

The materials concentrate on the development of the primary focal areas for 8th grade. A majority of concept development of these primary focal areas follows grade-level specific TEKS. The materials strategically and systematically develop student content knowledge appropriately as outlined in the TEKS, and practice opportunities are provided for students to master content.

Evidence includes but is not limited to:

The materials devote the majority of lessons to the focal areas, as outlined in the TEKS, clearly and consistently showcasing curriculum alignment in the grade-level. Four of the seven units focus on eighth grade-level focal areas: proportional relationships, expressions, equations including the Pythagorean Theorem, and making inferences from data.

Each unit begins with a Unit Pacing Guide, outlining the order of TEKS taught during the unit. Teacher editions provide a primary example of the focal area as it applies to a career; specifically, in Unit 2, the introduction explains how a cost estimator uses proportional relationships and estimation. Each module contains a "Before-In This Module-After" chart that outlines what students learned before, during, and after the module; whereas, the introduction to each module in the teacher edition provides "Mathematical Background" for TEKS providing further guidance and a brief explanation of the standard(s) and accompanying visuals. In both the teacher and student editions, "Front Matter" provides an outline of grade-level TEKS taught in each unit, module, and lesson. Introductory materials also include an Essential Question for each module, an "Are You Ready?" activity to build students' knowledge from the previous grade level, a "Reading Start-Up" activity with review and preview vocabulary terms, and

"Unpacking the TEKS" with examples, visuals, and key vocabulary. The materials support the teaching and learning of math concepts through the inclusion of "Professional Development," "Differentiate Instruction," and "Extend the Math" sections in each lesson. "Your Turn" provides students opportunities to reinforce concepts worked out in examples, and "Math Talk" provides students exercises to further describe their understanding while encouraging the use of the mathematical process standards.

The instructional materials note a systematic philosophy around the introduction of key concepts as each lesson consistently follows the 5E model (*Engages* with Real-world video, *Explores* the math concept, *Explains* with examples in guided practice, *Elaborates* with math talk, and *Evaluates* through independent practice.) For example, in Lesson 9.1 on "Volume of Cylinders," teachers pose an essential question to *engage* the learner, followed by a "Motivate the Lesson" question to transition into the *explore*. Next, the "*explore* activity connects the formula for the volume of a prism to determine the volume of a cylinder. For Lesson 12.1 "Properties of Translations," students use hands-on activities to *explain* the properties of translations in the multiple examples and related questions with applicable solutions to build understanding. Then, in Lesson 13.3 "Dilations and Measurements," the students *elaborate* by providing questions such as, "If a rectangle is dilated by a scale factor of 5, what happens to the perimeter and to the area?" At the end of Lesson 16.2 "Saving and Investing," students *evaluate* understanding by working through guided and independent practice (available in paper and online formats) as well as a short "Lesson Quiz."

The materials provide various practice opportunities in multiple settings or modalities as well as a systematic philosophy around key concepts. At the beginning of each unit, professional development videos created by the authors demonstrate the teaching and learning of math concepts. For example, in Module 13 "Dilations, Similarity, and Proportionality," author Juli Dixon models best teaching practices as she teaches the concept of dilations in an 8th-grade classroom. Each module also contains a "Go Digital" section, providing a variety of settings for focal area skills practice, such as the "Personal Math Trainer," where feedback is given on online practice sets; the "Animated Math," where students explore key concepts online; and the "Interactive Whiteboard," which offers quick activities to draw on a whiteboard. In the majority of lessons in Grade 8, students interact with or model the concept before moving into the algorithm and other more complex concepts. For example, in Module 7 "Are You Ready?," students practice evaluating expressions, finding a rule from a function table, and graphing ordered pairs. Then, in Module 9, students model finding the volume of a cylinder by using a soup can and centimeter cubes. The students put a layer of cubes along the bottom of the can, count them, then stack cubes along the inside of the cylinder. The students use this model to come up with the volume formula of V=Bh.

The materials, therefore, build upon previously taught concepts to increase rigor and ensure students grasp the full intent of the concept, offering numerous opportunities for mastery. For instance, in Module 3, students complete "Are You Ready?" prior to Lesson 3.1. Students write fractions as decimals and solving proportions before moving on to Lesson 3.1, where they will

represent linear proportional situations with tables, graphs, and equations. The skills learned in Module 3 are used again in Module 6 when comparing functions using tables, graphs, and equations, as well as verbal and numerical representations. Later, in Module 3 “Proportional Relationships,” students practice this primary focal area skill through the use of tables, graphs, equations, verbal descriptions, and real-world problems in the “Independent Practice” at the end of each lesson. Lessons provide additional opportunities with “Engage with the Whiteboard” and “Talk About It” and offer multiple versions of practice and problem-solving PDFs, editable documents, a quiz, and a reteach document. Focused on “HOTS” (higher-order thinking skills), Guided Practice is provided where students answer questions, fill in tables, chart graphs, and respond to an Essential Question Check-In prompt for each lesson; Independent Practice provides open-ended response questions. In Lesson 8.3 “Solving Problems with Proportions,” students display academic rigor by evaluating and proving mathematical information like “Jason watched a caterpillar move 10 feet in 2 minutes. Jason says that the caterpillar’s unit rate is 0.2 feet per minute. Is Jason correct? Explain.” Units conclude with a Study Guide Review where students complete exercises over primary focal point areas from each module within the unit. Students also complete a Unit Performance Task that ties back to the career application introduced at the beginning of the unit. Lastly, students complete the “Module Quiz” to demonstrate mastery and a “Texas Test Prep,” which is a mixed review that spirals concepts and includes STAAR-like questions that are in multiple-choice and griddable format.

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2.2 Materials sequence concepts from concrete to representational to abstract (CRA) as is appropriate for the grade-level and content.

- Materials include a variety of types of concrete models and manipulatives, pictorial representations, and abstract representations, as appropriate for the content and grade level.
- Materials support teachers in understanding and appropriately developing students' progression along the CRA continuum.

Partially Meets 2/4

Most materials sequence concepts from concrete to representational to abstract (CRA) as is appropriate for the 8th grade, although the explanation for the concrete is minimal. Materials include some variety of concrete models and manipulatives, pictorial representations, and abstract representations, though not always explicitly taught. The primary focal areas for Grade 8 are limited in concrete examples to integers, expressions, and equations. Materials do offer teachers some support in understanding and appropriately developing students' progression along the CRA continuum, but with little guidance for misconceptions and little support for new teachers.

Evidence includes but is not limited to:

The materials include a variety of concrete models and manipulatives, pictorial representations, and abstract representations to introduce and practice mathematical concepts. Within each module in the materials, there are lessons that include one or more "Explore" activity where students "select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems." In Module 11, some lessons contain an "Explore Activity," and others do not. Lesson 11.1 "Equations with Variables on Both Side" has students Explore by using "algebra tiles to model and solve x+5= 3x- 1." In contrast, Lesson 11.2 on "Equations with Rational Numbers" does not contain an Explore Activity as the content is more abstract and builds on previous student understanding. When looking at manipulatives, resources in both the teacher and student editions provide links to integer counters, fraction bars, fraction decimal grids, bar models, geometry sketcher, algebra tiles, graphing calculator, and scientific

calculator. These virtual tools provide a varying level of guidance on how to use the tool, not explicitly teaching students how to work with the concrete models. For example, the fraction/decimal grids "Help" menu provides a detailed explanation about how to use this tool for adding, subtracting, and multiplying; whereas, the "Bar Models" tool provides a "key" to the different buttons without guidance related to application or use. These materials are not interactively linked with a specific lesson. They are strictly digital manipulatives. In some cases, the teacher edition notes only suggest directing students' attention to the concrete manipulatives.

The materials employ a variety of concrete models and manipulatives, pictorial representations, and abstract representations to introduce and practice mathematical concepts. A primary focal area of grade 8 states that students should "represent linear non-proportional situations with tables, graphs, and equations in the form of y=mx+b, where b≠ 0." In example problems from Module 4, students are provided a two-step equation in the form (y=mx + b) from which they create a table with data. Students graph the data from the table and use their understanding of proportionality to make justifications for non-proportionality. Materials also provide tables to represent proportional relationships. Then, equations represent proportional relationships, including the constant of proportionality. Next, students represent proportional relationships on graphs, passing through the origin (0,0). Tables and graphs are also used to determine the rate of change and slope. Tables are also used to write a direct variation, which is then graphed, and they represent linear nonproportional relationships. Real-world visuals are used throughout to make connections to daily life. In Module 8, students are provided a visual from which they explore the Pythagorean Theorem; they draw, cut, and position triangles to make the shape of a square. Pictorial models are included to illustrate the concrete model and are also used to model verbal descriptions. As students move through the module, the pictorial models are less frequent; however, the real-world problems included in the practice materials lend themselves to pictorial models, if needed by a student.

Another primary focal area of grade 8 states that students should "model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants." In the Explore activity Lesson 11.1, students model variables on both sides of an equation using algebra tiles. Teaching strategies noted in "Differentiate Instruction" provide additional suggestions for integrating algebra tiles into the lesson. Then in Module 15, the materials provide tables to organize data when exploring mean absolute deviation. Equations are then used to guide calculations. The materials introduce the use of spreadsheets to incorporate technology for finding the mean absolute deviation of a data set. Additionally, the materials provide guidance on how to generate a random sample using a graphing calculator. Grid visuals are provided as well, for students to generate random samples without technology. However, there is no evidence of concrete models for the focal areas of proportional relationships nor making inferences from data.

When looking at the concrete to representation to abstract (CRA) continuum, some guidance and support are present, though not always consistent. The 5E model leads teachers and students from the *engage* stage through the *evaluation* stage. The *explore* stage is to teach the concrete phase, the *explain* stage moves students into the representational phase, and the *elaborate* and *evaluate* stages move students into the abstract phase. In addition, materials provide some guidance as students work through the phases of the CRA continuum related to "Avoid Common Errors" and suggestions to "Focus on Models." In Module 3, the material provides guidance on how to represent proportional relationships using tables, graphs, and equations and how to calculate the rate of change and slope. The material progresses from concrete to representational when students use slopes to compare unit rates from tables and graphs. The material progresses to abstract throughout the Independent Practice. Students determine the slope and unit rate from a table and a graph and then compare the results. Later in Module 9, the materials include visuals of cylinders found in daily life, like a soup can. Teachers guide students through making connections to circular objects that are stackable, such as pancakes or cookies. Students will relate these examples to the formula for volume, $V = Bh$. Question Strategies are provided so that students extend their thinking by comparing and contrasting cylinders and prisms. Teachers are reminded of common errors to avoid when working with radius and diameter. The materials progress students through several problems to find the volume of a cylinder in a real-world context. The materials provide additional practice with models but quickly move to abstract use of the volume formula throughout the Independent Practice. Although students ideally would move through the CRA continuum while completing tasks, there is no evidence that the materials provide guidance for teachers on identifying where student understanding is along the phases of the CRA continuum and no guidance for moving students through the phases of the CRA continuum.

"Professional Development" videos included in each module guide teachers with "best practice" visuals specifically related to the content being developed in the module. For example, the video in Module 3 shows a classroom teacher sharing how proportional relationships can be displayed as tables, graphs, and equations with a focus on equations in real-world scenarios. Through watching this video, teachers witness the development of the lesson (how to use a table to understand how to write an equation to represent the data in the table), questioning strategies, and "teacher moves" (i.e., having students justify their thinking) to successfully connect from the table to the equation in this lesson. Also, the "Personal Math Trainer" provides teachers some feedback related to where students are in the phases of the CRA continuum by incorporating varied problem types that address the phases of the CRA continuum. However, minimal evidence was located to provide insight into which activities correspond to progressive points along the continuum. Teachers evaluate individual lessons or refer to the TEKS Correlation for Grade 8 information in "Front Matter" to see which lessons align to which TEKS, but, in this document, no specificity is included related to where on the progression the activities align.

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2.3 Materials support coherence and connections between and within content at the grade-level and across grade levels.

- Materials include supports for students to build their vertical content knowledge by accessing prior knowledge and understanding of concept progression.
- Materials include tasks and problems that intentionally connect two or more concepts as appropriate for the grade-level.
- Materials provide opportunities for students to explore relationships and patterns within and across concepts.
- Materials support teachers in understanding the horizontal and vertical alignment guiding the development of concepts.

Partially Meets 2/4

The materials provide some coherence and connections within content at the grade-level but do not support coherence and connections across grade levels. Students build their vertical content knowledge by accessing prior knowledge and understanding of concept progression. Throughout the lessons, the materials include some tasks and problems that intentionally connect two or more concepts, so students are able to explore relationships and patterns within and across concepts. However, the materials lack a significant number of tasks that require students to recognize mathematics in contexts outside of the classroom. Teachers' support in understanding vertical and horizontal alignment guiding the development of concepts is not substantial; the materials are limited in the vertical progression of concepts and lack specifics related to how content builds on prior knowledge from previous grades. The materials don't provide enough evidence to enable teachers to connect what students have learned and where the content aligns above Grade 8 to the breadth, depth, and complexity of high-quality materials.

Evidence includes but is not limited to:

Materials consistently contain one task to direct teachers to build on students' prior knowledge before presenting a new concept aligned to a grade-level focal area. At the beginning of each module, Are You Ready? provides support for review skills needed for the chapter. The teacher edition provides assessments to determine if students need intensive or strategic intervention

for the module's prerequisite skills. If students are not ready, teachers reteach specific areas with Skills Intervention worksheets, which include two lessons and student practice focusing on intervention. For example, in Module 5, Are You Ready? assesses students' understanding of writing fractions as decimals and inverse operations as foundational content for "Writing Linear Equations." The teacher edition includes two lessons and student practice focusing on intervention related to each of the areas assessed. The second lesson for each of the concepts includes an "alternate teaching strategy" that focuses on using rectangular models to show fraction and decimal equivalents and "using cups and cubes to model inverse operations." After mastering the review, students are ready to continue with this 8th-grade focal area, "representing, applying, and analyzing proportional relationships." Other than Are You Ready?, teachers are not consistently provided review material of previously learned concepts, nor do they receive further guidance on intensive or strategic interventions.

The teacher edition contains a "Grade 7 Review Test" in Front Matter that gives an overview of when TEKS are taught and when they are reinforced. It also includes skills and standards students should have mastered in 7th grade. The materials do not include specifics related to how the beginning units and modules build on students' prior learning. The materials also do not contain an overview of how the 8th-grade objectives connect to previously learned concepts and concepts to be learned. Teachers are not provided with information regarding how students should progress in their knowledge and skills throughout future grade levels. What each unit does include is a brief breakdown of the progression from one unit to another horizontally—*within* the grade level. This progression at the beginning of the unit quickly shows teachers what students learned in the previous unit, what students learn in the current unit, and what students will learn in the upcoming unit. Additionally, each module includes a brief breakdown of the progression from one module to another horizontally—*within* the grade level—which quickly shows teachers what students learned in the previous module, what students learn in the current module, and what students will learn in the upcoming module. Also, at the beginning of each module, Unpacking the TEKS restates the TEKS, clarifying what students are expected to learn, providing an example related to the TEKS, and highlighting key vocabulary for the TEKS. This information is also available for all TEKS, not just those covered in a specific unit or module, via a QR code in the teacher's edition.

Throughout the materials, each module does provide teachers insight into how the concepts progress in rigor in the "Grades 6-8 TEKS" section, which is divided into a 3-column table with what the students will be doing Before/In This Module/After. The "Before" portion states the prior knowledge, so in Unit 2, "Students understand proportional relationships," which includes "rates and proportionality, linear relationships represented by tables, graphs, or equations" and "constant rates of change represented by tables descriptions, equations or graphs." The middle column called "In This Module" states specifically what the students will learn in the unit: "linear proportional and nonproportional relationships, unit rate and slope, constant of proportionality, direct variation, equations in the form y=mx + b, systems of equations and functions." The final column, "After," states connections that will be made in future units. For example, after Unit 2, "students will connect" proportional relationships and constant rate of

change, proportionality and direct variation, and linear relationships and their graphs and equations in y = mx + b." Again, it's important to note that the "Grades 6-8 TEKS" section mostly focuses on grade-level content and does not show a true vertical alignment across grade levels. Module 4 briefly mentions vertical alignment when the "Before" column explains increased rigor from those foundational concepts introduced in Grades 6 and 7 using the same models and strategies that they already know. For example, in Grade 6, in Lesson 14.2 "Independent and Dependent Variables in Tables and Graphs," students use tables, graphs, and verbal descriptions; in Grade 7, in Lessons 7.1 and 7.2 "Linear Relationships," students use tables, graphs, equations, and verbal descriptions to build understanding that is foundational for Module 4 concepts. However, the continuum is inconsistent in its presentation since only a few modules actually provide sixth and seventh grade information.

In each lesson in the Professional Development section, there is a Math Background description, which outlines all the TEKS for that unit and the math background of TEKS. Some of these just give the mathematical reasoning for why the TEKS is solved the way it is. For example, in Module 3, it gives the definition and why direct variation is y=kx, but does not give previous learning that relates to direct variation. Module 5 Math Background reminds teachers that "a constant rate of change can be shown by a linear graph. The rate of change is the slope of the line. Lines with positive slopes rise from left to right; lines with negative slopes go down." This information provides a vertical look at how the concepts covered in this lesson are building on the ideas introduced in 6th grade (constant rate of change) and 7th grade (constant rates of change in mathematical and real-world problems). Again, not all modules provide even this level of vertical alignment and concept explanation.

Within the grade level, some materials provide tasks that help students connect concepts that are appropriate to their grade level, such as rate of change and slope in grade 8. For example, the teacher edition prompts teachers to ask specific questions that relate back to the previously taught concept of rate of change and slope when determining association in scatter plots. The student edition tells students to use their understanding of linear and nonlinear relationships to determine the association among scatter plots. In Module 4, students are working on proportional and nonproportional situations. They connect their understanding of proportionality from Module 3 to determine if the relationship between the number of batteries and the price is proportional if "two batteries cost $3.00 and a twelve-pack of the same batteries costs $15." Then in Module 7, students apply their knowledge of slope from Lesson 3.2 to questions posed in the Independent Practice, such as writing an equation in the form y=mx + b to describe the height of a hot air balloon that is released from a platform that is 50 feet off the ground. The students connect their understanding of the slope or rate of change to write their equation in the desired format by replacing the variable, m, with their slope.

The materials provide some opportunities for students to make connections within and across math concepts. These interconnections are supported for students, but teachers are provided little guidance on how to fulfill the connections. For example, in Module 1, when ordering real numbers in a real-world context, the materials prompt students to approximate square roots

(or irrational numbers) in order to list values correctly from greatest to least or least to greatest. Students use this previously learned skill to also plot the values in the correct order on the number line. The materials support interconnections across concepts when students are asked to find the area of square and circle gardens to compare their size and determine which garden provides more space to plant.

Additionally, many lessons include exploration to examine relationships and patterns. Module 1 asks students to use a number line to place real numbers in order. The materials support making connections across math concepts as they guide teachers to "discuss with students which number is greater, $3.\underline{45}$ or 3.450? $3.\underline{45}$ or 3.455 and why. Explain that $3.\underline{45}$ can be written out as 3.4545… Make sure they understand that $3.\underline{45}$ is greater than 3.45, but less than 3.455." Through this discussion, connections to place value and bar notation are made to prior knowledge of ordering rational numbers, and students reflect and communicate their understanding of comparing numbers, especially irrational values. Then in Module 3, the materials use a staircase as a model for slope. The teacher's edition includes a note for teacher's to make a connection between slopes that "go up the staircase" as being positive and slopes that "go down the staircases" as negative. In the Independent Practice, questions push students to make connections: "Two lines pass through the origin. The lines have slopes that are opposites. Compare and contrast the lines." Through this exploration, students may connect that "one line has a positive slope and one slants upward left to right while the other slants downward left to right." Then in Module 5, students explore questions, connecting back to slope as the constant of proportionality or, in this case, the increase in height of the handrail per foot of horizontal distance when answering "What does the slope of the equation represent in this situation? What does the y-intercept represent?" Module 8 provides an exploration where students analyze the Pythagorean Theorem by drawing triangles and finding the area of each piece of the square formed.

Another connection opportunity comes at the beginning of each module in Active Reading, where a Reading Start-up page suggests graphic organizers to help students connect mathematical vocabulary to the content throughout the module. Some modules include a foldable, such as Module 6, where students create a double-door fold and record understanding about proportional functions and non-proportional functions.

The materials provide real-world problem solving and mathematical processes, helping students connect math concepts to life outside of the classroom. The units begin with a Real-World Video that sometimes poses a problem. For example, in Module 3, the video is about three different modes of water transportation and how fast they can go. The slope is graphed and then interpreted to see how far each mode of transportation can go in three hours. Other examples during the Explain phase pose a problem with a suggestion to use Math Talk to describe the mathematical process. For example, in Module 6, "Josh and Maggie buy MP3 files from different music services. The monthly cost, y dollars, for x songs is linear." The Math Talk asks students to write, in words, the meaning of the slopes and y-intercepts for equations that represent the situation.

