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# Carnegie Learning 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), but materials provide limited 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 and across grade levels; resources build vertical content knowledge by accessing prior knowledge and understanding of concept progression.
- Tasks are of high-quality and engage students in the appropriate level of rigor and complexity as identified in the TEKS.
- 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 develop students' abilities to reflect on approaches to problem-solving; however, materials prompt students to use a problem-solving model that is transferable across problem types and grounded in the TEKS.
- 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 prompt students to effectively communicate and justify mathematical ideas, reasoning, and their implications in multiple representations.

#### **Section 4. Progress Monitoring**

- Materials include developmentally appropriate diagnostic tools; however, teachers are not guided to ensure consistent and accurate administration of diagnostic tools.
- Guidance is provided for teachers and administrators to analyze and respond to data; however, administrators are not provided with the guidance or tools needed to support teachers.
- Materials include frequent, 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; limited targeted instruction and activities are provided for students who struggle with content mastery.
- Instructional methods appeal to some learning interests and needs.
- 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 not designed in a way that allows Local Education Agencies the ability to incorporate the curriculum into district, campus, and teacher design and considerations; however, there is specific guidance provided for implementation that ensures the sequence of content is taught in an order that is 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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# Carnegie Learning Grade 7

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

Evidence includes but is not limited to:

All five of the modules cover one or more of the following: number and operations; proportionality; expressions, equations, and relationships; and measurement and data.

- Module 1 includes four main topics and 15 lessons that correlate directly with the focal point titled "Representing and applying proportional relationships."
- Module 2 includes two main topics and nine lessons that correlate directly with the focal point titled "Developing fluency with rational numbers and operations to solve problems in a variety of contexts."
- Modules 3 and 5 of the material include four main topics and 18 lessons that correlate directly with the focal point titled "Using expressions and equations to describe relationships in a variety of contexts, including geometric problems."
- Module 4 includes one topic and four lessons that directly correlate with the focal point titled "Comparing sets of data."

The design of the materials follows a cycle in each of the modules. Each module includes "Connections to Prior Learning," which is a review of key concepts found in the Teacher's Implementation Guide, and a "Content and Alignment" section of the instructional materials. Each module includes an overview section outlining for the teacher all the learning that will

take place within that module. The cycle then continues with a topic overview to detail the specific learning that develops within the module. Finally, lessons and activities are included to develop focused learning in each topic.

In addition, these key focal areas are spiraled among all modules. The materials showcase the focal concepts throughout by providing standard descriptions and essential ideas at the beginning of each module. The lessons include suggestions and materials to practice and reinforce the primary focal area skills in a variety of settings that include performance tasks, MATHia, a technology component, pre-tests, and post-tests. Questions and tasks within and across units build in academic rigor to meet the full intent of the primary focal areas. Problem sets across lessons scaffold from lower-level tasks (e.g., define, identify, or describe) to higher-level question types (e.g., evaluate, analyze, or create).

Lessons contain several activities, as well as the “Talk the Talk” for each lesson before getting to the actual assignment. The activities allow students to have several opportunities to master the content. MATHia is available for each lesson. This provides the students with additional practice to master the content. Students have a skills practice book to allow for more practice on each skill.

Module 1 suggests the following scaffolding for calculating tip percent and missing meal costs: “Students will use the tip (part) and percent (15% or 18%) and determine the possible whole (check total) first.” In Module 1, Topic 3.4, students use multiple representations such as diagrams, equations, tables, and graphs to show proportional relationships. Multiple activities (4.1, 4.2, 4.3, 4.4, and 4.5) within one single lesson (3.4) show a progression of rigor to meet the full intent of primary focal areas.

Module 3, Topic 1 introduces students to algebraic expressions, Topic 2 adds two-step equations and inequalities, and Topic 3 culminates with multiple representations of equations. The materials build upon previously taught concepts across previous weeks, and topics within each module increase rigor and ensure students master the full intent of the concept.

Module 4 guides teaching and learning math concepts through a variety of question types and tasks, such as “What is the difference between an array and the sample space?” or “What strategies did you use to list the possible outcomes?”

In Module 5, Topic 1.2, students learn about line segments and how to construct them before moving into using line segments to create other geometric figures in Topic 1.3. Each topic is broken down into several activities in which there are multiple opportunities for students to practice what they are learning, with each activity building on the previous one.

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# Carnegie Learning Grade 7

**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

The materials include a variety of types of concrete models and manipulatives, pictorial representations, and abstract representations, as appropriate for the content and grade level. The materials guide teachers to help students move through the CRA continuum; however, there is limited evidence that the materials support teachers in understanding students' progression along the CRA continuum.

Evidence includes but is not limited to:

The materials use models, manipulatives, and representations for concept exploration and attainment for the primary focal areas number and operations; proportionality; expressions, equations, and relationships; and measurement and data. Students work with models, manipulatives, and representations used for content exploration and attainment or have previous experience with the instructional materials through teacher guidance and instructions on activity sheets in the students' Skills Practice Workbook. The materials include a variety of types of concrete models and manipulatives in only some of the lessons. It is more evident that pictorial and abstract representations are present throughout the materials. Every topic in the materials has an overview section to support the teacher before teaching each lesson.