Each module also contains a Challenge problem. The Challenge problem for Module 3 requires students to investigate the possibility of giants through the use of a proportional relationship called the “nth power variation,” which was not previously introduced but extends their understanding of proportional relationships as well as their understanding of exponents. (Now, it’s important to note that the task does not require students to recognize the mathematics needed on their own as student thinking is guided through direct questions implying the content to apply to the situation, such as “The weight of a person of average build varies directly with the cube of that person’s height. Use a person 6 feet tall who weighs 200 pounds to find the equation of variation.”)

Each of the seven units also begins with a section entitled Careers in Math. The units end with a Performance Task that incorporates concepts from these careers and real-world scenarios. For example, in Unit 2, the career is a cost estimator; the performance task has students create an equation to solve for how much money a company would make selling MP3 players. In Unit 6, the career is a psychologist: the performance task asks students to examine a graph of data presented from a test given to 15 participants.

For seasoned teachers, these materials might be sufficient; however, a new teacher may struggle with how to present the materials. All of the teacher supports provide questions to ask, reminders of common errors to avoid, and suggestions to have students go to the whiteboard. The “extend the math” sections are primarily just more practice of the same concept, not an extension of the concept to the next grade level.

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2.4 Materials are built around quality tasks that address content at the appropriate level of rigor and complexity.

- Tasks are designed to engage students in the appropriate level of rigor (conceptual understanding, procedural fluency, or application) as identified in the TEKS and as appropriate for the development of the content and skill.
- Materials clearly outline for the teacher the mathematical concepts and goals behind each task.
- Materials integrate contextualized problems throughout, providing students the opportunity to apply math knowledge and skills to new and varied situations.
- Materials provide teacher guidance on anticipating student responses and strategies.
- Materials provide teacher guidance on preparing for and facilitating strong student discourse grounded in the quality tasks and concepts.

Partially Meets 2/4

Throughout the lessons, the materials include tasks partially designed to engage students in the appropriate level of rigor (conceptual understanding, procedural fluency, or application) as identified in the TEKS and as appropriate for the development of the content and skill; however, the materials do not always reach 8th-grade depth and complexity nor is the concrete-representational-abstract (CRA) continuum consistently developed throughout. For the teacher, materials clearly outline mathematical concepts behind each task; however, they exclude evidence explaining how each task builds student efficacy towards the goal of demonstrating mastery. Teacher guidance on anticipating student responses and strategies often limits student responses, and teacher guidance is weak when facilitating strong student discourse grounded in the quality tasks and concepts. Additionally, no rubrics/keys are provided to assist teachers in evaluating and providing feedback to students while engaging in discourse. The integration of contextualized problems throughout provides students the opportunity to apply math knowledge and skills to new and varied situations, but with no regard to student interest.

Evidence includes but is not limited to:

The materials engage students in the rigorous tasks aligned to TEKS and are developmentally appropriate for the grade-level content and skills. Throughout each lesson, the 5E model (engage, explore, explain, elaborate, and extend) develops the concept with increased rigor through the engage, explore, and explain. Lessons begin with finding patterns in relationships, then using the patterns to create multiple representations, and solving problems from the representations. They move to application and problem solving as students use CRA tools and models, increasing in depth and complexity. However, materials used are limited to two-color counters, number lines, bar models, algebra tiles, and fraction/decimal grids; their use is inconsistently guided in the materials. Some tools, like two-color counters, are supported with clear instructions, while others, like the bar models, are presented but not specifically taught. This lack of depth of understanding of the tools jeopardizes building the foundation necessary for students to fully master content. “Focus on Models” allows students to see connections between the concrete models and the pictorial models while providing a foundation for understanding before moving to solve the problem; however, when students reach the elaborate portion of the lesson, the variance in the problems is not evident. Students continue to solve real-world contextualized problems that relate to the content, but they are rarely challenged to make generalized conjectures or apply their thinking beyond this level. To extend, problems tend to be a repetition of the HOT (higher-order thinking) Questions that are in “Independent Practice.” The materials also lack cumulative projects to assess students’ depth of knowledge and ability to apply their conceptual knowledge.

For example, in Modules 1–2, students express rational numbers as decimals when revisiting the real number system. They learn to find square roots and perfect squares, which was not taught in the previous grade level. They apply these skills to estimate rational numbers and approximate pi before classifying sets and subsets of real numbers. The unit continues with comparing irrational numbers. The unit ends with the scientific notation of positive and negative powers of 10. Module 5 takes the students through activities and questions, discussing data in a table and how that data can be graphed. Students predict where a graphed line will cross at a given value, checking it by substitution. Students answer questions, such as “What does the y-intercept represent in this situation?” Students answer real-world questions to find the slope and y-intercept, write the equation, and apply that equation to get a future answer. The lesson ends with Independent Practice, where students answer real-world questions and HOT questions to analyze relationships and answer “what if” questions. Module 3 asks students to represent a proportional relationship using a table then with an equation. Next, students understand rates of change, as a unit rate, to determine slope.

As students work through units, modules, and lessons, materials include explanations of the mathematical concepts and goals behind each task and serve to build teacher content knowledge. Each unit contains “Math Background,” which clarifies which TEKS are taught in the unit, what lesson they are taught in, and the background to those TEKS. Some examples are provided of what students may wonder about the TEKS, the mathematical reasoning for the TEKS, or what students should have learned previously. Vocabulary is also clarified for each concept, and where appropriate, visuals are provided.

The materials provide students the opportunity to apply math to different situations and real-world contexts. In fact, each unit begins with “Careers in Math,” offering specific jobs that use the concept in life; then, at the end of the unit, a “Performance Task” about the career provides students an opportunity to solve the career-challenges. For example, in Unit 2, the career is a cost estimator; the end task requires that students create an equation to solve for how much money a company would make selling MP3 players. Unit 6 asks students to analyze results from a memory test that have been recorded on a scatter plot similar to what a psychologist might analyze, and in Unit 6, students think like a contractor, expanding a dog pen by six times the original area.

Besides the Careers in Math, each lesson contains multiple opportunities to answer questions in real-world contexts. For example, in Module 3, students represent proportional relationships while mastering graphs, tables, and equations. Topics studied are the speed of a snail, the relationship between the area and perimeter of a square, and deposits in a savings account. In Module 4, students use an equation to complete a table, calculating the cost to go bowling. In Independent Practice, four of the seven questions are about real-world contexts. In Module 6, function questions relate to the relationship between the weight of cheese wedges as well as the cost/amount of milk a whale calf is fed. In Module 13, students calculate the area of a mini-deck of cards based upon measurements of a standard deck. In Independent Practice, four of the eight questions are about real-world contexts. These materials do provide students with opportunities to apply math to different real-world situations, but support is not provided for teachers to modify tasks to specific student interests and backgrounds. The materials provide editable documents, such as leveled quizzes/tests and skill intervention worksheets. There is no guidance for how to revise the content; therefore, the revision of content is left to the insight and knowledge of the teacher without guidance from the materials.

The materials provide some guidance to the teacher in supporting student discussion and responding to student strategies as they use problem-solving to support the development of skills. The teacher’s edition offers “Essential Questions,” “Questioning Strategies,” “Focus on Reasoning,” and “Talk About It” to stimulate discourse; however, according to NCTM, discourse in the mathematics classroom incorporates “ways of representing, thinking, talking, agreeing, and disagreeing.” Using these materials, the questions may provoke thinking, but they do not build talk that fosters agreement and/or disagreement.

Each lesson includes an Essential Question related to the covered TEKS that students answer. This also addresses the knowledge and skill (8)(1)(f), which states, “the student is expected to analyze mathematical relationships to connect and communicate mathematical ideas.” The essential question posed in one lesson from Module 1 asks, “How do you order a set of real numbers? The corresponding teacher answer states, “Find their approximate decimal values and order them.” This response is limited in supporting teachers in being prepared for alternate responses from students or for ensuring that multiple strategies are discussed. There is one expected, correct response the teacher is looking for; most student discussion is used to

summarize understanding, not to guide students' own thinking towards choosing strategies that best fit their learning needs.

Also in Module 11, teachers ask, "Why can you add or subtract the same term, for example 28x or 20, on both sides of the equation?" and "How does the method used to get the variable terms on one side of the equation compare to the method used to get the constant terms on one side of the equation?" Finally, teachers ask students to "Explain why it does not matter which side of the equation you get the variable terms on." The materials do not include general discussion-generating questions. Immediately following the Questioning Strategies, the materials provide teachers an opportunity to Engage With The Whiteboard. Teachers are asked to have students circle or underscore the information in the question that is needed when writing the equation. There is no suggestion for other topics, questions, or statements that students may generate naturally in a more spontaneous discussion. No additional solutions are offered. The anticipated strategies presented in the material keys typically align with what was presented in the lesson, with no evidence of additional "anticipated" strategies being sequenced or incorporated into the materials. No teacher guidance explains which strategies are appropriate for tasks based on grade-level expectations; the strategy presented is the one expected. Teachers are simply prompted to ask specific questions with specific expected student responses and are not provided guidance on asking probing questions to assess student thinking. Open-ended response-type questions are not provided for teachers, so an inexperienced teacher might struggle with evaluating and providing feedback.

Materials also foster discourse through "Math Talk" and Talk About It discussions. In Lesson 5.1, the Math Talk question asks students, "what change could the studio make that would make a difference to the y-intercept of the equation?" A possible response is provided. These sample answers provide teachers with guidance on how to direct the discussion toward the correct explanation if students struggle. Talk About It includes a question to summarize and check for understanding. For example, Lesson 6.2 asks the question, "How can you show that the relationship between x and y given in the form of an equation is a linear relationship and also a proportional relationship?" Again, the materials provide a key for all questions, but very little flexibility is allowed in discussions. No rubrics exist for evaluating and providing feedback for student discourse so that teachers can assess student understanding.

"Avoid Common Errors" sections in both the lesson notes related to teaching the content and later in Guided Practice offer the teacher insight in identifying common errors made by students. These notes guide the teacher to point out or to remind students of mathematical processes to use during practice but do not provide questions or prompts to get students to understand their own mistakes. For example, in Module 3, the teacher's guide warns teachers to "make sure that students divide the number of bicycles by the number of hours, not the number of hours by the number of bicycles" when completing the "Your Turn" portion. This strategy is reiterated in Guided Practice exercises 1 and 2, which have students applying this idea to targeted vocabulary questions. In exercise 5, the teacher is guided to build the concept of proportionality by reminding "students that the relationship shown in the graph is a

proportional relationship because the line contains (0, 0).” In Module 6, as students graph, teachers are reminded that a student error may be graphing the equation incorrectly. To combat this problem, the suggestion is to graph at least three ordered pairs. Later in this same module, the teacher notes suggest, “Remind students that the graph of a proportional relationship is a line that goes through the origin.” While there are multiple opportunities to anticipate student responses, there are no strategies to combat any misconceptions other than within the Avoid Common Errors section. Also, some inexperienced teachers might struggle with guiding students through problem-solving if they are always pointing out the common misconception straight away and not allowing students to determine errors on their own.

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2.5 Materials include cohesive, year-long plan for students to develop fluency in an integrated way.

- Materials include teacher guidance and support for conducting fluency practice as appropriate for the concept development and grade.
- Materials include a year-long plan for building fluency as appropriate for the concept development and grade.
- Materials integrate fluency at appropriate times and with purpose as students progress in conceptual understanding.
- Materials include scaffolds and supports for teachers to differentiate fluency development for all learners.

Does Not Meet 0/4

The materials do not include a year-long plan for building fluency as appropriate for the concept development and grade, nor do they integrate fluency at appropriate times and with purpose as students progress in conceptual understanding. No significant scaffolds and supports for teachers to differentiate fluency development for all learners are evident in the materials, and guidance does not provide suggestions for the next steps to support all student learning.

Evidence includes but is not limited to:

While there are isolated fluency tasks, the materials do not provide a year-long plan for building fluency. The materials do not provide guidance for tracking the fluency progress of students across the year. No clear directions exist to support teachers for how/when to conduct fluency activities and practice with students. There are few lesson notes for teachers to describe the fluency practice and how it supports students' access to the concept in each lesson, but they lack clarity.

Materials do not specifically address fluency within the lessons. This is illustrated by a search through materials for variations of the word "fluent/fluency/fluently." In the 8th grade materials, "fluent/fluency/fluently" is mentioned two times, both within the "Animated Math" section, which indicates that students will build fluency by playing the game. There is no

evidence that these animated math games will build fluency. One of the games requires students to sort rational/irrational numbers. The game does not indicate if the answers are right or wrong unless the student watches the score. If an answer is incorrect, there is no guidance explaining the correct answer. The other Animated Math game requires students to solve equations with variables on two sides. If the problem is missed twice, the game gives the answer; there is no correction or answer as to why the answer is what it is. There is no guidance for fluency development and no mention as to when or how this activity should be conducted.

There is no evidence of instructional routines for building fluency and no evidence of the materials supporting the quick recall of facts. The following examples show how materials address the development of conceptual understanding, but these examples are not integrated into materials as part of specific fluency building. “Math Background,” at the beginning of each unit in the teacher’s edition, provides connections to the development of conceptual understanding. For example, Lesson 10.1’s Math Background explains the conceptual understanding behind calculating the surface area of prisms using a visual of a net and the formula for finding the lateral area of any prism. Lesson 11.1 focuses specifically on “Writing and Solving Equations with Variables on Both Sides”; teacher notes from Math Background say, “variable terms may be grouped on either side of the equation. However, grouping the variable terms on the side that results in a positive coefficient may be more efficient and result in fewer calculation errors.” Then, the “Professional Development” section of Module 9, Integrate Mathematical Processes, explains the progression of the use of TEKS 8.1C. “Students explore ways to find the volume of a cylinder, working from descriptions or diagrams. Students then represent the volume in symbolic form as an equation.” Again these examples are not integrated into materials as part of a year-long plan for developing fluency; they do not specifically offer routines to build that fluency.

Numerous assessments are provided to determine each student’s development of procedural fluency, but there is nothing to suggest the next steps for supporting student learning. The materials do not suggest how results are to be used to support student learning beyond the assessments. Looking specifically at the Beginning-of-Year Diagnostic Test, which has 78 problems covering 8th-grade content, the purpose is “to assess knowledge of the key objectives that will be taught in the current school year” and can be used as “a baseline for a student’s mastery of math concepts and skills, and to evaluate growth during the school year.” Fluency support is limited and inconsistent. This diagnostic tool focuses on mastery versus assessing students developing procedural fluency. For example, question 17 from the diagnostic test asks students what the relationship is between x and y in an equation based upon a story problem. The reasoning for incorrect answers is that students forgot the definition of proportional or didn’t recognize that the equation was linear. The answer key doesn’t diagnose where the problem is, nor does it offer suggestions on ways to build fluency for those students who lack understanding.

The materials indirectly integrate fluency activities with the development of conceptual understanding. For example, the “Explore” activity and “Guided Practice” introduce conceptual

understanding; however, the activities are pre-scripted and fall within the lowest cognitive level when mapping fluency to Bloom's Taxonomy. In Module 2, Lesson 2.2, "Independent Practice" provides a problem that could be interpreted to develop the accuracy part of fluency through the use of a worked example. "Jerod's friend Al had the following homework problem: Express 5.6 ×10^7 in standard form. Al wrote 56,000,000. How can Jerod explain Al's error and how to correct it?" In Module 11, students are asked to write a description of the mathematical equation. Although this question appears to offer flexibility, students are not given the opportunity to strategically and flexibly choose their own appropriate strategies and must select from those provided only. Again, students are guided through steps and are not allowed to strategically and flexibly choose the appropriate strategies for grade-level tasks.

Students *are* given ample practice opportunities, but none of them specifically lean toward fluency. The student edition online materials include "Math on the Spot" tutorial videos in each lesson for students to watch and build their conceptual understanding. Also included in some lessons is Animated Math, which engages students in interactive "Explore" activities to practice key math concepts and skills. The "Personal Math Trainer" provides a variety of learning aids, including videos, guided examples, and step-by-step solutions. However, there is no specific guidance for teachers on how fluency practice is addressed within the materials. The only "guidance" comes from the pages that show a description of each resource that can be found in the print materials and online materials.

The materials provide strategic discourse opportunities around the conceptual understanding, but there is no evidence of this discourse as a support for fluency. In Module 11, there is some discourse around the conceptual understanding of solving equations, but instead of asking students if they could solve a different way, the text asks students a question with one solution. The materials do not provide a specific fluency practice; questions such as this build fluency as students build understanding related to when it is appropriate to use a specific strategy.

Materials do not include scaffolds and supports for teachers to differentiate fluency development for all learners; there are additional skills worksheets for struggling learners. These worksheets and online options address accuracy and efficiency (more practice of the same concept), not fluency. For students who have mastered the content and need an extra challenge, "Extend the Math" of the teacher's edition includes opportunities to extend fluency; however, these opportunities to extend fluency are infrequent throughout the materials. Overall, materials do not provide an integrated, cohesive plan for developing fluency.

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2.6 Materials support students in the development and use of mathematical language.

- Materials include embedded opportunities to develop and strengthen mathematical vocabulary.
- Materials include guidance for teachers on how to scaffold and support students' development and use of academic mathematical vocabulary in context.

Partially Meets 2/4

Some materials support students in the development and use of mathematical language. The materials include embedded opportunities, mostly at the beginning of lessons, to develop and strengthen mathematical vocabulary, but only some materials include guidance for teachers on how to scaffold and support students' development and use of academic mathematical vocabulary in context.

Evidence includes but is not limited to:

Materials include some opportunities to develop and strengthen mathematical vocabulary. Each unit begins with a Vocabulary Preview, which provides puzzles like word searches and word scrambles as a way to introduce new vocabulary. For example, Unit 3 provides a crossword puzzle as a way to preview "important concepts in this unit"; the puzzle's clues describe terms associated with expressions, equations, and relationships in geometry. Another section at the beginning of each unit is Math Background, which provides teachers guidance on the academic vocabulary being introduced in each lesson in the unit, including clarification of the term's definition. For example, Unit 5 focuses on the development of dilations and similar figures; it includes a definition, examples, and reminders, guiding teachers to say, "unlike rigid transformations (translations, reflections, and rotations), dilations may change the shape of the pre-image."

The teacher and student editions provide an outline of the mathematical vocabulary within modules. Each module begins with an Unpacking the TEKS page where key vocabulary, definitions, and the Spanish words are all given. Additionally, each module offers a Professional Development Video with guidance on "teacher moves," including ways to encourage language development. In one example from Module 12, teachers are guided to connect previously

taught transformations (i.e., reflections and translations) to rotations, while also modeling the use of academic vocabulary. In addition, the teacher models correcting inaccurate vocabulary—like when a student describes a rotated image as having to stay "similar" when the figure is actually "congruent." The Reading Start-Up, also at the beginning of each module, describes the development of mathematical vocabulary, including a review of previously introduced vocabulary and a preview of key terms for the module. This section includes three parts. *Part one:* Visualize Vocabulary uses graphic organizers, charts, and diagrams as a way for students to review vocabulary that will be used in the lessons. Here, the teacher edition tells teachers to discuss these terms as a class. *Part two:* Understand Vocabulary, in the teacher edition, provides a detailed "explanation to help students learn the preview words" by asking them to complete sentences using these bolded words outlined on the page. *Part three:* Active Reading provides students with "reading and note-taking strategies to help them organize and understand new concepts and vocabulary." The materials provide instructions on how to use the foldable to take notes. Here is an example of what all three parts of Reading Start-Up look like for one module: In Module 7 "Angle Relationships in Parallel Lines and Triangles," Visualize Vocabulary provides a word bank and asks students to choose words and place them in a graphic. In Understand Vocabulary, a word bank provides preview words, and students complete sentences incorporating their definitions. In the "Active Reading" part, a pyramid is provided to organize students' learning on each of the faces using self-selected topics based on the module lessons under which students write " important ideas like vocabulary, properties, and formulas."

Lessons identify the vocabulary to be introduced and used within. Each lesson highlights the term being introduced and uses bold print to put emphasis on these academic words. For example, Module 6 introduced the term "function" when teaching about identifying and representing functions. (This term was also included as a preview word in the "Reading Start-Up" at the beginning of the unit. In addition, the teacher's edition includes a Connect Vocabulary section, which guides teachers to "remind students that a function is a rule that explains what to do with the input value to get the output value. The rule may involve one or more operations, but each input value results in exactly one output.") For each lesson, the materials include a Reading Strategies worksheet as an additional resource for struggling students. This material includes additional visuals for students to connect with the new words. Activities like Using the Context help develop the key vocabulary of the lesson and build an understanding of the vocabulary by providing a simplified definition and additional models. For example, Module 7 introduces a transversal as "a line that intersects two lines in the same plane at two different points"; however, in the Reading Strategies worksheet to support this concept, it is explained as "when parallel lines are cut by a third line, called a transversal, some pairs of angles are congruent" followed by an explanation that breaks the types of angles that are created into smaller chunks. Some questions are also provided as an opportunity for students to display, describe, and communicate mathematical ideas using precise mathematical language.

Many lessons include vocabulary connections within the Explore and Explain activities. For example, in Unit 2, Lesson 5.3, the vocabulary connection helps the students understand bivariate data. Teachers are guided to "help all students to understand the term bivariate data by first pronouncing it slowly so that they hear all the syllables. Then circle the bi- and connect it to a bi-cycle (2 wheels), and underline vari- and connect it to variable or change. So bivariate data is data in pairs of 2 variables that change in some way. The change is constant (linear) or is not constant (nonlinear)."

The teacher's edition includes Connect Vocabulary for some lessons, which prompts teachers to deepen students' understanding of vocabulary. For example, Lesson 15.1 guides teachers to "relate the math term 'mean absolute deviation' (MAD) to the math term 'absolute value.' Students should remember that the absolute value is the distance between a number and 0, and the MAD is the mean distance between each data value and the mean of the data set."

Some other lesson activities and practice include specific questions that push students to use and apply an understanding of academic vocabulary in mathematical contexts. These activities are Analyze Relationships, Justify Reasoning, Make A Conjecture, Critique Reasoning, Communicate Mathematical Ideas, and Essential Question Check-In. One example comes from Module 1, where students, learning about rational and irrational numbers, are asked to evaluate and explain what "pi" being irrational tells them about its decimal equivalent.

Some lessons also include vocabulary as part of the Guided Practice, such as the fill-in-the-blank vocabulary questions in Lesson 1.1, which asks students to express their understanding of square roots and irrational numbers by completing the sentence, "Square roots of numbers that are not perfect squares are _____." Then, in Lesson 7.1, students identify pairs of corresponding angles and alternate exterior angles, as well as describe the relationship between two angles in an illustration.

Overall, several components are there for the development and use of academic mathematical vocabulary in context, but there are missing supports for teachers on how to scaffold and support students. There are not enough opportunities for students to use academic vocabulary to listen, speak, read, and write. Some questions ask students to write their reflections, but there is no guidance on including precise mathematical language when doing so. Most of these vocabulary connections are limited to "remind the students" statements or statements such as "discuss the meaning of counter (a game piece) and board (a game tool, not a piece of wood)." The "development" of the language and vocabulary is not readily demonstrated for teachers as materials do not build on students' growth from informal language to the formal. No explicit instructions are included for repeated opportunities to use and develop terms. A strategic approach to developing math vocabulary is lacking; other than the Reading Start-Up page, addressing vocabulary development strategically is missing.

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2.7 Materials provide opportunities for students to apply mathematical knowledge and skills to solve problems in new and varied contexts, including problems arising in everyday life, society, and the workplace.

- Materials include opportunities for students to integrate knowledge and skills together to successfully problem solve and use mathematics efficiently in real-world problems.
- Materials provide students opportunities to analyze data through real-world contexts.

Partially Meets 2/4

The materials provide some opportunities for students to apply mathematical knowledge and skills to solve problems in new and varied contexts, including problems arising in everyday life, society, and the workplace. The problems focus on isolated content knowledge and skills throughout the materials, although they lack opportunities for students to integrate multiple knowledge and skills together to successfully problem solve and use mathematics efficiently. The materials do not include opportunities for students to *analyze* data through real-world contexts.

Evidence includes but is not limited to:

The materials provide multiple opportunities for students to solve real-world problems from a variety of contexts. Each module begins with an Essential Question that pertains to the real world; many lessons include application to the real world via the Explore section. In Unit 1, Module 2 focuses on scientific notation, and the Explore activities include contexts such as whale weight, planetary distances, and diameter of a strand of hair. In Unit 2, Guided and Independent Practice sets include real-world contexts such as the comparison of magazine subscriptions and carpet cleaning costs. Other topics from everyday life presented in the 8th-grade units are gardening, baseball, chess, surfing, biology, etc.

In addition, the opening of each unit contains Careers in Math, which introduces how the mathematical concepts in the unit are applicable to a specific career that ties to the student edition Performance Task. These open-ended tasks help students better understand the application of mathematics in the specific career, integrating knowledge and skills obtained

previously and in the modules throughout the unit. For example, in Unit 2, students are introduced to the primary focal area of proportions using the career of a cost estimator determining cost-effective productions. Within this unit, other proportional relationship problems include using distance, earnings per hour at a part-time job, and bicycle production at a bike shop. Students represent proportional relationships in graphs using weight on Earth and the moon, as well as distance traveled by a backpacker. Then, in the next lesson, students investigate rates of change using earnings from mowing the lawn, football heights from a kicker, and distance bicycled over time. They must also relate unit rate to slope using the constant rate of change of the snow level on a mountain, water passing over a dam, and oil pumped from a well. Later, Unit 3 focuses on "Expressions, Equations, and Relationships in Geometry" and how hydrologists use "math to assess water resources and mathematical models to understand water systems, as well as statistics to analyze phenomena such as rainfall patterns." In the Unit 3 Performance Task, students use dimensions of an underground aquifer and the mass of water to determine the mass of the water in the aquifer and if the aquifer is full given a specific mass of water.

These opportunities allow students to connect math concepts to the real world, and problems are routine in nature, providing students a clear path to replicate step-by-step methods previously learned within the unit—in isolated cases. Non-routine problems that require students to apply mathematics learned to this context are not included.

Because of isolated practice, the program incorporates minimal opportunities requiring students to integrate knowledge and skills together to make sense of a context and lacks the opportunity for students to develop an efficient and successful solution strategy. In fact, the Front Matter of both the teacher and student editions lays out the Mathematical Process Standards. It gives a suggested problem-solving method of the following steps: 1. Analyze Information, 2. Formulate a Plan, 3. Solve, and 4. Justify and Evaluate. However, its application and use are not visible or supported consistently throughout the materials. For example, in Unit 2, Lesson 3.4, "Example 2," the materials include guidance for problem-solving related to analyzing the material and formulating a plan to determine from a graph how long it takes a diver to ascend 450 feet. While this supports students finding efficient strategies, it is an isolated example, and efficiency is not a significant focus of the materials, nor is the problem-solving model explicitly a focus of instruction or learning.

The teacher edition offers a "performance task" in Assessment Resources (not to be confused with the Performance Task connected to Careers in Math), which includes a rubric to evaluate students in making sense of the problem, creating a successful and efficient solution strategy, integrating knowledge and skills, and clearly communicating their reasoning. The first statement of the Student Scoring Rubric says, "Make a plan. If the plan does not work, change it until it does work." For the Unit 2 Assessment Resources performance task, students integrate knowledge and skills within the focal point of proportional relationships. Students use an understanding of proportional and nonproportional relationships to complete tables and graphs, as well as write equations and compare functions to represent real-world situations.

For the Unit 6 Assessment Resources performance task, students are provided a table of data and must determine mean and mean absolute deviation. Graphical representations are created to display the data. Two questions within the task require students to make sense of the context when asked to “conjecture about the total number of hours spent on studying and exercise by the students surveyed” and when asked to “explain if the sample is a good representation of the entire school.” These tasks isolate the knowledge and skills presented throughout the unit and focus on routine problems and guide the students to replicate previously learned procedural methods, limiting integration and application—the next steps in the learning progression.

At the beginning of each module, Real-World Videos are provided to “engage students with interesting and relevant applications of the mathematical content of each module.” Although materials offer students a chance to read and use real-world data, no opportunities for students to analyze data are provided. They do not have opportunities to connect with and communicate findings; in fact, what is called analyzing is simply calculating and following steps. Students do not use graphs and tables in a way that helps them better understand or draw conclusions about their world. Students mainly “examine” data to complete a specific task. The following examples provide evidence: In Module 15, the Real-World Video shows how data from a sample can be used to make determinations about a population. Although the sampling process is modeled in an attempt to determine which college football team is most popular in Austin, Texas, and specific data is shared in a table, the opportunity for this data to be analyzed by students is not provided. In Module 16, students are provided tables and must calculate simple and compound interest. Students analyze real-world data pertaining to deposits in a savings account to save money for college and retirement. Students also compare simple and compound interest to determine which of two accounts will earn more interest over a period of time. Students represent real-world data presented in a graph using equations to show how the values of two accounts increase over time but are not asked to collect real-time data in lessons. Students are simply following provided procedures to calculate problems, but they do not conduct an analysis where information is connected and communicated after determining solutions.

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2.8 Materials are supported by research on how students develop mathematical understandings.

- Materials include cited research throughout the curriculum that supports the design of teacher and student resources.
- Materials provide research-based guidance for instruction that enriches educator understanding of mathematical concepts and the validity of the recommended approach.
- Cited research is current, academic, relevant to skill development in mathematics, and applicable to Texas-specific context and demographics.
- A bibliography is present.

Does Not Meet 0/4

The materials are not supported by research on how students develop mathematical thinking. The materials do not include cited research throughout the curriculum that supports the design of teacher and student resources. The materials do not provide research-based guidance for instruction to enrich educator understanding of mathematical concepts, and there is no research to support the validity of any recommended approaches. The program does not cite research to understand skill development in mathematics and does not reference application to Texas-specific context or demographics. There is no bibliography present in the materials.

Evidence includes but is not limited to:

The materials do not include a description of the design of the program. While the materials include a limited concrete-representational-abstract (CRA) approach to developing students' conceptual understanding and procedural fluency throughout the units, there is no reference of cited research from the field of mathematics education or special education justifying this approach for lesson design. For example, Unit 3 Lesson 10.1 introduces the surface area of prisms by moving students from nets to writing equations using area formulas to find surface area; however, no research-based information is provided related to this approach. The program does not provide cited research about the effectiveness of a specific model for teaching, such as graphic organizers. The program does not cite research on effective blended instruction.

The materials provide descriptions of the mathematical concepts within the materials to support educators in deepening their own understanding of the mathematics being developed but do not provide research to support these descriptions. For example, at the start of each unit in the teacher edition, the materials provide educators with detailed explanations and visuals for the trajectory of learning mathematics within each unit, including representations and contexts used during instruction, but do not cite supporting research. Additionally, at the beginning of each unit, Math Background provides educators with detailed explanations related to the mathematical concepts that will be introduced in the unit, including connections to prior understanding, vocabulary, examples/non-examples, pictorial models, and common misconceptions which guide teachers' instruction; however, the information provided does not include any references to research that supports these approaches nor are contexts specifically included in the information. In Unit 1, while teaching scientific notation, the Math Background for this TEKS states, "Scientific notation is an efficient way to write very large and very small numbers. The distance from Earth to the sun is approximately 93 million miles or 93,000,000 miles. The key step in the translation to scientific notation is to recognize that 93,000,000 = 9.3 × 10,000,000 and to see that 10,000,000 is a power of 10, namely10^7 . Thus, 93,000,000 = 9.3 × 10^7." There is no evidence of mathematical research to support this information and no resources to consult for further explanation. While there is guidance in each unit's Pacing Guide (how long to spend on each lesson), Program Resource page (how to plan for the lesson, introduce the lesson, teach the lesson, and assess the lesson), and Front Matter (how the Mathematical Process Standards are met), research is not cited to explain reasoning/justification for these suggestions.

The materials do not explain the validity of their approach to the development of mathematical understanding and the process standards and do not reference research-based instructional techniques. Lessons follow the 5E model: Engage, Explore, Explain, Elaborate, and Evaluate. Again, no research is cited to support the "validity" of this approach. The materials include specific tasks related to their integration of the mathematical process standards. For example, the "HOTS" (Higher-Order Thinking Skills) and Reflect sections are included in the lessons throughout the materials and support TEKS 8.1.F related to analyzing relationships; however, the validity of these types of tasks is unconfirmed due to no cited evidence.

The TEKS Correlation within the materials provides citations specific to the "instructional resources that support all of the Texas Essential Knowledge and Skills for Mathematics Grade 8." In addition, this section includes references within the materials specific to the English language proficiency standards (ELPS), which "outline English language proficiency level descriptors and student expectations for English language learners." While this information supports a Texas-specific context and relates to the demographics of Texas students, the materials lack specific evidence of research used to design the program around these parameters.

The materials do not contain a bibliography that cites research presented throughout the instructional materials. The only items found in the Back Matter are a glossary, index, table of

measures, formula chart, and a list of commonly used mathematical symbols. There is no bibliography or appendix to list cited research.

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3.A.1 Materials develop student ability to use and apply a problem-solving model.

- Materials guide students in developing and practicing the use of a problem-solving model that is transferable across problem types and grounded in the TEKS.
- Materials prompt students to apply a transferrable problem-solving model.
- Materials provide guidance to prompt students to reflect on their approach to problem solving.
- Materials provide guidance for teachers to support student reflection of approach to problem solving.

Partially Meets 2/4

Although materials provide a problem-solving model that is transferable across problem types and grounded in the TEKS, the development of student ability to use and apply the model is lacking. Throughout the lessons, materials do not consistently prompt students to apply a transferrable problem-solving model. The materials do provide some guidance, prompting students to reflect on their sample problems, and some guidance provides teachers support for student reflection of problem solving, but not of their own problem-solving applications.

Evidence includes but is not limited to:

The Mathematical Process Standards pages introduce a problem-solving model in Front Matter of the teacher and student editions, which is given within the context of the process standard TEKS 8.1.B and divided among the four parts. The process is listed as “Analyze Information,” “Formulate a Plan,” “Solve,” and “Justify and Evaluate.”Each category of the problem-solving model also includes guiding questions to better explain what the model means. For example, Analyze Information asks the following guiding questions: “What are you asked to find? What are the facts? Is there any information given that you will not use?” Next, the Formulate a Plan step asks, “What strategy or strategies can you use? Have you solved any similar problems before?” The third step in the problem-solving model, Solve, includes statements to remind students to follow their plan and show the steps in their solution. Finally, the Justify and Evaluate step asks, “Did you answer the question? Is your answer reasonable? Are there other strategies that you could use?”-However, the problem-solving model in its entirety is only sometimes present, not used throughout every unit for all problem types. The prompts to

analyze and justify are throughout, but the materials do not support the student to develop and practice the model using all four sections. These prompts are more aligned with 8.1F (analyzing mathematical relationships) and 8.1G (display, explain, and justify mathematical ideas) rather than 8.1B (using the problem-solving model). Some questions in the Higher Order Thinking (HOT.) section are labeled "Problem Solving," but the support to practice the four parts is missing. The first time the problem-solving model is clearly introduced in the materials is in Example 2 of Unit 2, Lesson 3.4. While Example 2 models the problem-solving steps for students "through a four-step problem-solving plan to solve a multistep word problem," it is the only example problem provided throughout the 15 lessons in Unit 2, which explicitly integrates and provides opportunities to develop the problem-solving model.

The materials provide few opportunities for students to practice and apply the problem-solving model. On page TX12, the Correlation for Grade 8 includes a list of pages within the student edition where specific TEKS are addressed. TEKS 8.1.B, the use of a problem-solving model, can be found in four lessons within the following modules: Modules 3, 10, and 13. This does not support the consistent development and practice of a problem-solving model for students. Additionally, students are not asked to complete this model on their own during independent practice. For instance, Module 10's example uses the problem-solving model to calculate the surface area of a rectangular prism. Students analyze information by identifying the important information, which has been identified and listed for them. Then, students formulate a plan, which is also there for them to read. Next, students are prompted to solve; the materials provide step-by-step instructions on how to solve the problem. Finally, students are asked to justify and evaluate. A justification is provided but does not include an opportunity for students to evaluate the reasonableness of the solution. Immediately following the problem-solving model is an additional question labeled "Your Turn." Students are expected to mimic the problem-solving model here, but no further guidance is provided for them to truly practice each part of the problem-solving model on their own.

Materials contain few guiding prompts for students (or for teachers) to apply a transferrable problem-solving model. No anchor charts are included of the problem-solving model, which would allow students a quick reference throughout the year. The Front Matter of the materials in the Student and Teacher Editions includes a graphic of the four-step problem-solving model as a reference, which includes question prompts for each step. However, no prompts encourage the use of this resource. For example, "Practice and Problem Solving" worksheets do not have prompts or guides to help students remember to use the problem-solving model for all problem types. These prompts are only used in specific lessons where the problem-solving model is presented. Students are frequently asked to answer questions involving problem-solving but make no mention of using the model to analyze information, formulate a plan, solve, then justify and evaluate. Before each "Independent Practice" section, teacher editions provide support for teachers in a chart form. The information provides the exercise/problem number, its depth of knowledge level, and its math process identification. Two instances from the teacher edition indicate that a particular Independent Practice problem focuses on a "problem-solving model." However, the actual exercises mentioned do not ask the student to

use a problem-solving model, and in fact, are simply word problems. There were NO instances found in the materials where the students were prompted to utilize a problem-solving model. Furthermore, in Unit 2 of the materials, none of the 84 Independent Practice questions explicitly encourage students to "use a problem-solving model." It is also important to note that there are numerous problems within each lesson that focus on a specific part of the model, although the connection to the model is not made. For example, Lesson 11.1 focuses on students justifying their reasoning on a question in Independent Practice, which is a part of the problem-solving model; however, a connection between justification and the problem-solving model is not made evident.

The materials provide minimal prompts for students to reflect on their approach to problem-solving. When the materials do prompt reflection, students are not reflecting on their own personal processes for solving a problem; the reflections address the context and not the *approach* to problem-solving. Although the guiding questions associated with the problem-solving model include "Are there other strategies that you could use?" (in the Justify and Evaluate portion), no evidence was found of prompting students to reflect on their own approach to problem-solving. However, the materials do provide opportunities for students to reflect on *provided* problem-solving approaches. For example, Module 11 "Math Talk" prompts students to reflect to determine how they could have solved the problem differently to avoid having to reverse the inequality symbol when solving a two-step inequality. Additionally, throughout the materials, "Reflect" problems are incorporated, requiring the application of conceptual understanding to a new problem-solving situation, but not on the approach used. Lesson 1.1 Reflect asks, "How are the two square roots of a positive number related? Which is the principal square root?" In that same lesson, there is a Reflect question that states, "How could you find an even better estimate of$\sqrt{2}$? Later in Lesson 16.1, Reflect asks students, "If Alex had saved $333.34 a month for 3 months, how much money would he have? If he had used his savings instead of his credit card, how much less would his purchases have cost him?" While this encourages students to reflect and compare the two options, it is not related to a problem-solving approach used by the student specifically, nor is the solution path connected to the problem-solving plan.

Almost all guidance provided for teachers, as stated above, encourages a reflection on contextual understanding and not on the student's ability to use and apply a problem-solving model.

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3.A.2 Materials provide opportunities for students to select appropriate tools for the task, concept development, and grade.

- Materials provide opportunities for students to select and use real objects, manipulatives, representations, and algorithms as appropriate for the stage of concept development, grade, and task.
- Materials provide opportunities for students to select and use technology (e.g., calculator, graphing program, virtual tools) as appropriate for the concept development and grade.
- Materials provide teacher guidance on tools that are appropriate and efficient for the task.

Partially Meets 2/4

The materials provide some opportunities for students to use appropriate tools for the task and concept development. Throughout the materials, there are opportunities for students to use real objects, manipulatives, representations, and algorithms as appropriate for the stage of concept development, grade, and task; however, the selection of these tools is not left to the students. In addition, the materials provide opportunities for students to use technology (e.g., calculator, graphing program, virtual tools) as appropriate for the concept development and grade; again, their selection is not clearly provided within the tasks. Additionally, the materials provide teachers with little guidance on tools that are appropriate and efficient for the task.

Evidence includes but is not limited to:

Students use representations from the grade-level TEKS to solve tasks and enhance their understanding of concepts by exploring mathematical ideas and making/testing conjectures. For example, in grade 8, students are able to use a paper triangle to model the relationship between the measures of the interior angles of a triangle. Students use paper and pencil to create models to prove the Pythagorean Theorem and also to find the mean absolute deviation for two sets of data. Students use graphing calculators to randomly generate samples, then use paper and pencil to make predictions about the entire population. When determining monthly payments to pay back a credit card balance, students use an online loan calculator. Specifically, in Lesson 10.2, students are provided algebra tiles, nets, and equations to find the surface area

of cylinders; then, in Lesson 11.1, algebra tiles are used to solve equations with the variables on both sides. In Lesson 15.2, "Explore Activity 1" says that a graphing calculator can be used to generate a random number and lists instructions to guide the student through the process of which function on the keypad to use. In all of these lessons, tools are specified; students are not self-selecting.