In Module 1, students are explicitly taught how to work with models, manipulatives, and representations used for content exploration and attainment. In Module 1, Topic 1, students use string, compasses, rulers, scissors, and a calculator to explore the relationship between  $\pi$ , radius, diameter, and circumference. Students are then explicitly guided to develop an understanding of  $\pi$  and the ratio of a circle's circumference to its diameter. The lesson then moves the students from using the manipulatives and models to abstract by having students

write an equation they can use to solve circumference problems. Multiple pictorial and abstract representations are provided in the materials to continue developing the student's understanding of circumference. In Module 1, Topic 4, students are introduced to solving percent problems by using proportions. Concrete models and manipulatives are not used to introduce this concept. Students are asked to use visual representations such as scale drawings and the proportion "part/whole = percent number/100" to solve percent problems.

In Module 2, students use 2-color counters, number lines, and red and black number cubes as an introduction to adding and subtracting integers. Later in Module 2, students are provided with representations of problems using 2-color counters and number lines to solve addition and subtraction of integers problems. Module 2, Topic 1.5 culminates with students solving problems adding and subtracting integers without the use of manipulatives or pictorial representations. Students are explicitly taught how to use the manipulatives or representations they are given through teacher guidance and instructions on activity sheets in the students' Skills Practice Workbook.

In Module 3, students review the Distributive Property by calculating the product of two numbers using the area of a rectangle diagram. Then, to increase rigor, students simplify algebraic expressions using both the area model and symbolic representations. In Module 3, Topic 2, teachers are given background knowledge about students' understanding of two-step equations and inequalities from the current and previous grade based on what the student *should* understand; however, no guidance is provided for teachers to identify where a student's actual understanding is along the CRA continuum. The lesson includes pictorial type problems that include bar models and number lines and abstract problems with just numbers and symbols. The materials do not have further teacher support for students to progress if they are not yet working at an abstract level.

In Module 4, Topic 1, students conduct probability experiments (concrete); suggestions are given on how to conduct probability experiments. In Topic 2, students use arrays, lists, and tree diagrams to organize the outcomes of their experiments (representation). In Topic 3, students use data to estimate results (abstract); suggestions are given on how to use data to make predictions, which moves students along the CRA continuum.

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# Carnegie Learning

## Grade 7

**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.

### Meets 4/4

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

Evidence includes but is not limited to:

At the beginning of the Teacher's Implementation Guide, a chart entitled "Middle School Math Solution Content at a Glance" explains how concepts are built during the current year and across multiple years. The materials provide a detailed "Introduction" at the beginning of each module and each topic. This section gives teachers a summary of what students should already know in the section called "What is the entry point for students?" This section supports teachers in knowing what the students already know and what they need to learn to build on the next concept. The materials include teacher supports and guiding documents that help teachers understand how concepts build over time. Teachers have access to extensive professional learning with a mobile and web-based app, LONG + LIVE + MATH, an online community, and a "Central Hub" with access to all products and resources included, in addition

to the books and software. Additionally, the materials include guiding documents for teachers, which include content and alignment documents for each module, and a Teacher's Implementation Guide.

In Module 1, Topic 3, students use strategies from previous topics, such as using graphs and tables to connect the understanding of ratios and rates to the more formal strategy of solving proportions. Students then develop strategies for graphing proportional relationships that will continue to be used in eighth grade. In Topic 4, students use proportions to solve percent problems, and later in the topic, to determine scale factors to help them create scale drawings. In Lesson 1, students access prior knowledge by taking what they have already learned about solving percent problems with ratio reasoning to answer the question “How can you use proportional relationships to solve percent problems involving markdowns and markups?” In Lesson 4.5, teachers help students make connections between the previous activity on drawing scaled triangles that are 50% of the original size and the new activity of applying these similar triangles to find the scale factors and compare perimeters and areas. In Lesson 5.1, students use a map of the United States and a map key to estimate distances between different cities. Students use patty paper to draw their ruler and measure distances and apply mathematics to continue the activity and answer questions about determining actual distances from a scaled map.

In Module 2, the teacher overview explains the knowledge and fluency students learn in operating with signed numbers throughout students’ mathematical journey. It also explains how this information will be used in working with irrational numbers and complex numbers in subsequent years. In Topic 1.2, students provide examples of adding numbers with different signs that produce a positive result and other examples that produce a negative result, requiring them to look for relationships or patterns when using numbers. In Module 2, students use number lines to model the addition of integers; this skill reappears in Module 3 as a tool to model adding and subtracting linear expressions. Number lines are used in grade 8 to compare and order rational and irrational numbers and aid in estimating irrational numbers. In Module 2, students learn to operate with rational numbers. Module 3, “Algebraic Expressions,” combines students’ knowledge of expressions with negative numbers on a number line to develop number line models for variable expressions. Students evaluate algebraic expressions with rational numbers using operations students learned in the previous module. The materials provide opportunities for students to examine relationships and patterns within concepts and across concepts. In Activity 2.1, students calculate the missing measurements of supplementary and complementary angles using equations and variables.