The materials do not explicitly provide students opportunities to select grade-appropriate tools for solving tasks; the materials incorporate prompts for students to use a specific tool versus making a choice. In Lesson 7.2, the "Professional Development" box says that this lesson addresses TEKS 8.1C, "'select tools, including real objects, manipulatives, paper and pencil, … to solve problems.' Students use a paper triangle to model the relationship between the measures of the interior angles of a triangle. They can then use paper and pencil to solve equations to find the measures of the interior angles of a triangle or the measure of an exterior angle of a triangle." "Guided Practice" for Lesson 11.1 says, "use algebra tiles to model and solve each equation." These examples given do not allow the student to select the tool; they are told what to do.

There are a few opportunities that allow students to choose the most appropriate tool for a task. In Lesson 4.5, students answer a "Your Turn" question after teachers review methods of graphing lines: "Students can either use a table of values or plot the y-intercept and use the slope to plot additional points on the line." In Lesson 8.1, the "Essential Question Check-In" tells students to "use a model or a diagram to help you state the Pythagorean Theorem and tell how you can use it to solve problems." The Essential Question from Lesson 11.1 asks, "How can you represent and solve equations with the variable on both sides?" The sample answer states that "you can use algebra tiles to model and solve equations with the variable on both sides. You can also use inverse operations to get the variable terms on one side of the equal sign and the constant terms on the other side, and then divide both sides by the coefficient of the resulting variable term."

The materials provide students opportunities to learn to use grade-appropriate tools for solving tasks and understanding concepts. In Unit 1 in the teacher and student editions, there are links to integer counters, fraction bars, fraction decimal grids, bar models, geometry sketcher, algebra tiles, graphing calculator, and scientific calculator. The student can click on a question mark, which brings up instructions on how to use each tool to model a task. However, not all tools are explicitly taught in regards to which tool to use within the context of the tasks/questions. The tools lack tutorials and prompts to support student learning of the tool. While the materials provide grade-appropriate technology that could be used for solving tasks, the integration of these tools within the tasks is not clearly encouraged or referenced in other places. (Also noted: the virtual graphing calculator does not have the full functions for grade-appropriate tasks.)

Each module does include one "Animated Math" activity, which provides online, interactive tools and simulations for students. The materials provide tutorials and prompts to support

student learning of the tools:-dynamic coordinate plane/table, dynamic corresponding angles, dynamic Pythagorean Theorem model, dynamic cylinders, interactive cylinder nets, dynamic transformations, dynamic triangles/rectangles, and virtual calculator. Activities in Animated Math use the tools to explore concepts such unit rate as slope, linear graphs, linear equations from a table, linear functions, parallel lines cut by a transversal, Pythagorean Theorem, volume of cylinders, surface area of cylinders, translations/rotations/reflections, similar figures, scatterplots, and repaying loans. In Module 15, the teacher guide explains using Animated Math during the lesson and provides an explanation of the tool being used: "Students use a graphical representation of data to visualize distance from the mean and explore mean absolute deviation." While some of these tools are representations from the grade-level TEKS, it's important to note that these tools are specific to a prescribed task and include minimal instructions on their use, which limits their application across concepts as well as understanding their use.

The materials provide some teacher guidance about each tool, but the teacher guide does not explain the purpose of each tool, when it is introduced within each grade, and how it connects to the TEKS. For example, Unit 3's Professional Development offers guidance on using a paper triangle for the measurement of angles, and in Unit 6, the guidance is on using paper and pencil to prove the Pythagorean Theorem. Other units guide the teacher through using number sense and mental math, but the materials do not explain which tool is more appropriate or more efficient for a task. In Lesson 7.3, an "Independent Practice" question asks, "When does it make sense to use similar triangles to measure the height and length of objects in real life?" The sample answer states, "If the item is too tall or too large to measure with a tape measure or other measuring device, or if a straight-line path is not accessible." This explanation states when the method is more efficient but does not provide a detailed explanation of the affordance and constraints of this method.

The materials provide teacher guidance about the tools introduced but lack explanations about which tools are appropriate and efficient for a task. In the Professional Development section of lessons, there is some guidance. It does not give the purpose of the tool or how it connects to the TEKS, other than the "select tools" TEKS (8.1C). In "Differentiate Instruction" of Lesson 7.2, teachers are guided to "have students draw a large scalene triangle ABC on a piece of construction paper and label the interior angles 1, 2, and 3. Then have them draw all six of the exterior angles and label them angles 4–9. Have students trace triangle ABC on another sheet of paper and label its angles 1–3. Now have students cut out the triangle they traced and tear off the three corners (including the numbers). Ask them to place two of the torn corners over the exterior angle for which they are the remote interior angles. A sample is shown at right."

Minimal guidance is provided for the integration of a calculator as a tool within the materials. The teacher materials in Lesson 11.1 Differentiate Instruction section guides teachers: "Using the expressions in Example 1, demonstrate for students how the situation can be represented on a graphing calculator. Have students graph the equations y= 20 + 30x and y= 36 + 28x on one screen. The x-value for the ordered pair at the point (8, 260), where the two lines intersect, is the number of days (8) for which the cost of either rental agency is the same. The y-value is the

total cost ($260).” However, it is important to note that this is the only reference in Unit 4 to integrating a graphing calculator.

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3.A.3 Materials provide opportunities for students to select appropriate strategies for the work, concept development, and grade.

- Materials prompt students to select a technique (mental math, estimation, number sense, generalization, or abstraction) as appropriate for the grade-level and the given task.
- Materials support teachers in understanding the appropriate strategies that could be applied and how to guide students to more efficient strategies.
- Materials provide opportunities for students to solve problems using multiple appropriate strategies.

Does Not Meet 0/4

The materials do not meet the requirements of this indicator. Although the materials provide multiple appropriate strategies for students to solve mathematical problems, opportunities for students to self-select appropriate strategies or techniques for given tasks do not exist. Instead, students are often prompted on how to solve problems. Additionally, they do not have opportunities to use two or more approaches at once, nor are students asked to describe similarities and differences between approaches without teacher guidance. The materials provide minimal support for teachers in understanding the appropriate strategies or guiding students to apply more efficient ones.

Evidence includes but is not limited to:

Mental math, estimation, number sense, generalization, or abstraction techniques are used sparsely throughout the materials, and when they are used, the materials do not prompt students to select an appropriate technique for solving tasks. Students are provided the specific technique to use, without an opportunity to choose their own. Evidence was found to support teachers prompting students to use a specific technique, but, again, there was no evidence found related to support students to select an appropriate technique. For example, in Unit 1, some prompts ask students to “approximate each irrational number” and “use perfect squares to estimate square roots” and “estimate the value of the square root of 5.” Unit 2 offers a Hot Tip, which is to “Estimate your answer before solving the question. Use your estimate to check the reasonableness of your answer.” Sometimes the prompt is part of a word problem like

these examples from Unit 3: “Matt bought a tent without a floor. Estimate the surface area of the tent in square feet” and “A pole is 65 feet tall. A support wire is attached to the top of the pole and secured to the ground 33 feet from the pole’s base. Find the approximate length of the wire.” Other times the prompt also mentions a specific tool to aid with the technique, like in the Unit 7 Study Guide Review, where students are told to “use an online tool to estimate the cost for one year at a 4-year university and one year at a 2-year college in Texas.” However, none of these allow students to select a technique.

Although these prompts offer support throughout the teacher edition, materials do not outline the importance of the strategy in a student’s mathematical learning trajectory with explicit connections to the TEKS. Teachers do not learn the reasoning of early less-efficient strategies in supporting students’ early conceptual work. There is never a mention of why one is more appropriate than another. The “Math Background” at the beginning of each unit provides teachers with some strategies to use within each concept but does not discuss the importance of beginning with specific visual models before moving on to the abstract and conceptual strategies to develop students’ understanding. Math Background for Unit 1 provides guidance on the use of estimation when working with square roots. However, the guidance includes step-by-step instructions without building understanding for which tasks it would be appropriate. Additionally, throughout the materials, efficiency is addressed two times**.** First, in Unit 1, Math Background for scientific notation states that “Scientific notation is an efficient way to write very large and very small numbers,” “easy to write and easy to read.” The other time is in Unit 4 Math Background, which discusses writing and solving equations with variables on both sides, and states that “grouping the variable terms on the side that results in a positive coefficient may be more efficient and result in fewer calculation errors.”

The materials do provide prompts for the instructor but only assist in using appropriate techniques, and do not provide the depth of knowledge to the teacher. For example, in Lesson 1.3, “Your Turn” suggests to teachers that, “Calculators should not be used at this point because developing number sense is the goal.” Additional “Number Sense” activities are provided in the “Differentiated Instruction” guidance only in the teacher edition. Later, Lesson 11.2 Number Sense prompts, “Students should note that when eliminating decimals from an equation, the greatest number of decimal places in the terms will determine the power of 10 they should multiply by.” In Lesson 15.1, teachers facilitate discussion in “Engage with the Whiteboard,” prompting students to “Discuss different ways to find each distance, such as mental math or by using pencil and paper.” These examples fail to develop teachers’ understanding of strategies appropriate for solving a task.

The materials include opportunities for students to learn multiple appropriate strategies for solving problems. For example, in Unit 1, students interpret square roots using perfect squares, estimation, and technology (calculator). Unit 2 requires students to use tables and equations to model proportional values, use graphs to visualize proportional relationships, and create tables to model relationships. In Unit 5, students use coordinate grids to visualize rotations, then describe relationships between rotations and preimages. In Unit 6. paper and pencil are used to find mean absolute deviation; then students use spreadsheets to program and find the mean

and MAD of a data set. In Unit 7, students use an online loan calculator to determine monthly credit card payments, then use a calculator to determine the total repayment of the loan.

However, there are no tasks requiring students to solve a problem using at least two different approaches learned within the unit, and students are not directly asked to describe the similarities and differences between the two approaches. The only evidence found involves teachers asking students to compare approaches. For example, in Lesson 4.1, teachers “have students complete the graphic organizer showing at least one similarity and one difference between proportional and nonproportional linear relationships.” Later in Unit 2, Lesson 4.4 asks the Essential Question, “How are using graphs, equations, and tables similar when distinguishing between proportional and nonproportional linear relationships?”

Overall, materials are teacher-driven, and students do not have the opportunity to select appropriate strategies, thinking through grade-level math work and concept development.

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3.A.4 Materials develop students' self efficacy and mathematical identity by providing opportunities to share strategies and approach to tasks.

- Materials support students to see themselves as mathematical thinkers who can learn from solving problems, make sense of mathematics, and productively struggle.
- Materials support students in understanding that there can be multiple ways to solve problems and complete tasks.
- Materials support and guide teachers in facilitating the sharing of students' approaches to problem solving.

Does Not Meet 0/4

The materials for this grade level do not meet the criteria for this indicator because the materials do not support students seeing themselves as mathematical thinkers who can learn from solving problems, make sense of mathematics, and productively struggle; the materials do not support students in understanding that there can be multiple ways to solve problems and complete tasks, and the materials do not support and guide teachers in facilitating the sharing of students' approaches to problem-solving.

Evidence includes but is not limited to:

The materials provide a guide in Front Matter—for students to see their role—called "Succeeding with...Math." Students see the components of the materials where they "actively participate" in lessons, engage in "Explore" activities, try "Your Turn" exercises to check for understanding, scan QR codes to watch "Math On the Spot" tutorials, and check for mastery by completing "Texas Test Prep" questions. Additionally, the guide shows students how to enhance their learning with an online assessment and intervention tool, "Personal Math Trainer," and "Animated Math" activities for interactive exploration of key math concepts and skills. However, the materials do not support the development of a growth mindset. Classroom norms are not provided to support a shift in the authority of mathematics from the teacher-and-textbook to the classroom community. Students rarely share their strategies and approaches with classmates, nor do they communicate or respond to their peers' thinking or problem solving. While the materials do provide opportunities for some collaboration, the development of a mathematical community is not inherently introduced or supported as there

is no guidance for teachers on how to engage *all* students, especially those reluctant to participate. There is no guidance on small group discussions, and the whole group discussions do not involve making sense of mathematics. The following is a rare example guiding teachers to provide discourse around solution strategies: The "Differentiate Instruction" section of the teacher guide includes "Cooperative Learning" in some of the lessons, which provides an additional grouping activity; however, the opportunity to focus on alternate strategies or compare strategies was rarely found. In Lesson 11.1, Cooperative Learning guides teachers to "have students work in pairs to use algebra tiles to model and solve equations. Have one student model the left side of the equation and another student model the right side. Then have one student model how to get the variable terms on one side of the equation and the other student model how to get the constant terms on the other side of the equation."

The materials do not include tasks designed to support the development of confident problem solvers that struggle productively, making sense of the problem, and solving it. The materials do not provide low floor, high ceiling tasks for students to make mistakes and ask questions. The materials only provide opportunities to correct mistakes in word problems from other "textbook students," but the tasks themselves are suggestions of what students might do and not actual errors current students have made. For example, "Avoid Common Errors" highlights common, anticipated errors/misconceptions and provides guidance for alerting and/or guiding students to avoid these misconceptions. Lesson 1.1 prompts the teacher to "make sure students understand that the rational numbers 3.14 and 22/7 are only *approximations* for π. They are NOT *equal* to π, which is an irrational number." Lesson 12.2 warns, "students may plot the vertices of the image correctly but label them incorrectly. Suggest that they label each vertex of the image as they plot the point and confirm that each letter matches the letter of the corresponding vertex in the preimage." Because teachers are not prompted to address "real-time" errors, the characteristics of being a learner of mathematics are not specifically addressed and do not foster an intentional growth mindset as students may not connect these errors to their own.

The materials highlight mathematical careers focused on the work of mathematicians, but these do not necessarily enable students to see themselves as mathematical thinkers. At the beginning of each unit, materials include "Careers in Math," which provides an opportunity "to apply mathematics to problems arising in everyday life, society, and the workplace." "Real-World Videos" are provided for students to see and hear these careers in action. However, these are not focused on developing efficient ways of solving problems. A "Performance Task" is also included at the end of each unit for students to work through problems involving the highlighted career, concepts, and skills. For example, in Unit 1, the career is an astronomer. The question states: "An astronomer is studying Proxima Centauri, which is the closest star to our Sun. Proxima Centauri is 39,900,000,000,000,000 meters away." The questions then are related to scientific notation using the data given in the problem. Another example from Unit 5 highlights how contractors "use math when researching and implementing building codes, making measurements and scaling models, and in financial management," and includes an image of contractors from different ethnicities; however, beyond the image, there is no specific

connection to these individuals in the materials. Additionally, there is no indication the purpose of this section is to encourage students to see themselves as doers and thinkers of mathematics. The teacher guide includes a link to the American Mathematical Society website as an additional resource "for more information about careers in mathematics as well as various mathematics appreciation topics"; the link is to the home page for the site without guidance to the specific materials referenced.

The materials provide very few tasks designed to allow for multiple pathways to a solution by applying the tools and procedures they are learning. Students see multiple pathways for solving a problem through the examples in the materials. However, there are no discussion questions or prompts to compare the pathways between students and to orchestrate a productive mathematical discussion. Although the questions lend students toward multiple pathways, the textbook limits guidance to a specific strategy. In Unit 4, the introductory question to motivate the lesson asks, "What are some ways to create a new equation with no fractions and the same solution as the original equation?" Then in Lesson 11.3, the question asks how to represent an unequal situation. Also, the Unit Performance Tasks (separate assessment Performance Tasks, not related to Careers in Math) include open-ended questions for students to apply their prior knowledge, and according to the student rubric, the students should use different methods and models to help find the solution. However, the teacher rubric does not mention multiple methods, nor do the performance tasks actually require or ask for multiple methods. Given that multiple strategies are not taught or encouraged throughout the materials, these tasks tend to lean toward mimicking procedures versus deep exploration of alternate strategies.

Instructional routines are not explicitly included in the materials. However, it is important to note that most of the lessons follow the "I do—We do—You do" routine which the National Council of Teachers of Mathematics (NCTM) notes, "focuses on doing processes and procedures with little understanding of how and why they work or the appropriate use of different processes and procedures and how they can be applied in varied mathematical situations. In addition, lessons that follow this routine tend to "focus on mimicry and memorization." In addition, the problem-solving process outlined in the Front Matter is only used a few times throughout the materials. The materials do not provide instructional routines designed to provide greater access to a problem. The Explore Activity typically models a rudimentary breakdown of a specific strategy used for the concept or skill. This suggests a focus for students to align with few solution strategies with no suggestions for setting up a task in ways that encourage divergent solution strategies from students. Mathematics as an act of creativity and experimentation does not exist. For example, in Lesson 11.1, algebra tiles are used to model a variable of both sides of an equation. Guidance in the teacher guide builds the idea of multiple approaches by having "students model subtracting x from both sides of the equation and then adding 1 to both sides of the equation. Then have students start with the original equation again and model, adding 1 to both sides of the equation and then subtracting x from both sides of the equation. Have students compare the solutions that are obtained in both ways." After the one Explore problem, inverse operations are used, and no connection is made to the algebra tiles or the multiple solution paths that the materials prompt with them.

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3.B.1 Materials prompt students to effectively communicate mathematical ideas, reasoning, and their implications using multiple representations.

- Materials provide students opportunity to communicate mathematical ideas and solve problems using multiple representations, as appropriate for the task.
- Materials guide teachers in prompting students to communicate mathematical ideas and reasoning in multiple representations, including writing and the use of mathematical vocabulary, as appropriate for the task.

Partially Meets 2/4

Some opportunities exist for students to effectively communicate mathematical ideas, reasoning, and their implications using multiple representations. However, the use of these representations to communicate their thinking with others is not prompted; in fact, there is no indication that students' communication extends beyond self, other than whole class discussion. In addition, the opportunity to develop vocabulary exists, but there is a lack of teacher guidance to develop written mathematical communication since there are no consistent prompts for students to communicate ideas and reasoning. Because this indicator focuses on communication, including writing, it only partially meets grade-level expectations.

Evidence includes but is not limited to:

The materials provide numerous opportunities for students to communicate mathematical ideas and representations using visual, physical, contextual, verbal, and symbolic representations. For example, in Module 3, students use tables and equations to model a relationship between corresponding real-world proportional values. Students represent proportional relationships with graphs as well. Students are prompted to use pertinent vocabulary from the lesson and explain the process for using an equation to draw a graph that represents a proportional relationship. In Module 8, students use equations and graphs to determine the distance between two points; students reflect by explaining why specific coordinates represent points on the graph and describe what x and y represent in terms of the Pythagorean Theorem. Then in Module 11, students use symbols to represent verbal descriptions by writing inequalities to model real-world situations. Students explain their process for determining which inequality symbol to use when writing the inequality.

The “Multiple Representations” tasks that appear throughout the material provide opportunities for students to represent their thinking in multiple ways and can be solved using a variety of representations. Students can use models, pictures, or verbal descriptions to solve tasks. For example, in Module 3, the “Guided Practice” nudges students through tables and graphs to determine rates of change. While this lesson contains tasks that ask the students to communicate their thinking, there is no evidence of how students show their thinking to others. In Module 10, students use a net to determine the lateral and total surface area of a cylinder. Students then model their thinking; however, the visibility of their thinking to others is undefined. In Module 11, students use algebra tiles to support their understanding of equations, yet they are not using these algebra tiles to communicate with others. In 12.1, students use physical models of traced figures or independently move each point of a figure to represent translations; however, the material lacks prompting for these representations to be shared with others.

The materials support teachers in developing students’ use of mathematical vocabulary at the beginning of each unit in “Reading Start-up,” where important mathematical vocabulary is listed. Graphic organizers, such as main idea webs, introduce vocabulary. Students visualize and understand vocabulary and create a foldable to add important ideas and vocabulary as they work through the module.

In Module 15, students create a layered book as a tool for learning vocabulary. Guides include prompts for the teacher related to the use of the graphic organizer. For example, in Module 11, the teacher guide prompts “as a class, add additional ovals to the graphic and brainstorm additional terms and definitions related to the content in this module.” Each unit also contains a vocabulary preview that is a word puzzle of some kind like a word search, an “unscramble the word,” or a crossword puzzle. Additionally, the teacher guide includes “Connect Vocabulary,” which guides the teacher in making connecting relationships for vocabulary development. An example from Module 7 says, “Explain that even though corresponding angles and same-side interior angles are found on the same side of the transversal, they are not the same pair of angles. Corresponding angles have one angle on the exterior and one on the interior and are congruent, while same-side interior angles are both on the interior and are supplementary.”

Students are provided opportunities to share thinking with “Communicate Mathematical Ideas” tasks, which are included in the introductory activities, in examples, and in “Independent Practice.” In Module 1, students share their understanding of irrational numbers by answering this question: “Irrational numbers can never be precisely represented in decimal form. Why is this? ” In Module 12, students communicate their understanding of rotations when they answer, “How are the size and the orientation of the triangle affected by the rotation?” Then in Module 16, students express their understanding of repaying loans as they respond to the question, “With Claudia’s loan, does loan length or interest rate have the greater effect on the cost of the interest for the loan? Explain.” Additional communication opportunities come from “Math Talk,” where students answer questions like “Describe two ways to find m∠ACB.” and

“Which is more likely representative of a population, a small sample or a large sample? Explain.”

The materials also provide opportunities for students to take notes and share their mathematical ideas in the online, write-in Student Edition. This version of the student edition allows students to digitally take notes and answer questions posed in lessons. The materials allow students to save their notes and responses to their online “My Notebook” tool by clicking the checkbox as they use the digital write-in feature.

The materials provide some suggestions for teachers on ways to support students in orally expressing their mathematical ideas; however, there is no guidance for teachers on how to use writing to develop reflection. For example, the teacher guide includes a “Focus on Math Connections” for teachers to point out important steps and information throughout a lesson. The teacher edition includes “Avoid Common Errors,” where prompts remind students of pertinent protocols when working with numbers and operations, especially when using symbols. The “Essential Question” and “Questioning Strategies” included in the teacher guide provide opportunities for teachers to prompt students’ sharing their mathematical ideas orally through the inclusion of open-ended questions that often ask students to explain or justify their thinking. Also, questioning strategies exist that support students’ reasoning with representations, but they generally do not include *multiple* representations. For instance, Unit 2 asks, “How do you find slope when you are only given an equation or table?” Talk About It in Lesson 11.3 asks, “How can you use inequalities to solve real-world problems?”

At times, Focus on Communication (also in the teacher guide) provides discussion prompts such as this one provided in Lesson 5.2: “Have students informally describe the information that is shown in the table for Exercise 2-5, and what it might mean for someone who is climbing mountains.” In general, though, this section guides teachers with reminders for students more often than prompts for discussion. In Unit 2, one of three prompts relate to sharing mathematical ideas orally, whereas the other two prompts do not elicit sharing of ideas orally or in writing and were simply reminders to students “be sure that students can explain that in order to find the y-intercept, they need to work backward to find the y-value when x is 0.’” In the other units, the Focus on Communication sections prompt discussions less. In Unit 1, one of two prompts suggests discussion; zero in Unit 3; zero of two occurrences in Unit 4; etc. Most prompts that are designated as writing assignments could just as easily be completed orally because no specific details guide the teacher in written instructions, expectations, or scoring.

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3.B.2 Materials provide opportunities to discuss mathematical ideas to develop and strengthen content knowledge and skills.

- Materials provide opportunities for students to engage in mathematical discourse in a variety of settings (e.g., whole group, small group, peer-to-peer).
- Materials integrate discussion throughout to support students' development of content knowledge and skills as appropriate for the concept and grade-level.
- Materials guide teachers in structuring and facilitating discussions as appropriate for the concept and grade-level.

Does Not Meet 0/4

The materials do not meet the criteria for this indicator. Although there are opportunities for students to engage in mathematical discourse, discussions are not structured to develop and strengthen content knowledge and skills. Some opportunities allow students to engage in a variety of settings (e.g., whole group, small group, peer-to-peer), but not necessarily to develop understanding. Additionally, these opportunities are sporadic and lack guidance for teachers on how to facilitate and integrate discussion. Materials do not integrate discussion throughout lessons to support students' development of content knowledge and skills as appropriate for the concept and grade-level.

Evidence includes but is not limited to:

Discussion prompts are ample. A few come from "Focus on Critical Thinking," which prompts teachers, in Lesson 7.1, to "Discuss with students the number of angles formed and their relationships when two parallel lines are intersected by two parallel transversals." Then in Lesson 12.3, the teacher will "Point out to students that a clockwise rotation of 270°results in the same image as a counterclockwise rotation of 90°. Ask students to examine this claim, discuss why it is true, and justify it with a logical argument." "Connect to Daily Life," in Lesson 1.3, says, "Discuss how measuring across a canyon might involve different methods than measuring along a road." Additionally, Lesson 3.2, "Focus on Reasoning" says, "Discuss with students how the graph and the rate of change would be affected if Nathan rode 15 miles in the first hour, but only 12 miles in the second hour and 10 miles in the third." However, the design

lacks intentional opportunities for all students to discuss mathematics during every lesson with partners, small groups, and/or the whole class.

Though grouping strategies are suggested at times, they are always mentioned as an option and not fully developed as a strategy. For example, in Module 3, materials prompt the teacher to "Have students discuss different ways to use tables, equations, and graphs to represent proportional relationships." Then it proceeds to give examples of what student 1 and student 2 would say. The directions do not state to group with a partner, but the example given indicates this could be a partner activity. Teachers would need training beyond the materials to implement grouping strategies. In "Questioning Strategies" and "Talk About It," notes suggest the teacher engage students in discussion, but no mention is made toward grouping for these activities. Each module begins with a "Vocabulary Preview," but the teacher guide includes generalized grouping prompts like "Students may work individually, in pairs, or in groups." There is no specific guidance. While each lesson begins with an "Essential Question" that could serve as a springboard for discourse, the materials do not include explicit guidance related to the integration of different groupings for discussion. (In addition, the Essential Question sometimes focuses on procedures and not developing and strengthening understanding—like Lesson 3.2 asks, "How do you find a rate of change or a slope?") "Communicating Math" recommends, in Unit 6 "Vocabulary Preview" guides that "Students may work individually, in pairs, or in groups." There is no specific guidance. When integrating the ELPS, the teacher guide suggests teachers may want to pair up English Learners with a partner for portions of the lesson to help them develop their language skills; no further suggestions are made on what type of students should be chosen for the pairs. When differentiating instruction, the materials suggest in some lessons that teachers orchestrate cooperative learning and opportunities for the use of manipulatives by having students work in pairs, but, again, there is no set structure as to when grouping will take place or how.

The materials do not intentionally support discussion throughout *all phases* (beginning, middle, and end) of content and skill development. In Unit 1 (the first time "discuss" is used in the materials), the prompt is in the Explain phase of the 5E model. (Engage, Explore, Explain, Elaborate, Evaluate). The next time "discuss" is seen is in Unit 1 is again in the Explain phase. Later in Lesson 2.2, "discuss" is seen in the Explore, Explain, and Elaborate phases. In other words, the discussion pieces are there, but they are sporadic throughout the lessons. Additionally, when introduced to a concept, students are asked an Essential Question but are not guided on how to engage in a discussion. The teacher is prompted to ask a question to motivate the lesson but is not directed in how students should discuss the topic. There is no mention of whether students should answer these questions on their own or discuss in small groups. An effort is made to integrate discussion throughout the lessons but does not necessarily address the development of content knowledge and skills. Then Talk About It prompts teachers to ask a question to summarize the lesson; the questions make an effort to conclude the learning but do not focus on the development of efficient and accurate skills for solving problems. For example, in Module 8, students begin developing their understanding of the Pythagorean Theorem through manipulation of a paper right triangle cut apart to create a

rectangle with an equal area. “Reflect” tasks prompt students to independently think about the area of specific sections of their model; however, the materials do not include guidelines for the discussion or sharing. As students move to using the Pythagorean Theorem and discovering its converse, the teacher guide includes more Reflect questions and additional questions related to if “the converse of the Pythagorean Theorem only [applies] to triangles with rational numbers as side lengths,” which could be used for discussion, but guidance for its use is not included in the materials. Talk About It prompts teachers to ask, “How can you use the converse of the Pythagorean Theorem to classify a triangle as a right triangle or not a right triangle?” As students build development of knowledge, the teacher guide includes additional questions that prompt students to determine the longest and shortest edges of a triangle. While these questions are available at the beginning, middle, and end of the lesson, there is no evidence that students discuss these questions with others.

The materials do not offer guidance for teachers on how to structure discussion that is appropriate for the grade level. Materials do not provide a guide for creating norms and expectations for classroom discussions about math. Materials do not offer guidance for a grouping structure for class discussions or building community. Materials do not offer anchor charts or suggest posters to teach the class how to “actively listen” or “respond to others’ ideas.” Materials do not include sentence stems or prompts for students to use for different types of responses in math discussion; there are no stems such as, “I agree with...because….” or “I noticed/wondered….” Materials do not provide teachers with a rubric to utilize to provide feedback for students when discussing mathematical concepts and ideas. The materials lack best practice guidance related to key elements of classroom discussions, as suggested by John A. Van de Walle et al., in *Elementary and Middle School Math: Teaching Developmentally.* There are no productive talk moves (i.e., revoicing, reasoning, waiting, rephrasing, elaborating), teacher actions (i.e., anticipating, selecting, connecting, monitoring, sequencing), or encouraging student dialogue and questions.

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3.B.3 Materials provide opportunities for students to justify mathematical ideas using multiple representations and precise mathematical language.

- Materials provide opportunities for students to construct and present arguments that justify mathematical ideas using multiple representations.
- Materials assist teachers in facilitating students to construct arguments using grade-level appropriate mathematical ideas.

Partially Meets 2/4

The materials provide some opportunities for students to construct arguments and justify mathematical ideas using multiple representations and precise mathematical language. However, the materials lack support for teachers to facilitate students' construction of their arguments using grade-level appropriate mathematical ideas.

Evidence includes but is not limited to:

Throughout the materials, tasks are identified as aligning to TEKS 8.1.G, "incorporate using precise mathematical language in written or oral communication." There are numerous opportunities throughout the materials for students to justify mathematical ideas, but almost all are represented with words, not multiple representations. For example, in Lesson 1.1, one question says, "If the ratio of the circumference of a circle to its diameter is π, what is the relationship of the circumference to the radius of the circle? Explain." During Lesson 7.1, students find "How many different angles would be formed by a transversal intersecting three parallel lines? How many different angle measures would there be?" In Lesson 3.2, one question says, "Two lines pass through the origin. The lines have slopes that are opposites. Compare and contrast the lines." In Lesson 4.4, students analyze relationships represented by words, tables, equations, and graphs and must describe the relationships with terms such as proportional, non-proportional, linear, and nonlinear." Then in Lesson 12.1, students answer, "How many different angles would be formed by a transversal intersecting three parallel lines? How many different angle measures would there be?" In Lesson 13.1, questions 7-11 provide students with descriptions of two shapes and then prompt them to explain if one figure is a dilation of the other. Prompts like this provide students the opportunity to construct arguments based on their own mathematical understanding and experience. In addition, "Communicate

Mathematical Ideas" and "Critique Reasoning" provide students opportunities to explain and justify their thinking with words. In Lesson 4.1, one question prompts students to "explain how you can identify a linear non-proportional relationship from a table, a graph, and an equation." The students also have the opportunity to construct and present arguments using multiple representations during the "Explore and Explain," "Justify Reasoning," "Analyze Relationships," "Persevere in Problem Solving," and "Critical Thinking" tasks.

The materials include rare opportunities for students to justify using methods *other than words*, such as in Lesson 7.1, where students construct parallel lines cut by a transversal then make conjectures about the angle relationships. Then in Lesson 3.3, students use data from a graph to discover the relationship between unit rates and slope. Students are asked to write about their findings.

The materials support students sharing their ideas with peers orally by providing students opportunities to respond to questions, but these are geared toward answering questions as a whole group. Also, the materials lack the guidance of clearly defined structures and routines to help students think metacognitively about their argument and the arguments of others; in fact, they are not prompted to think and write *before* sharing ideas. The materials do not provide opportunities for students to engage in discussions where they present their fully developed arguments. While some of the Explore phases do guide students through justifying their thinking, there is no guidance for students to process their thinking through discussion with others, and the structure for the sharing process is not explicit in teacher materials. Although the problem-solving model incorporated in the materials includes a Justify and Evaluate step, given that the model is not explicitly reinforced, the relevance of these occurrences is lessened.

"Questioning Strategies" guide a student's understanding of the topic being presented and the strategies and processes used to find the solution. Before moving on to the next example or activity, students are provided an opportunity to reflect and communicate their mathematical ideas. However, materials do not list discussion questions and sentence stems to elicit different types of responses from students as they present their arguments. Students are not asked additional questions during the discussion to deepen their understanding, to critique an idea, or to develop their explanations. Beyond the Questioning Strategies, no additional supports assist teachers in facilitating students to construct arguments. Students are often asked to justify their reasoning within the independent practice, but there are no guidelines for the teacher on how to help students develop their argument when justifying their reasoning. Lessons do not suggest time be set aside to have students read from their written arguments to partners before whole-class discussions. Discussion questions and sentence stems eliciting different types of responses from students do not exist. There are no prompts such as, "When will that strategy work?" or "Why do you think that is true?" or "Do you agree or disagree?"

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4.1 Materials include developmentally appropriate diagnostic tools (e.g., formative and summative progress monitoring) and guidance for teachers and students to monitor progress.

- Materials include a variety of diagnostic tools that are developmentally appropriate (e.g., observational, anecdotal, formal).
- Materials provide guidance to ensure consistent and accurate administration of diagnostic tools.
- Materials include tools for students to track their own progress and growth.
- Materials include diagnostic tools to measure all content and process skills for the grade level, as outlined in the TEKS and Mathematical Process Standards.

Partially Meets 1/2

Materials include limited developmentally appropriate diagnostic tools (e.g., observational, anecdotal, formal) to measure all content and process skills for the grade level, as outlined in the TEKS and Mathematical Process Standards. Very little guidance is available for teachers and students to monitor progress, and there are no tools for students to track their own progress and growth. No guidance is provided to ensure consistent and accurate administration of diagnostic tools. In all, while the materials provide some tools, there is a lack of variety, student-tracking, and guidance for teachers to ensure consistency.

Evidence includes but is not limited to:

The materials include some formal assessment measures designed to support the teacher in determining a student's understanding and fluency with critical content and skills. In fact, according to the "Assessment Resources" in Unit 1, the assessment options for diagnostic purposes are the "Placement Test," "Beginning-of-Year Diagnostic Test," and "Are You Ready? Intervention." However, there is no indication that the tools are designed to allow students to demonstrate understanding in a variety of ways and settings. Additionally, the "Mathematical Process Standards" are not measured in the formal assessments, nor are there assessment tools that provide information on the development of mathematical reasoning or the use of mathematical discourse.

In Unit 1, the Placement Test is a formal assessment measure used "to assess prerequisite skills mastery before beginning the school year." Students answer 36 questions, and given that the Placement Test covers seventh-grade TEKS, this tool supports teachers in determining which students may need intervention. The test includes an "Individual Student Profile" that allows the teacher (or student) to record data collection by providing a column to record proficiency for each question from the tests available. It is important to note, though, that only eight 7th grade math TEKS are presented more than one time; a student's "proficiency" is determined by one single question on 34/42 math TEKS.

Also in Unit 1, the Beginning-of-the-Year Diagnostic Test is a formal assessment measure included "to assess knowledge of key objectives that will be taught in the current school year." In addition, the Beginning-of-the-Year Diagnostic Test is used as "a baseline for a student's mastery of math concepts and skills, and to evaluate growth during the school year." Many of the 8th-grade math TEKS are represented on the diagnostic test multiple times; one even has six items correlated to it.) An Individual Student Profile accompanies the test and allows the teacher (or student) to indicate proficiency in each of the tested math TEKS. It also matches the test item to the module in which it is taught. (The last column of the profile provides a place for teachers to designate if a student is proficient or not. While the tool could be used by students, minimal guidance directs teachers, which keeps students from self-monitoring. The use of this tool by students would only occur if a teacher made a purposeful move to share it with them and provided more detailed insight into its relevance.) Also included is an answer key with "Test Prep Doctor" comments related to why a student may have chosen an incorrect answer, such as on Question 1, where it provides, "Students who answered A might have forgotten that the set of integers is a subset of the set of rational numbers. Students who answered C did not realize that some negative numbers are not integers, so the set of negative numbers cannot be a subset of the set of integers. Students who answered D did not understand the diagram or did not realize that the set of irrational numbers is not a subset of the set of integers." This is helpful guidance for the teacher to understand the misconception. Most of the time, though, the reasons are vague and simply computational-related or content-specific. "Students who answered A may not have realized that the gray figure is the image of the black figure after a dilation. Students who answered B or C might have counted incorrectly or made a computational error," or "Students who answered A, C, or D did not know that a graph that shows a linear relationship is the graph of a line, or may have forgotten what the graph of a line looks like." Overall, the test is very limited in allowing students to demonstrate their competence given that almost all 78 questions require students to demonstrate their understanding in an abstract way: only three questions ask students to demonstrate their solutions pictorially. The remaining 75 questions require students to provide an abstract representation of the content and skills being assessed. (Note: in addition to the paper version, another Beginning-of-the-Year Assessment is found online through the student edition Personal Math Trainer, although guidance related to student performance or feedback related to their misconception was not found in the materials. The online option does provide opportunities to incorporate concrete, pictorial, and abstract representations as well as written descriptions, which makes an important difference. For example, question 2 (online) provides students an

opportunity to graph pi, 22/7, and 3.14 on a digital number line. Students are prompted to determine which value is a more accurate approximation of pi based on their number line. Finally, the materials prompt students to find a value for x in the fraction x/113, which would create a better estimate for pi than the two previously explored.)

Each module begins with an assessment, and "For students who require intervention, use the online Are You Ready? Intervention." This assessment aligns concepts with the online Personal Math Trainer, which is intended to provide intervention through examples, step-by-step procedures, and links to the textbook to build students' understanding. It also allows the user to print helpful materials. An example from Module 1 Personal Math Trainer covers finding squares of numbers and models beginning support. If the student answers incorrectly, the Personal Math Trainer gives immediate feedback like, "Try again. Multiply the number by itself." When the "Are You Ready?" is completed, according to the teacher guide, it will "automatically prescribe a targeted, personalized intervention path" for students; however, evidence was unavailable relating to how an intervention path is determined.

Throughout the materials, each module provides a "Ready to Go On?" quiz in the student edition, as well as "Leveled Module Quizzes" in the teacher edition, providing correlations to 8th-grade TEKS to assist in providing intervention support. In addition, these tools measure the content and process skills for 8th grade, as outlined in the TEKS and Mathematical Process Standards. However, it is important to note that the materials lack specificity related to the alignment to the 8th Grade TEKS and Mathematical Process Standards.

The "Assessment Resources" provided for the teacher show an overview of the options available and whether the source can be found in the Assessment Resources section, the student or teacher edition, or online. The Assessment Resources break down each of the assessments by what they are used to assess, but there are no recommendations as to how to use the assessment past the "diagnostic" or "formative" label given. This resource does suggest when to administer the benchmarks, the purpose of the placement and diagnostic tests, and the levels for the different quizzes and unit tests. However, it lacks guidance related to assessment administration (i.e., time expectations, scripted instructions, etc.); no guidance is provided regarding administering the 78-question test to ensure validity or in a developmentally appropriate way. Additionally, the materials do not provide guidance for collecting observational or anecdotal data, and the placement test does not guide the teacher in recommendations from the student results on the test. For example, the Individual Student Profile included with the Placement Test and the Beginning-of-Year Diagnostic Test are simply yes/no checklists. The materials do not include guides for each domain area to support teachers in understanding examples of student language and behaviors which demonstrate progress toward identified outcomes.

The materials do not include opportunities for the students to track their own progress and growth with teachers or guardians. No student portfolios illustrate progress toward goals. Students do not collect samples and share reflections on their selected work. No student

reflection tools are offered for assessments; students are not prompted to revisit errors to confirm their understandings and misunderstandings. The materials do not include on-going informal diagnostic tools or guidance related to the use of checklists, observations, anecdotal notes, interviews, etc. The materials do not include family input questionnaires, nor do they provide information to families to support their understanding of students' learning needs or provide learning opportunities at home. The materials *do* include "Reflect" tasks throughout lesson examples, "Guided Practice" and "Independent Practice"; however, these tasks do not provide students opportunities to confirm their understanding and determine what they need to learn next, nor do they help students identify their strengths and areas of growth. The Reflect tasks in the materials are generally more focused on the specific lesson content, such as in Lesson 7.2, Explore Activity 1 prompts, "Can a triangle have two right angles? Explain."

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4.2 Materials include guidance for teachers and administrators to analyze and respond to data from diagnostic tools.

- Materials support teachers with guidance and direction to respond to individual students' needs in all areas of mathematics, based on measures of student progress appropriate to the developmental level.
- Diagnostic tools yield meaningful information for teachers to use when planning instruction and differentiation.
- Materials provide a variety of resources and teacher guidance on how to leverage different activities to respond to student data.
- Materials provide guidance for administrators to support teachers in analyzing and responding to data.

Does Not Meet 0/2

Materials do not include guidance for teachers and administrators to analyze and respond to data from diagnostic tools, nor do they yield meaningful information for teachers to use when planning instruction and differentiation beyond the "Placement Test" and the "Beginning-of-Year Test." While assessments exist, there is a lack of support for teachers with a variety of suggestions and activities to respond to data from diagnostic tools. The materials do not provide guidance to respond to individual students' needs in all areas of mathematics, based on measures of student progress appropriate to the developmental level. There is no evidence of guidance for administrators to support teachers in analyzing and responding to data.

Evidence includes but is not limited to:

The materials do not include guidance that supports the teacher in utilizing results from a variety of assessments to support purposeful planning of the appropriate grade level experience. Also, the answer keys do not contain suggestions of activities as a way to respond to students' demonstration of mastery on assessments. The data from these diagnostic tools included in the materials (Placement Test, and Beginning-of-the-Year Diagnostic Test) could guide teachers in differentiating instruction, but the materials do not include guidance showing the correlation between students' performance to grade-level TEKS and the level of support they may need. None of these assessments provide guidance to understand the results, other

than “proficient” or “not proficient.” There is also no indication of what “proficient” looks like, other than getting a question correct. The “Assessment Resources” Beginning-of-Year Diagnostic Test does provide a “Test Prep Doctor” that explains reasons for incorrect answers. Sometimes these reasons are diagnostic in nature, sometimes they are content/computational specific, but the relevancy for the teacher is minimal given that similar guidance is not evident on other measures of their progress throughout the materials. In the Assessment Resources, the table describes the purpose of the placement test, then goes on to suggest, “for students who require intervention…” but there is no guidance determining which students need intervention. In fact, the Placement Test “Individual Student Profile” and the Beginning-of-Year Individual Student Profile are the only two resources that allow individual student data to be checked, based on proficiency in each standard assessed, but further resources for observing student mastery are not provided.

While the materials may not frequently guide teachers to use certain activities based on student performance, the materials do incorporate materials that would be appropriate for reteaching or additional content support throughout the materials. Throughout each lesson, the teacher guide offers suggestions for differentiation in the following sections: “Differentiate Instruction,” “Success for English Learners ELL,” “Reteach,” “Leveled Practice and Problem Solving,” and “Challenge” activities. No scoring guide is provided for differentiation, and these are not diagnostic in nature. (For example, in the leveled module quizzes and leveled unit tests, there is no guidance as to how to assign the different levels other than “slightly below level,” “on level,” “advanced,” and “considerably below level.” No assessment instructions explain how students reach different levels.) Teachers are prompted within the teacher edition to use differentiated materials, but no specific guidance offers best practices for these materials (small group, one-on-one, etc.) The Differentiate Instruction section addresses critical thinking, modeling, multiple representations, graphic organizers, number sense, cognitive strategies, technology, and more, but nothing as a result of data. These worksheets are typically more problems similar to those in the unit and do not include recommendations for how to respond to student needs; these tools are simply more of the same practice. Prompts are not purposefully related to student needs in terms of additional time or alternate strategies. “Questioning Strategies” throughout these lessons are specific to the lesson and do not support students or teachers in using a variety of strategies toward pursuing solutions. Some lessons include “Curriculum Integration,” a section of the Differentiate Instruction, which provides connections to other content areas, but they are very specific and guided. For example, in Lesson 14.2, Curriculum Integration prompts teachers to “ask students to work together to brainstorm some situations in science or social studies in which scatter plots and trend lines could be useful. For example, in social studies, trend lines could be used to predict population growth, and in biology, a scatter plot could show whether there is a relationship between average temperature and tree height.” While this is an example of a connection to science or social studies, it does not provide an opportunity for students to explore independently. Rather, it guides them to complete a specific task. Also, there are only three out of the 50 lessons in the eighth grade materials with a Curriculum Integration section.

All lessons include “Reteach” activities and practice, which are provided to support deficits in a particular skill or concept while also providing a different lens with which to explore the concept. For example, in Lesson 15.2 on “Generating a Random Sample,” the concept is taught through the use of technology and dropping items onto an array, whereas Reteach focuses on how “random samples can be modeled using coins or number cubes.” In addition, the materials offer “Performance Tasks,” an alternative method for assessing students’ mastery of concepts that provide enrichment at the end of each unit. These tasks provide students with the opportunity to apply learning from each unit in real-world problem situations, but they do not connect to other content areas. While the rubric measures students’ critical thinking skills, reasoning, and constructing arguments, there is no guidance to support the teacher in understanding this as a diagnostic tool.

The “Math Background” section at the beginning of each unit includes specific trajectories to support the teacher in understanding the progression of content and skill development. For example, in Unit 2, this section uses a mapping diagram to support identifying and describing functions and relates this model to ordered pairs. The section also makes teachers aware of common misconceptions; however, little to no support is offered to help teachers interpret assessment results for individualized instruction. Each module also contains an “Are You Ready?” skills check, an alternative teaching strategy for students who need additional targeted intervention lesson activities and practice. “Skills Worksheets” support deficits in a particular skill or concept. Each Skills Worksheet includes an outline of how to teach this skill, including common errors students may exhibit. To help, each Skills Worksheet includes a group practice with each step listed in how to solve the problem and ends with a “Practice on Your Own.” However, these do not directly support teachers’ planned instruction based on data from diagnostic tools. Again, the resources are there but not as a means to provide support based on student assessment data.

There is no evidence of guidance for administrators to support teachers in analyzing and responding to data. In fact, the materials do not provide any evidence of guidance for administrators to support teachers in designing instruction to respond to data. While it seems likely that the assessments completed in the student online edition through the Personal Math Trainer would have data that would be accessible for analysis for individual students, classes, and the school, evidence of this data was not found.

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4.3 Materials include frequent, integrated formative assessment opportunities.

- • Materials include routine and systematic progress monitoring opportunities that accurately measure and track student progress.
- Frequency of progress monitoring is appropriate for the age and content skill.

Partially Meets 1/2

Materials provide some frequent, integrated assessment opportunities. Throughout the materials, routine and systematic progress monitoring accurately measures student progress; however, those opportunities lack explanations of measurement and tracking student progress.

Evidence includes but is not limited to:

Materials include routine and systematic progress monitoring opportunities that accurately measure and track student progress and are content specific as well as age-appropriate. According to “Assessment Resources” in Unit 1 teacher editions, summative assessments are used for assessing mastery, including leveled “Unit Tests,” “Unit Performance Tasks,” “Quarterly Benchmark Tests,” “Mid-Year Test,” “End-of-Year Test,” “Unit STAAR Test Prep,” “STAAR-Aligned Practice Tests,” and “Online Quizzes and Tests.” More specifically, “Assessment Resources” highlight Unit Tests as a way to “assess mastery of concepts and skills taught in the Unit.” Materials prompt teachers to use “Level A for students who are slightly below level; Level B for students who are on level; Level C for advanced students; and Level D for students who are considerably below level and require modified materials.” The Unit Tests Include from 15 to 24 questions in a multiple-choice and open-ended format and are provided at the end of each Unit through the online teacher guide resources for that unit and an online version that is also available via the student “Personal Math Trainer.” Also, “Benchmark Tests” are available for teachers to “use for prep for the STAAR Test.” Within the materials, there are four Benchmark Tests: two quarterly tests (one covering Modules 1–6, the other covering Modules 11–13), the “Mid-Year Test,” and the “End-of-Year Test.” There is little guidance as to when these are given other than the name of the test (Mid-Year, End-of-Year), and according to the link for the quarterly tests, they are intended to be given after Modules 1–6, and again after Modules 11–13.

According to the Assessment Resources, the formative/progress monitoring tools are the leveled "Module Quizzes," "Your Turn," "Math Talk," "Reflect," "Questioning Strategies," "Essential Questions," "Lesson Quizzes," "Ready to Go On? Quizzes," "Module Mixed Review: STAAR Test Prep," and the online pieces of Ready to Go On? Intervention and Enrichment, "Online Homework," Module Mixed Review: STAAR Test Prep, Online Quizzes, and Tests. These provide a variety of question formats, such as multiple-choice, short and expanded answer, and gridded response. The questions mostly assess student knowledge to recall and apply the knowledge and skills, sometimes asking students to explain their thinking. Students are rarely asked to reflect on their thinking and justify their reasoning on formal progress monitoring assessments. For instance, Module Quizzes are explained as routine, formative assessments used to "assess mastery of the concepts and skills taught in the Modules." The materials prompt teachers to "use Level D for students who are considerably below level and require modified materials" and to use Level B "for all other students." The Module Quizzes include from 11 to 28 questions in a multiple-choice and open-ended format at the end of each Module. The materials include "Are You Ready?" sections at the beginning of each module and Ready to Go On? sections at the end of each module, which help to identify students who would benefit from receiving the intervention opportunities. The "Program Resources" page also explains that the Personal Math Trainer is used to "monitor student progress through reports and alerts," and teachers can "create and customize assignments aligned to specific lessons or TEKS." (The materials provide no further guidance on how the Personal Math Trainer can be used to accurately measure and track student progress.) An *online* version is also available via the student Personal Math Trainer, which "provides online practice, homework, assessments, and intervention." Teachers "monitor student progress through reports and alerts. Create and customize assignments aligned to specific lessons or TEKS." Assessments taken through the online Personal Math Trainer provide "instant scoring, feedback, and customized intervention or enrichment." (That evidence was not provided given that access to the "teacher-side" of Personal Math Trainer is not available for review; there was no guidance as to how to access any of these reports and alerts or how to get the personalized intervention path.) The materials do include suggestions for more frequent monitoring of students who are not demonstrating progress and include instructional interventions to support students who are struggling learners. Online and print resources are available to differentiate instruction, as well as differentiate assessments. Resources to support struggling learners include "Reteach" worksheets, "Reading Strategies" handouts, and "Success for English Learners" worksheets.

Additionally, throughout the teacher guide, Your Turn, Math Talk, Reflect, and Questioning Strategies sections are included to guide informal monitoring of student progress and understanding related to the content. Each of these sections of the teacher guide provides specific questions to check for understanding and application of knowledge. For example, in Lesson 7.3, the materials prompt teachers in the Your Turn section to ask, "To check that your answers are correct, is it enough to check that the sum of the angle measures equals the measure of the exterior angle? Explain how you know." Questions like these provide opportunities for teachers to routinely check for understanding and address misconceptions. In each lesson, Math Talk opportunities are also used to "continually monitor and assess student

progress with integrated formative assessment." Sample answers to Math Talk questions are provided. Although Math Talk is labeled as a formative assessment, there is no guidance on how to track student progress or collect data using these questions. Then, in the student and teacher editions, each module concludes with a Module Mixed Review: STAAR Test Prep with STAAR-formatted questions covering current content as well as "mixed review concepts from previous modules or a previous course." For example, Module 11 Mixed Review requires students to use their understanding of irrational numbers learned in Unit 1.

Formative and summative opportunities are plentiful. However, while the materials have a variety of assessment opportunities, both formative and summative as well as observational, the materials provide no guidance as to a way to track student progress. There is no progress monitoring to provide teachers with feedback for identifying each student's content and skill level and how they change over time. Tracking and measuring the data are unknown since there is no access to the actual reports. No checklists exist for documenting and tracking observations and individual student growth. The materials state that the teacher can view the reports to track progress, and one of the reports mentioned is a Knewton Analytics Report. However, the reports were not available to preview.

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5.1 Materials include guidance, scaffolds, supports, and extensions that maximize student learning potential.

- Materials provide recommended targeted instruction and activities for students who struggle to master content.
- Materials provide recommended targeted instruction and activities for students who have mastered content.
- Materials provide additional enrichment activities for all levels of learners.

Partially Meets 1/2

Materials include guidance, scaffolds, supports, and extensions that maximize learning potential for some students. Struggling learners receive targeted instruction and activities in order to successfully master eighth grade content. However, materials are limited for students who have mastered the content, offering little extension, and push to maximize their potentials. Additional enrichment activities provide some exploration and application opportunities, but not much variety.

Evidence includes but is not limited to:

The materials provide several supports for differentiated instruction for students who struggle to master the content; these include guidance for motivating learners using connections to daily life, modeling using mathematical process standards, connections to vocabulary beyond their mathematics definitions, questioning strategies, checks for understanding, engagement strategies, focus on patterns, avoidance of common errors, and additional examples. In the teacher's edition, each module begins with a "Are You Ready?" assessment (also available online) for instant feedback and to "determine if students need intensive or strategic intervention for the module's prerequisite skills." Here, teachers are provided guiding questions, common errors, and alternative teaching methods using concrete examples. Within each module, "Skills Intervention" worksheets are available to target specific skills, including prerequisite skills. These mini-lessons also include common errors, practice problems, alternate approaches, and "Practice on your Own." For example, Module 1 Rational Numbers includes a skills activity reviewing operations with fractions as a foundational skill for operations with rational numbers. Included in each lesson of the modules, "Practice and Problem Solving"

provides a variety of ways for students to develop skills using different types of questioning. "Differentiate Instruction" offers specific ideas for visual clues, critical thinking, kinesthetic experience, multiple representations, manipulatives, communicating math, number sense, "Cooperative Learning" suggestions, and/or additional resources. In addition, printable "Reteach" materials start with a mini-lesson offering examples and end with several questions for students to apply what they learned. Within each module, "Professional Development" videos include models and provide guidance to teachers for scaffolding instruction. Each unit includes leveled unit tests, including tests specifically designed for students who are "slightly below grade level" and students who are "considerably below grade level and require modified materials." Other supplemental resources are "Reading Strategies," which uses real-world context to support the focal point of the lesson, and Reteach, which includes extra examples for struggling students to grasp and make connections to the academic vocabulary being used in the focal point. "Success for English Learners" is another resource, which includes visuals for making connections to the real-world and supporting language as it pertains to the focal point.

For students, the "Personal Math Trainer" is an available intervention tool that prescribes "a targeted, personalized intervention path" by scaffolding content for students. It provides more questions over the content that allows the students to check their answers in real-time, but it also gives the option for a step-by-step example. A few "Animated Math" problems in select lessons provide a more tactile way for struggling learners to grasp the focal point, and lesson tutorials, called "Math on the Spot," offer videos that allow students to pause and take notes over the concept with which they are struggling. The student also can hear the information from an expert other than their teacher. Additionally, visual aids are found as graphic organizers to help explain vocabulary, concrete objects help students "Explore" the concept, and "Engage with the Whiteboard" allows students to illustrate learning.

Materials provide minimal recommended targeted instruction and activities for students who have mastered the content. Materials do not guide teachers in specific ways to extend grade-level content and skills. Materials in each lesson do ask students to engage in "HOT." questions (Higher-Order Thinking) to communicate mathematical ideas, analyze relationships, critique reasoning through error analysis, and use multiple representations to justify their understanding. In fact, "Math Talk" reflections provide opportunities for learners to "display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication." Materials also *recommend* that teachers include an "Extend The Math" and "Challenge" activity asking students to answer a Pre-AP level question as an extension of the lesson, yet this resource can be found only in the online materials and teacher edition, meaning students do not have independent access. In addition, these extensions do not engage students in more challenging tasks, nor do they ask students to elaborate on their responses by making connections to larger mathematical ideas. Though "Leveled Practice and Problem Solving" includes lessons for "on-level" or "advanced" students, the questions seem to be more of the same level, lacking higher-level exploration. Following Independent Practice, each lesson contains a short, Extend the Math Activity, which is sometimes a game and sometimes a problem to solve, but these activities do not extend grade-level content and skills.

There is little evidence of ways to enrich content to support students who have met mastery; there is no evidence of project-based exploration. Materials do not provide students with opportunities to use learned concepts in new ways, creating a depth of knowledge.

As for enrichment activities for all levels of learners, some materials include activities that allow all students to explore and apply new learning in a variety of ways, including technology supports. Each unit does conclude with a “Performance Task” (“accessible to all students and suitable to be completed in a classroom”) that engages students in a career application situation using the cumulative skills needed throughout the unit. Additionally, each module includes a “Real-World Video” that allows students to make connections between the focal points and their application to daily life. The videos, though, do not add depth to the learning or provide additional activities.

Lessons include HOT problems within independent practice that focus on higher-order thinking skills and the TEKS process standards, though this independent practice is more of the same type of problem, not an extension or project-based exploration. Some lessons include a Single Representation technology tool called Animated Math that engages students in utilizing interactive examples and visuals of the content skills in the lesson, but not all units have them. Each lesson does include an activity called Extend the Math in the teacher’s edition and accessible online, offering students additional practice and sometimes partner work, yet the additional practice does not truly extend the learning. Several lessons begin with an “Explore Activity” that asks students to use concrete objects or to engage in Math Talk, but again, these activities do not really provide enrichment. Each lesson also includes a Challenge page, geared toward Pre-AP students; however, these problems are more practice on the lesson content, not the application of new learning.

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5.2 Materials provide a variety of instructional methods that appeal to a variety of learning interests and needs.

- Materials include a variety of instructional approaches to engage students in mastery of the content.
- Materials support developmentally appropriate instructional strategies.
- Materials support flexible grouping (e.g., whole, small, individual).
- Materials support multiple types of practices (e.g., guided, independent, collaborative) and provide guidance and structures to achieve effective implementation.

Partially Meets 1/2

Materials provide instructional methods that offer a variety of learning and appeal to learner interests and needs. Instructional approaches offer consistency and continuity in approaching mastery of content; however, the variety of strategies and activities remains minimal. Although there are mentions of flexible grouping, teachers are not always guided as to when students should participate as a whole class, small groups, or as individuals. Not enough new teacher supports exist to achieve effective implementation.

Evidence includes but is not limited to:

The materials provide routines for whole group instruction, small group instruction, pairs, and independent work but contain little guidance on when to use specific grouping structures based on the needs of students or how to address misconceptions from previous class instructions. During the “Vocabulary Preview” and “Reading Start-Up,” for example, materials suggest that students may work individually, in pairs, or in groups, but do not provide guidance to teachers about the best grouping options. For intervention and enrichment activities, no grouping recommendations guide teachers on how to group students to complete the work. Materials do include lessons to support skill acquisition for students who require intervention but make no suggestions on how many students should be grouped to maximize these resources. The materials do not guide teachers on how to support small group work with peers, including norms and classroom routines. There is no evidence of students learning a routine for independent work throughout the lessons even though individual exploration is suggested for

“Animated Math,” the “Personal Math Trainer,” and black line masters of practice sets. At the beginning of each module, “Are You Ready?” activities offer teachers targeted intervention lessons and practice worksheets for use with a targeted small group but don’t make suggestions. “Differentiate Instruction” also includes activities to engage small groups or pairs, but again, teachers lack group formation guidance.

The materials do include guidance to support teacher understanding of developmentally appropriate instructional strategies. “Math Background” includes information about the meaning and use of the TEKS. Models and visuals offer concrete ideas to avoid student errors and misconceptions. Each module also includes “Professional Development Videos” that model successful teaching practices and strategies in actual classroom settings. “Differentiate Instruction” offers suggestions for manipulatives, historical examples, cooperative learning, and critical thinking.

All lessons provide a consistent format using the 5E model. Teachers first engage students with an essential question to motivate the lesson and spark interest in the opening exploration. “Careers in Math” connects the new concept to a real-world career as “Unpacking the TEKS” provides examples of what students will be learning and how it relates to the TEKS. “Assess Readiness” enables teachers to determine if students need intensive or strategic intervention for the prerequisite skills. Then, as students explore by engaging with a whiteboard or using models, the teacher’s “Avoid Common Errors” suggests mistakes students may make. Module 9 warns the teacher that “some students may try to measure the height of a cone from the vertex to a point on the circumference of the base, which is the slant height. Point out that the height is a segment perpendicular to the base from the vertex to the center of the circular base.” In addition, “Focus on Models” guides teachers through building conceptual knowledge with specific directions like “ask students to write at least five different ways to represent one-half” when looking at rational and irrational numbers. Students have an opportunity to explain concepts through “Talk About It” and “Focusing on Communication,” where they connect vocabulary to similar terms, clarify its meaning, and provide connections. (Teacher supports for vocabulary also include “Visualize and Understand Vocabulary” and a “Glossary.”) Teachers explain content using provided questioning strategies that connect materials to daily life and guide students to talk about their understanding. Some provided supports include “Focus on Math Connections,” “Connect to Daily Life,” “Focus on Patterns,” and “Connect Multiple Representations.” “Active Reading” provides ideas for foldables to aid in note-taking, understanding, and organization of new concepts. To elaborate, students summarize the lesson and work through guided practice. “Reflect” questions allow students “to analyze mathematical relationships [and] to connect and communicate mathematical ideas.” When students complete these questions online, their responses can also be saved to “myNotebook,” which teachers can view. The online “Personal Math Trainer” provides content practice using examples, video tutorials, access to the online textbook, and other “similar” problems, with step-by-step directions for reinforcement. “Depth of Knowledge” employs higher-order thinking questions, encouraging students to evaluate their level of understanding. Each lesson provides support with “Questioning Strategies,” think-aloud processes, and patterns within the content,

as well as “Math Talk” opportunities to formally assess student progress. Another part of evaluate, “Extend the Math,” helps students take their current knowledge and extend it to a higher understanding. (However, many of the extensions provide more of the same type of practice and do not truly extend the meaning of the concept.) Although consistency exists in the lesson format, lessons do not have a large variety of different instructional approaches.

Some instructional strategies include engagement with real-world context, exploration with concrete, hands-on materials to model examples, teacher-modeling of a new concept, opportunities to discuss common errors, and language with pictorial supports. Unit 1 “Resources” include virtual tools for student use. Lessons sometimes include concrete practice with interactive materials, such as colored integer counters, fraction bars, fraction/decimal grids, bar models, geometry sketcher, algebra tiles, a graphing calculator, and a scientific calculator. The materials include visual representations or symbolic abstractions. However, even though students have online access to all virtual manipulatives, not all lessons use manipulatives, and variation of materials is minimal. The following examples detail common manipulatives: In Module 1, students use a graphic organizer to place numbers in the appropriate place. In Module 5, students write equations to express relationships shown in graphs, tables, and written descriptors. In Module 8, students use a calculator for squaring and finding the square root while working with the Pythagorean Theorem. Students use algebra tiles to model the equations in Module 11. In Module 12, students create paper templates of shapes to manipulate on a coordinate plane as they experience translations, reflections, and rotations.

The following examples provide insight into the implementation instruction teachers receive in various activities: Every lesson includes an “Engage with the Whiteboard” where students explain and illustrate answers to questions (it is unclear they are online or actual whiteboards in the classroom). “Talk About It” allows students to summarize the lesson and their understanding. “Guided Practice” provides the teacher-sequenced steps to walk students through the questions. For students who struggle to master the content, “Math On the Spot” videos reteach the lesson. Module 5 provides a reteach video for writing a linear equation in slope-intercept form. Differentiated Instruction includes “Cooperative Learning” opportunities, sometimes having students work in groups to complete a task. For example, in Module 14, students engage physically in creating a human scatter plot as a whole class or in groups on a large first quadrant coordinate plane created with chalk or paper “with height as the vertical axis and age in months as the horizontal axis.” Students “place themselves on the scatter plot according to their own ages and heights...students describe the type(s) of association shown in the human scatter plot.” Then for Module 9, the class can be divided into small groups or pairs, and the teacher is guided to “ask students in small groups to brainstorm which mnemonic devices they might use to remember the different formulas for the volumes of a cylinder, a cone, and a sphere. Invite them to create rhymes, raps, cartoons, etc., to help them remember these three different but related formulas and the shapes for which they apply.”

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5.3 Materials include supports for English Learners (EL) to meet grade-level learning expectations.

- Materials must include accommodations for linguistics (communicated, sequenced, and scaffolded) commensurate with various levels of English language proficiency.
- Materials provide scaffolds for English Learners.
- Materials encourage strategic use of students' first language as a means to develop linguistic, affective, cognitive, and academic skills in English (e.g., to enhance vocabulary development).

Partially Meets 1/2

The materials include some supports for English learners to meet grade-level learning expectations. The materials provide few scaffolds for English learners but do not specifically provide scaffolds for each level of English language proficiency beyond the beginning teacher materials. No opportunities are provided that encourage strategic use of students' first language as a means to develop linguistic, affective, cognitive, and academic skills in English (e.g., to enhance vocabulary development). The English Language Proficiency Standards (ELPS) can be found; however, the language support is limited for languages other than Spanish.

Evidence includes but is not limited to:

The Front Matter states that the material "supports English language learners at all proficiency levels. The … Student Edition provides integrated resources to assist all levels of learners … In addition, students at various levels may benefit from additional program support: Beginning-Students at a Beginning level are supported by *Spanish Student Edition, Spanish Assessment Resources*, Success for Every Learner, and Leveled Practice A worksheets in *Differentiated Instruction, Math On the Spot* videos with Spanish closed-captioning, and the *Multilingual Glossary.* Intermediate-Students at the Intermediate level may use any of the resources above and may also use Reading Strategies in *Differentiated Instruction.* Advanced and Advanced High-Students at these levels will be successful as the *Student Edition* promotes vocabulary development through visual and context clues. The Multilingual Glossary may also be helpful." (However, many of these supports, such as the "Spanish Student Edition," the "Spanish Assessment Resources," and the "Math On the Spot" videos with Spanish closed-captioning are

specific to native Spanish speakers and do not support *all* ELs.) No additional reference or guidance specifically addresses Beginner, Intermediate, Advanced, or Advanced High ELs; the other resources lump all ELs together when addressing options.

Also in the Front Matter, a table lists all of the ELPS and where that standard is met in the student edition, yet most of these citations do not match what the ELPS say. For example, C.2.C says, "learn new language structures, expressions, and basic and academic vocabulary heard during classroom instruction and interactions"; one citation given says, "How many places to the left did you move the decimal point to write 41,200 in scientific notation?" Then, in example C.3.E, directions say, "Share information in cooperative learning interactions"; one of the citations says, "Describe the two factors that multiply together to form a number written in scientific notation." Also, the "Differentiated Instruction" section, mentioned as one support for Intermediate learners, is never mentioned in the table as meeting the ELPS, and some of these areas listed are for the purpose of engaging with the content and *not* for *linguistic* accommodations.

Each lesson in the online materials contains a "Success for English Learners" task, which introduces the lesson content in a format that includes pictorial models, graphics, pictures, short text, and simplified vocabulary. Each task provides two sample problems and some practice questions related to content covered in the lesson. While these materials are available, the only reference for their use is included in the teacher guide under Differentiated Instruction, which encourages ALL students, not just ELs, with modeling, kinesthetic activities, cooperative learning, and *sometimes* language development. The materials do not include specific guidance related to language development. For example, in Lesson 3.1, the materials provide two examples that use a map and a table to build the concept of proportional relationships. Each step of the process is modeled, written directions and guidance are succinct, and the two follow-up questions specifically focus on finding the distances on a map in relation to the real-life distance. No specific guidance to help ELs exists.

The materials include some suggestions for appropriate scaffolds to support students learning English. At the beginning of each module in the student materials, the "Reading Start-Up" section focuses on reviewing and previewing important vocabulary. Three sections are included: "Visualize Vocabulary," "Understand Vocabulary," and "Active Reading." To begin, Visualize Vocabulary provides diagrams and graphic organizers to help students review vocabulary in the module. (The Reading Start-Up page calls attention to ELPS and states that utilizing the vocabulary graphic addresses the standard listed.) Next, Understand Vocabulary provides tasks intended to help students learn the preview words. Finally, Active Reading supports ELs through the integration of "reading and note-taking strategies to help them organize and understand new concepts and vocabulary." For example, in Module 12, students create a pyramid as a way to organize their knowledge of transformations and congruence. Unfortunately, strategies do not explicitly teach the process; in fact, the teacher guide does not suggest specific models or information to include on the pyramid to support ELs. At a beginner level, ELs would need to see modeled step-by-step instruction, explaining important

information to include. No explicit connections are made between English and the students' home language.

Another appropriate scaffold occurs at the unit start: "Vocabulary Preview" uses "puzzles to give students a preview of important concepts in [the] unit." The teacher guide prompts teachers to allow students to "work individually, in pairs, or in groups." Within the task, students are provided a definition and a reference to the vocabulary introduced, which is bolded within the student edition. Unit 1 Vocabulary Preview begins with a word unscramble puzzle of the key vocabulary terms for that unit. In Unit 6, the Vocabulary Preview asks students to complete a word search puzzle of vocabulary words from within the unit.

The materials include opportunities to support a student's development of English in speaking or writing through the use of mathematical language tasks, such as those provided in the "Math Talk" section. Through the question posed, "the student is expected to display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication." For Lesson 16.1, the Math Talk asks students, "In addition to the interest you pay to borrow money, what other costs may there be when you take out a loan?" Questions like this one provide students the opportunity to respond orally or in writing using content-specific understandings. Some lessons encourage teachers to engage the class in discussion; here, English learners benefit from hearing and participating.

Integrating the ELPS provides very generalized guidance for teachers related to supporting students and their language development. Many lessons say, "You may want to pair English learners with a partner for Explore Activity 1 to help them develop their language skills." There is no guidance on how to partner students if the partner should also be an EL, etc. This guidance is lesson/content-specific and does not include general teaching strategies that would be effective across all the units. For example, Lesson 15.2 reminds teachers to "encourage a broad class discussion on the Math Talk question, but doesn't provide appropriate strategies or sample comments for a variety of learners.

"Focus on Modeling" provides effective strategies for teachers to model content; however, while this strategy is an appropriate support for ELs, the materials do not identify modeling as a way to support ELs. In Lesson 12.4, the materials guide teachers to "explain to students that if you are at a 2 on a horizontal number line and move 3 units to the right, you are now at 2 + 3 or 5. A move left of 3 units moves you to 2 - 3 or -1. On a vertical number line, you add when moving up and subtract when moving down."

"Connect Vocabulary" in the teacher guide provides effective strategies for building content vocabulary and is also denoted within the materials as supporting the ELPS. For example, in Lesson 1.1, the materials guide teachers to "explain to students that the word *irrational*, when used as an ordinary word in English means without logic or reason. In mathematics, when we

say that a number is irrational, it means only that the number cannot be written as the quotient of two integers."

The materials include a glossary that inconsistently supports the use of ELs' first-language as a foundation for English vocabulary development. Within Unit 1 materials, the "Multilingual Glossary" provides an audio recording in English and Spanish of the pronunciation of each vocabulary term, a written definition in English and Spanish, and an example (as applicable) in English. This ensures the proper pronunciation of terms as a foundation for building accurate verbal pronunciation. In addition, a translation of definitions is available in 12 additional languages (Arabic, Armenian, Chinese, Haitian Creole, Hmong, Khmer, Korean, Punjabi, Russian, Tagalog, Urdu, and Vietnamese); however, it is important to note that the definition translations were not available for all terms in each of the additional languages. For example, Haitian Creole is included as a translation option; only 18 of the 33 terms under "A" are in that glossary. A translation for the definitions in Haitian Creole is not provided.

Additionally, the materials include little instruction to support students at varying levels and nothing after the Front Matter that specifically addresses each student's proficiency level. In Unit 1, the teacher notes state to encourage the EL to use the photo to help them understand the scenario, and another example states the teacher should encourage the EL to ask for clarification on terms they don't understand. At the end of each unit, the "Study Guide Review" suggests encouraging the EL to refer to their notes and the illustrated bilingual glossary to review concepts. While some materials attempt to support ELs, there is no instruction that is repetitive, playful, and interactive. Materials do not always help ELs meet grade-level learning expectations.

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6.1 Materials include year-long plans with practice and review opportunities that support instruction.

- Materials include a cohesive, year-long plan to build students' mathematical concept development and consider how to vertically align instruction that builds year to year.
- Materials provide review and practice of mathematical knowledge and skills throughout the span of the curriculum.

Partially Meets 1/2

The materials include a cohesive year-long plan to build students' concept development and consider how to vertically align instruction that builds year to year, but there is little guidance for the vertical alignment. The materials provide some opportunities to review and practice mathematical knowledge and skills throughout the curriculum, but most spiral review comes from module and unit assessments, not daily practice.

Evidence includes but is not limited to:

Materials include a cohesive, year-long plan to build students' foundational literacy skills. A "Unit Pacing Guide," provided at the beginning of each unit, includes a breakdown to show the timelines and sequence of instruction. Five of the seven units contain a pacing guide for 45-minute classes and 90-minute classes. The Unit Pacing Guide specifies teaching all lessons over a two-day span when following the 45-minute class outline. For example, the Pacing Guide recommends teaching Unit 5 over 16 days with 45-minute classes or 13 days with 90-minute classes. Equal amounts of time are given to each lesson. The Pacing Guide provides guidance for 116 days out of the 180 instructional days without specific guidance given for longer times to ensure mastery of the focal areas. (Although this seems like a significant lack of instructional days for the materials, given that the 8th grade STAAR Math STAAR test occurs much earlier in the year, this timeline is reasonable for covering the content before the STAAR test.) There is also no guidance for inclusion of the "Beginning-of-the-Year Diagnostic Test," the seven "Unit Tests" and their accompanying "Study Guide Review," the seven "Unit Performance Tasks," the "Quarterly Benchmark Tests," the "Mid-Year Test" or the "End-of-Year Test." Additionally, the pacing guide does not list TEKS to be covered; it simply includes the module and lesson number.

Another pacing component is "*my*SmartPlanner," which creates and schedules the entire year based on user input. This tool allows the user to input a personal school calendar, including days off and holidays. The "Auto-Schedule" button then schedules the entire year according to how many minutes the user says are in each class period. When 'details' is clicked on the date in *my*SmartPlanner, it brings up the standards taught for that day as well as all of the lesson resources that could be utilized.

The TEKS are listed on the "Unit Content" page before the Unit Pacing Guides but do not recur in subsequent Unit Contents to allow the teacher to see how concepts spiral throughout the year. Each module outlines the included lessons and lists the TEKS that connect to each lesson. In grade 8, the primary focus of five of the seven units is in the focal areas of proportional relationships, expressions, and equations, including the Pythagorean Theorem, and making inferences from data. More specifically, students' knowledge of proportional and nonproportional relationships and functions builds throughout the materials. Students use these relationships to understand expressions, equations, and relationships in geometry, and then they use that deep understanding of relationships to apply to statistics and samples.

The materials do not include a vertical alignment chart that shows how activities directly align to concepts and skills outlined for students in preceding and subsequent grades. For example, grade 8 materials do not develop teacher understanding of how previous and subsequent grade levels vertically align for all focal areas in Math Texas Essential Knowledge and Skills. The activities, though, are clearly connected within each unit, and the introduction of new concepts builds upon prior knowledge from the "Are You Ready?" activity at the beginning of each module. Are You Ready? assesses readiness of the modules' prerequisite skills but does not label specific TEKS, so it is unclear which the grade level or standard these skills address. While the activity checks for understanding for prior learning, it provides no teacher guidance as to how these skills are vertically aligned.

The teacher edition includes a "Unit Vocabulary Preview," which has an alignment guide listed at the bottom. The guide introduces the concepts that students understand from previous instruction, what students will learn about in the current unit, and what students will connect their learning to in subsequent units. However, it does not list specific TEKS; it outlines only brief descriptions of content and skills in bullet points. The "Reading Start-Up" resource follows this format. At the bottom of each Reading Start-Up page, the Grades 6–8 TEKS alignment guide mentions concepts from previous instruction, current module concepts, and connections for subsequent modules. Again, it does not list specific TEKS; it only outlines brief descriptions.

The materials include some guidance that supports the teacher in understanding the vertical alignment for all focal areas in Math Texas Essential Knowledge and Skills. The beginning of each unit includes a chart labeled "Before," "In This Unit," and "After," which shows the vertical alignment of concepts across grade levels. "Before" notes prerequisite knowledge and skills from within the current grade and preceding grade levels that students need to understand before beginning the unit. "In This Unit" notes the knowledge and skills students will learn

about in the unit. “After” shows upcoming knowledge and skills from within the grade level and subsequent grade levels, which will build on the understanding of the unit knowledge and skills. For example, in Unit 3, the Before section notes that “Students understand angle pair relationships; volume of prisms and pyramids; nets and surface area of prisms and pyramids” (which are Grade 6 and Grade 7 TEKS). In This Unit section, “students will learn about angle relationships of parallel lines and transversals; sum of the measures of the angles of a triangle; exterior angles of a triangle; similarity of triangles; the Pythagorean Theorem and its converse; the Distance Formula; volume of cylinders, cones, and spheres and surface area of cylinders and cones'' (which are knowledge and skills from Grade 8 TEKS). Following this unit, the After section notes that “students will connect angle relationships and transversals of parallel lines; interior and exterior angles of a triangle; similar and congruent triangles; volume of a cylinder, a cone, and a sphere” (which are Grade 8 and subsequent grade TEKS). However, it is important to note that the materials do not include notation of specific TEKS within this section, but only a list of knowledge and skills, so it is up to the teacher to know if these are concepts from preceding grades, the current grade or subsequent grades.

Another content plan is cohesively designed to build upon students’ current level of understanding with clear connections within and between lessons. Similar to the beginning of each unit, each module begins with a chart, also with three sections labeled Before, In This Module, and After. Likewise, this chart shows connections within and between lessons. For example, in Module 8, the Before section notes that “students understand how to write and solve an equation; how to use exponents and the order of operations and how to graph points on the coordinate plane” (which are Grade 6 and Grade 7 TEKS). This Module section states that “students represent and solve right triangles using the Pythagorean Theorem as they use models and diagrams to explain the Pythagorean Theorem; use the Pythagorean Theorem and its converse to solve problems; and determine the distance between two points on a coordinate plane using the Pythagorean Theorem.” Following this module, the After section notes that “students will connect **“**right triangles and the Pythagorean triples and the sum of the interior angles of a triangle and sum of the interior angles of a polygon” (which are knowledge and skills for subsequent lessons). Again, the materials do not include notation of specific TEKS, just a list of knowledge and skills, so it is up to the teacher to know these concepts and grade levels.

Materials provide some review and practice of foundational skills throughout the curriculum and at the appropriate level of rigor, but very little daily spiral review. The “Guided Practice” and “Independent Practice” provided within each lesson of the student edition contain practice problems that directly align with the concept taught in that lesson. For example, Lesson 8.1 teaches students the Pythagorean Theorem. All of the problems included in the Guided Practice and the Independent Practice can be solved using the Pythagorean Theorem without the inclusion of cumulative practice problems. Then, in the online teacher edition, each lesson includes a “Practice and Problem Solving” task that aligns directly with the concept taught in the lesson. Just like the Guided Practice/Independent Practice in the student edition, the Practice and Problem-Solving task focuses only on the concept taught in the lesson and does

not include cumulative practice problems. The materials contain numerous other print and online resources for additional practice. Some of these include, but are not limited to, “Reteach” and “Challenge.” However, these extra practice problems cover concepts from the lesson; they do not include opportunities for spiraled review. Also, the textbook suggests that teachers can use the PowerPoint presentation to present or review concepts; however, these presentations only cover the lessons in which they are found and do not build on previously taught content.

However, *at the end of each module* in the student edition, there is a one-page “Texas Test Prep Mixed Review” that includes questions from the current module, as well as questions that address mixed review concepts from previous modules or a previous course. In the teacher guide, the materials provide Grade 8 TEKS alignment, as well as Mathematical Process TEKS alignment, for each question in the Texas Test Prep Mixed Review. Questions that are from previous modules or a previous course are denoted with an asterisk. Similarly, *at the end of each unit* in the student edition, there is a Texas Test Prep Mixed Review that includes questions from the current unit as well as questions that address mixed review concepts from previous modules or a previous course. Again, the materials provide TEKS as well as Mathematical Process alignment for each question, and questions that are from previous modules/courses are denoted with an asterisk. (Four periodic Benchmark Assessments assess students’ knowledge of material taught previously.) The materials have plenty of resources that could be used as a review but do not suggest or guide the teacher in what this might look like or how to shape the extra worksheets into a spiraled review.

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6.2 Materials include implementation support for teachers and administrators.

- Materials are accompanied by a TEKS-aligned scope and sequence outlining the essential knowledge and skills that are taught in the program, the order in which they are presented, and how knowledge and skills build and connect across grade levels.
- Materials include supports to help teachers implement the materials as intended.
- Materials include resources and guidance to help administrators support teachers in implementing the materials as intended.
- Materials include a school years' worth of math instruction, including realistic pacing guidance and routines.

Partially Meets 1/2

The materials include some implementation support for teachers but have no guidance for administrators in supporting teachers or recognizing best practices in the math classroom. The materials are accompanied by a TEKS-aligned scope and sequence outlining the essential knowledge and skills that are taught in the program, the order in which they are presented, and how knowledge and skills build and connect across grade levels. A school years' worth of math instruction is evident, including realistic pacing guidance and routines.

Evidence includes but is not limited to:

Materials are accompanied by a TEKS-aligned scope and sequence, the "Pacing Guide," outlining the concepts taught in the program and the order in which they are presented. However, while the Pacing Guide does not include specificity related to the Grade 8 TEKS, each unit, module, and lesson *within* the materials includes the TEKS addressed in them. The Pacing Guide does show the timelines and sequence of instruction for using the materials in a 45-minute class, as well as in a 90-minute classroom, which is sufficient for a full year of instruction. The Pacing Guide for 8th grade contains 50 lessons (37 of these specifically teach focal areas), and the materials suggest two days per lesson for the 45-minute classes. With a total of 100 days to cover the lessons, this allows for additional days spent on assessment, reteach, and implementing the "Are You Ready?" skills practice or the "Reading Start-up" vocabulary activities. The pacing guide allows for flexibility and the ability to implement each lesson provided in the materials. The materials contain a "*my*SmartPlanner" that allows the

user to create and schedule the entire year. The Smart Planner allows input for personal school calendars, including days off and holidays. The “Auto-Schedule” button then schedules the entire year based on the calendar and the specified length of each class period. When the user expands the lesson details in the *my*SmartPlanner, it will list the Standards being taught as well as the Resources used.

In order to see a more in-depth TEKS guide, teachers must use other materials. For example, the Front Matter includes a TEKS for Mathematics Correlation for Grade 8 table, which lists each TEKS for the grade level in numerical order by standard (with the standard descriptor) and includes page references where the content is taught or reinforced. For example, TEKS 8.2C, which expects students to “convert between standard decimal notation and scientific notation” is taught on pages 33–36 and 39–42 in the student edition and is reinforced on pages 37–38, 43–44, 45, 49, 216, and 408. (Scientific notation is also reinforced on page 46, which is not included in the chart in the materials). Also, the Grade 7 Review Test in the Front Matter provides teachers a way to assess if students “have mastered the concepts” from 7th-grade, which is essential to making new connections. This assessment tool includes a TEKS alignment chart denoting the TEKS assessed on each question of the test.

The materials include other guidance that supports the teacher in connecting the learning of essential knowledge and skills across multiple grades within the program. “Math Background” begins each unit and clarifies each standard along with an example of how the standard is tested or should be presented. It also provides guidance for teachers in making direct connections between prior knowledge and the new concept in a lesson. It highlights concrete models/representations from prior lessons, showing the relationship between what students know and what they are learning. For example, Math Background in Unit 2, Lesson 3.4 and Lesson 4.1 use a table for linear relationships. Tables have previously been used by students for constant rates of change, so this connection is familiar and activates their prior knowledge and how it applies to this concept.

The beginning of each unit provides a chart with three sections: “Before,” “In This Unit,” and “After.” It shows the vertical alignment of concepts across grade levels. The Before section notes prerequisite knowledge and skills. Next, In This Unit notes the content students will learn about in the unit. Finally, the After section shows upcoming knowledge and skills from within the grade level and subsequent grade levels, yet it has no specificity to a grade level. It is unclear if the skills learned before and after the unit are within the same grade level or the grade levels prior or subsequent. It is unclear how the skills build and connect across grade levels.

While the materials include a Program Resources guide to support teachers in understanding what resources are included and while the components routinely include Plan, Engage and Explore, Teach, and Assessment and Intervention, some of these supports lack guidance. For example, the materials note that teachers can “present engaging content on a multitude of devices, including tablets and interactive whiteboards.” However, no teacher implementation

guidance is offered for interactive whiteboards. Also, Math Talk and Differentiated Instruction Print Resources offer supports like Leveled Practice and Problem-Solving, but again, there is no teacher guidance regarding their specific implementation. The Personal Math Trainer can "create and customize assignments aligned to specific lessons or TEKS," but these features could not be confirmed by the reviewer.

The materials use inconsistent naming conventions, which causes confusion when locating different materials. For instance, each unit contains two different tasks, titled "Performance Task." One Performance Task is in the student edition at the end of the chapter. There is an additional and completely different Performance Task in the teacher online materials. No guidance indicates the difference between the two. In addition, each unit and module contain a Before/In This Module (Unit)/After table. The unit table is a type of vertical alignment; the module table is an alignment *within* the same grade level. Nowhere do the materials state this. Furthermore, the teacher edition and student edition both contain a "Benchmark Test" in the Front Matter. The "Assessment Resources" also contain Benchmark Tests, but they are not the same as the one in the teacher/student editions.

The teacher guide does not mention the online Assessment Resources document, yet it serves an important purpose: denoting all assessments included in the materials. The Assessment Resources document also explains the "level" options. For Unit Tests, Level A is for students who are slightly below level; Level B, for students who are on level; Level C, for advanced students; and Level D, for students who are considerably below level and require modified materials. Then for Module Quizzes, Level D is for students who are considerably below level and require modified materials; all other students use Level B. Even though differentiated tests are necessary, no guidance explains how to implement these levels or which students qualify for each.

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6.3 Materials provide implementation guidance to meet variability in programmatic design and scheduling considerations.

- Materials provide guidance for strategic implementation without disrupting the sequence of content that must be taught in a specific order following a developmental progression.
- Materials are designed in a way that allow LEAs the ability to incorporate the curriculum into district, campus, and teacher programmatic design and scheduling considerations.
- Materials support development of strong relationships between teachers and families.
- Materials specify activities for use at home to support students' learning and development.

Partially Meets 1/2

The materials provide some implementation guidance to meet variability in programmatic design and scheduling considerations. The materials provide some guidance for strategic implementation without disrupting the sequence of content that must be taught in a specific order following a developmental progression. The materials are designed in a way that partially allows LEAs the ability to incorporate the curriculum into district, campus, and teacher programmatic design and scheduling considerations.

Evidence includes but is not limited to:

The materials provide a suggested sequence of units that considers the development of conceptual understanding, although it does not explain the reasoning behind the sequence related to the developmental progression of mathematics. By following the structure inherent in the materials (by unit, by module, by lesson), teachers ensure that students learn prerequisite concepts first, and the development of conceptual understanding usually follows the CRA continuum. For example, in following the materials in the order presented, students in Grade 8 will learn prerequisite skills related to proportionality in Unit 2 Module 3 and then apply this understanding to dilations in Unit 5 Module 13. At other times, the prerequisites mentioned are not related to previous units. For example, in Unit 2, the introductory pages include a sidebar of what students will learn in the unit and what students learned before.

However, the skills listed in the "Before" section are not skills that students learned in Unit 1. Moving into Unit 3, the "Before" section of the sidebar lists skills that were not taught in Units 1 and 2. As a result, the materials do not provide guidance about the flexibility of the placement of specific lessons, modules, or units.

Throughout the materials, 37 of the 50 lessons specifically focus on the primary focal areas for Grade 8, which include proportional relationships, expressions and equations, including the Pythagorean Theorem, and making inferences from data. While the materials provide no guidance to support teaching the focal areas without disrupting the recommended sequence, given the design of the materials and following the order of the materials, the lessons covering the focal areas could be used effectively given that lessons do not include any spiraling in daily practices. However, it is important to note that "Texas Test Prep" and "Unit Tests" do involve spiral questions, so their use is limited if the materials are not fully implemented in the order presented.

The materials provide some support for LEAs to consider how to incorporate the materials into a variety of school designs. The beginning of each unit includes a "Pacing Guide" in the teacher edition to support LEAs with a timeline and sequence of instruction for using the materials in a 45-minute class, as well as in a 90-minute (block) classroom. The Pacing Guide is very basic, providing only a lesson reference (i.e., Lesson 1.1) for each recommended day of instruction for the unit. It is important to note that in the Grade 8 materials, Units 2 and 3 do not include a Pacing Guide for 90-minute classes, only the 45-minute classes. Also, the materials do not include suggestions regarding the implementation of the materials beyond their use within a 45-minute class or a 90-minute class, nor do they include suggestions for implementation related to co-teaching, multi-grade classrooms, and/or online schools. While the materials *do* include Intervention/Reteach tasks, such as the "Skills Worksheets" and the "Reteach" found in the online teacher and student editions, they provide no guidance for how to incorporate full class as opposed to small group intervention times, co-teaching, multi-grade classrooms, or online school.

Various school settings (magnet schools, charter schools, and public schools) should be able to utilize these materials in their entirety. In fact, the materials contain a "*my*SmartPlanner" that allows the user to create and schedule the entire year. The Smart Planner allows input of personal school calendar information, including days off and holidays. The "Auto-Schedule" button then schedules the entire year based on the calendar and the length given for class periods.

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6.4 Materials provide guidance on fostering connections between home and school.

- Materials support development of strong relationships between teachers and families.
- Materials specify activities for use at home to support students' learning and development.

Does Not Meet 0/2

The materials provide little guidance on fostering connections between home and school. Throughout, the materials lack the development of strong relationships between teachers and families; there are no recommendations to build relationships. The materials only specify online activities for use at home to support students' learning and development but do not provide explanations for how to use the resources from home to improve connections.

Evidence includes but is not limited to:

The materials include online access to resources parents *can* use at home, but the materials only specify online activities for use at home to support students' learning and development and do not provide suggestions for meaningful, authentic opportunities. (Additionally, there is no evidence that parents can access the resources.) The materials include a "Student Online Edition," which allows them to "explore concepts, take notes, answer questions, and complete homework." "Animated Math" activities provide students the opportunity to "interactively explore and practice key math concepts and skills." The online "Personal Math Trainer" "provides a variety of learning aids that develop and improve your understanding of math concepts, including videos, guided examples, and step-by-step solutions." Both the online and paper versions include "Math On the Spot" QR codes that students can scan with a "smartphone to watch Math On the Spot tutorial videos for every example in the book" with "step-by-step instructions of the math concepts covered in each example." Printable versions are available of all the practice worksheets, including "Challenge," "Are You Ready?," "Reteach," and "Practice and Problem Solving." It also includes a library of online manipulatives, TI Activities (although the link is to a "no page found" page on the Internet), and STEM Projects by Spacemath@NASA. However, the materials do not provide any guidance for teachers to communicate the accessibility of any of these materials to families.

For some English Learners, the “Spanish Student Edition” mirrors the layout and materials provided in the original student edition with all the text translated into Spanish. The online student edition includes a page with each lesson entitled “Success for English Learners,” which can be downloaded and printed. Math On the Spot video tutorials include a Spanish translation with both auditory and Spanish closed-captioning. The End Matter of the student edition includes a Glossary which provides a written definition for each term in English and Spanish and has an example (as applicable) in English. The Multilingual Glossary provides an audio recording in English and Spanish of the pronunciation of each vocabulary term, a written definition in English and Spanish, and an example (as applicable) in English. In addition, a translation of definitions is available in 12 additional languages. While the materials include resources that could be used as school-to-home supports, it is important to note that the materials do not include any guidance related to communicating the availability of these resources to families.

The materials do not guide teachers on communicating with families about the mathematics in Grade 8, the structure of the mathematics classroom, or how families can support the class (i.e., practicing math facts, playing games, posing complex problems) which according to the National Council of Teachers of Mathematics (NCTM) are foundational components of a strong relationship between teachers and families. There are no family connection ideas related to each unit that explain answers to common math questions such as pedagogy, content, and learning outcomes. The materials do not make suggestions for planning family math nights or other similar activities. They provide no resources to bring attention to how families could engage with the main focal areas from each grade level at home. The materials do not include opportunities for students to engage in assessment reflections in order to plan for remediation and enrichment on particular skills both at home and at school, nor do they include suggestions for helping parents to participate in decision making and goal setting for their child.

“Differentiated Instruction” includes a “Home Connection,” which suggests real-world examples of using math at home. (Only one of the 50 lessons offer this connection.) Although the section is titled Home Connection, the tasks included in this section are an extension of the lesson and rarely provide teachers a meaningful way to engage parents in the mathematics content at home to build relationships. For example, in Lesson 4.5, the materials guide teachers to “have the whole class plan a party that must stay within a budget. Pairs of students will create a system of linear equations that represents how a certain amount of money will be spent on two items. For example, one pair works with pizza and soda, another with plates and cups.” Although the section is titled Home Connection, the one task provided in this section is an extension of the lesson and does not provide a connection to home or a meaningful way for parents to engage in the mathematics content at home. The task does not develop the relationship between teacher and family.

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6.5 The visual design of student and teacher materials (whether in print or digital) is neither distracting nor chaotic.

- Materials include appropriate use of white space and design that supports and does not distract from student learning.
- Pictures and graphics are supportive of student learning and engagement without being visually distracting.

Meets 2/2

The visual design of student and teacher materials (whether in print or digital) is neither distracting nor chaotic. Throughout the materials, appropriate use of white space and design that supports and does not distract from student learning is included. Pictures and graphics are supportive of student learning and engagement without being visually distracting.

Evidence includes but is not limited to:

The teacher materials are designed in a way that most teachers can locate important information for lesson planning and implementation. For example, the “Teacher Resource Page” lists all Units, Modules, and Lessons, with links to all of the ancillary materials that can be used to support differentiated learning. Materials for the Unit, such as “Unit Tests” and “Performance Tasks,” are always provided under the Unit heading. Module components such as “Real-World Videos,” “Module Quizzes,” “Challenge” activities, and “Professional Development Videos” are nested under each Module heading. Lesson components such as “Math On the Spot” examples, “Extend the Math,” “Differentiated Instruction,” and “PowerPoint Presentations” are nested under the Lesson heading. (While this consistency is helpful to teachers in navigating the materials, it should be noted that the “Online Teacher Edition” lacks a user guide to point out supports such as the “Assessment Resource” document, the virtual manipulatives, and the Multilingual Glossary found in Unit 1.) The “Contents and Unit Pacing Guide” pages, though, are clear and uncluttered. The “Program Resources” page includes a breakdown of tools and resources available throughout the materials that are used to support the implementation of paper-based and online content.

The materials consistently include items to support teachers in planning and implementing lessons. Within each module, Professional Development videos include models and guide teachers to build understanding related to the Module content. The materials consistently include these videos, and they are easily accessible via the QR code in the Teacher Edition or by clicking the Professional Development hyperlink in the Module menu of the Online Teacher Edition. The Teacher Edition each lesson includes a Professional Development section that includes guidance related to how the lesson integrates the "Mathematical Processes" as well as a "Math Background section," which reinforces vocabulary and provides alternate ways to think about the content and scaffolding guidance related to the content (i.e., what concepts are being built on and how this content will be used later).

The teacher material is designed to emphasize the 5-E model and is found in the same order for each lesson so that teachers can reach each component easily. An "Essential Question" guides teachers to the focus of the lesson as part of the Engage section. The Explore section offers specific notes related to implementing the provided Explore Activity. Explain includes multiple examples, sample questions with responses, and common misconceptions for teachers to consider in preparing and implementing the lesson. Elaborate guides the teacher to summarize the lesson through the provided question(s) and "Guided Practice." In the sidebar of the Teacher Edition, a Differentiated Instruction section provides guidance on ways to adapt the instructions to a Kinesthetic Experience, Number Sense, and numerous other ways to differentiate the instruction. Evaluate includes "Independent Practice" as well as tables for the teacher to understand the focus of questions within the Guided Practice and Independent Practice. The materials include a "Lesson Quiz" and additional resources to support students' understanding. The Extend the Math section at the end of the lesson provides teachers guidance on an activity that could be incorporated to build on the provided lesson.

The materials follow the guidelines of User Interface Design. The materials include visibility of system status as well as user control and freedom. In the teacher edition, a page is devoted to the unit title and a table of contents. The lines of text are spaced appropriately, and the eye is drawn to the unit title. The text on the Math Background pages contains the right white space, and tables and models are spaced appropriately. Throughout the unit, the teacher can locate teacher supports in the same area at the bottom of the pages as well as the right and left margins. Each page of the introductory material is designed with the same font and color scheme in each unit. The color scheme and use of fonts are consistent, appealing, and appropriate. However, the pages of Program Resources are highly distracting and do not use white space appropriately. The font is too much bold text and not enough white space surrounding the text. The visuals are distracting.

Items with photographs and colorful pictures do not distract from the text on the page or interfere with learning. Display charts, tables, and graphs are also clear and easy to read and understand. For example, the tables included in the materials use a consistent, easy-to-read font and include translucent shading to highlight the titles for the independent and dependent variables displayed in the table as well as the title of the table (when included). Although the materials use a variety of colors for highlighting tables (i.e., green, blue, and purple), this

difference does not impact the effectiveness or ease of use of the tables. Additionally, number lines and coordinate graphs are incorporated, which include clear labels and consistent spacing to support student learning. Pictures and graphics are supportive of student learning and engagement without being visually distracting, and where appropriate, real-world photos are placed to support the context of the problem. For example, the Glossary included in the Student Edition and the Multilingual Glossary included in the Online Student Edition include clear and authentic pictures and drawings to support understanding and reinforce highlighted vocabulary within the materials. In both the student and teacher edition, the unit introductory page contains a full-page color real-world photograph with the use of white space to place introductory text.

The lessons follow the same general design with the same pieces being highlighted the same way. The icons used to represent included components in the materials are consistent throughout the materials. For example, the Animated Math "online interactive simulations, tools, and games" are consistently notated by the icon labeled x^2. The Math on the Spot video tutorials are noted throughout the materials with a small television icon. The Personal Math Trainer, which "provides online practice, homework, assessment, and intervention," is denoted by an icon of the four operation symbols (i.e., addition sign, subtraction sign, multiplication sign, and division sign) wearing a cap and whistle. All examples use a blue-colored font to show each step of the solution; pink writing (in the teacher edition) indicates correct answers/thinking for each task presented as well as notes about sample questions and student responses to support instruction and discussion.

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6.6 If present, technology or online components included are appropriate for grade level students and provide support for learning.

- Technology, if present, aligns to the curriculum's scope and approach to mathematics skill progression.
- Technology, if present, supports and enhances student learning as appropriate, as opposed to distracting from it, and includes appropriate teacher guidance.

Not Scored

Materials contain features that allow students to interact digitally with tasks, receive immediate feedback while completing activities, and listen to high-quality examples before practice. For example, students have access to materials such as "Math On the Spot QR" codes, which can be scanned with a "smartphone to watch Math On the Spot tutorial videos for every example in the book." The Math On the Spot videos include "step-by-step instructions of the math concepts covered in each example," which supports student understanding. Students can also use online manipulatives such as algebra tiles and integer counters, and the student can practice concepts learned using these tools, following the progression of the math content. Number lines and coordinate planes represent various real-world situations and are used throughout the text. "Independent Practice" has a live link to "Selected Answers." Students also have access to a "Personal Math Trainer," which allows students to practice skills and complete homework online. The Personal Math Trainer "provides a variety of learning aids that develop and improve...understanding of math concepts, including videos, guided examples, and step-by-step solutions." "Animated Math" provides students the opportunity to "interactively explore and practice key math concepts and skills." These activities provide immediate feedback as students work on problems similar to those in the student edition of the textbook. If answers are incorrect, students are given step-by-step instructions to guide them to correct answers with additional practice. Students are also guided through the use of online manipulatives such as number lines, graphing tools, etc. In addition, the teacher materials include digital access to the teacher edition and resources, as well as a digital calendar and planner, reports, and the ability to create assignments digitally.

The technology materials are somewhat aligned to the scope and sequence of the program. The materials do not provide recommendations for teachers on which days to utilize technology with students, but there is a time during lessons that the technology would enhance student

learning. The “Unit Pacing Guides” do not include guidance or overviews on technology use. The digital planning guides have live links to the other online resources to facilitate planning and ease of use. However, the materials include a “Student Online Edition” that mirrors the Student Edition and follows the scope and sequence as outlined by the program in the Unit Pacing Guide at the beginning of each Unit. These materials follow the same progression for content as the lesson and are embedded within specific lessons to ensure continuity with the scope and sequence. For example, the Math On the Spot videos supports student understanding of the TEKS covered in the lesson. The Animated Math activities (accessible through the Student Online Edition) provide interactive exploration and practice of key math concepts and skills that are taught in each lesson. The Personal Math Trainer allows students to practice skills and complete homework online. The Personal Math Trainer aligns with the scope and sequence outlined in the materials. Within the resources, the teacher has links to assessments, practice pages, reteach pages, and other worksheets that are editable or available to print as a PDF. Each unit contains these same links and follows the materials’ sequence of concepts.

The materials contain digital features that enhance and do not replace or detract from classroom learning. Students can navigate through the units, modules, and lessons with ease, and buttons to visit videos and online skills practice are consistent and easy to use. Students’ individual, interactive, write-in edition includes a navigation menu to allow students to easily move throughout the online materials. The Content menu button provides access to the Student Edition text, tutorial videos, online skills practice, and highlighting/note-taking opportunities within the online text. The Resources menu button provides students access to lesson-level resources through the Personal Math Trainer, as well as access to the digital manipulatives, which include integer counters, fraction bars, fraction-decimal grids, bar models, Geometry Sketcher, Algebra tiles, graphing calculator, scientific calculator, and Multilingual Glossary. The Bookmarks button allows students to view and select pages that they have previously bookmarked. The Notes section allows students to see any notes they have taken online or any text that they have highlighted. The Page View button allows students to change their page view to a portion of a page zoomed in, one full page, or two full pages at a time. The Search button allows students to search online materials. Finally, the More navigation menu item allows students to access “My Notebook,” Print, review the Quick Start Guide for understanding and using the online materials, and find out about the edition of the materials they are using.

The materials do not provide support for teachers to successfully integrate technology. Aside from the “Quick Start Guide” in the Online Student Edition, the materials do not provide guidance for teachers to successfully integrate technology. Sidebars within the student and teacher editions include references to the technology included; however, no guidance is available to assist teachers with the integration of the technology. The teacher materials do not guide on how to support students other than suggesting the student uses the tools. There is no communication for families in how the student should utilize the digital components.