In Module 3, Topic 1, the overview states why fluency with algebraic expressions and number sense is important. In grade 8, students use their understanding of evaluating expressions using positive rational numbers and operating with rational numbers to solve equations. Then, in high school, students expand and factor polynomial expressions. In Topic 1, the “Engage” part of the lesson uses a number line, which students have used in several previous grade levels. In Topic 1 “Overview,” an explanation is given of when this topic will appear again in seventh grade, eighth grade, and high school math.



In Module 3, Topic 2, students rewrite expressions to discover similarities in the expressions' structure to plot the expressions on a number line more accurately, connecting the ideas of evaluating an expression and using number lines. In Module 3, Topic 3, the materials include a section that describes how students will use knowledge from reasoning algebraically in future learning. It continues with information about how the lessons in this topic will develop students' understanding, which is needed in eighth grade to transform geometric objects. In Module 3, Topic 3, students write the algebraic expression a limousine rental company would use to calculate their customers' cost.

In Module 5, Lesson 2.4, when introducing the surface area of pyramids, students work with the pyramid nets from the previous activity to calculate the lateral and surface area. The teacher asks the students specific questions to connect the perimeter's mathematical idea to the lateral and total surface area.

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# Carnegie Learning Grade 7

**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

The materials include quality tasks that address content at the appropriate level of rigor and complexity. Some 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. The materials clearly outline for the teacher the mathematical concepts and goals behind each task. The materials integrate contextualized problems throughout, providing students the opportunity to apply math knowledge and skills to new, but not varied, situations. The materials provide some teacher guidance on anticipating student responses and strategies. Lastly, the materials provide some teacher guidance on preparing for and facilitating strong student discourse grounded in the quality tasks and concepts.

Evidence includes but is not limited to:

The Teacher's Implementation Guide provides teachers guidance in each topic's overview, including how students demonstrate understanding and how each topic's tasks promote student expertise. The materials provide "Learning Together," which is a subsection of the topic overview. It shows the progression of each lesson and the standards addressed, both target and spiral. The materials explain how each task builds student efficacy towards the goal of demonstrating mastery. For example, in the facilitation notes guide for each topic, the

materials provide summaries of each activity and what students should demonstrate after completion. This section provides the teacher with a list of indicators to look for that constitute a student's understanding of the topic's standards. For example, the materials suggest that the teacher look for students' identification of parts in a numerical expression using terms such as *sum*, *factor*, *product*, and *coefficient* to understand the distributive property.

The materials include meaningful tasks for students set in real-world contexts that allow them to demonstrate mastery of math concepts. For example, in introducing unit rates, the materials offer several real-world activities such as calculating tips for a restaurant waiter, finding the total amount due to a hairstylist after the tip is included, calculating the simple interest on a loan given a set principal amount and different rates over various periods, and solving problems about the commission on selling cars. The materials do not guide the teacher on how to appropriately revise content to be relevant to their specific students, backgrounds, and interests. The materials provide teachers with possible student strategies to practice questions and tasks. For example, the materials include a problem-type called "Thumbs Up/Thumbs Down" to analyze problem solving in examples provided. When an incorrect response is presented, students look for errors in calculation and correctly solve it.

The materials' online component, MATHia, provides students with multi-level hints to help them solve problems. No evidence was found that the materials provide teacher guidance throughout the topic or lesson overview on anticipated student strategies. The facilitation notes section in every lesson provides several open-ended questions to ask students and support discourse. The materials provide teacher responses to possible students' answers, including how to direct students' misunderstandings or misconceptions. The misconception section is included in most lessons, as are differentiation strategies to help students who may struggle. For students having difficulty finding the percent of a number, the materials suggest that the teacher use diagrams and models and explain that a percent is part of a whole and can be any size. The materials do not provide rubrics or keys with which teachers can evaluate and provide feedback to students while engaging in discourse. The materials partially support the teacher with setting up and reinforcing strong practices for student discourse. Although every topic provides an overview for the teacher that includes guided questions to support students through each topic's learning, little to no detail is given to setting up and reinforcing these practices.

In Module 2, the materials begin with adding and subtracting rational numbers. The second topic increases in rigor with multiplying and dividing rational numbers. These two topics have sub-lessons that also increase rigor by breaking down the lessons into integers and then moving to rational numbers. In Module 2, Topic 1, students learn about adding and subtracting rational numbers using concrete, physical representations of integers such as two-color counters and physical motion. Students use number line models and drawings of zero pairs to represent the addition and subtraction of integers. The materials include the following question for teachers to use to promote discourse: "When computing the sum of two or more integers using a number line, where do you always start?" At the end of the lesson, students develop their rules to add and subtract integers using symbols and numbers, which is the lesson's abstract part. In

Lesson 2.2, the materials indicate that “Students sometimes think that if a decimal is repeating, the repetition must start immediately after the decimal point.” To combat this misconception, the teacher provides an example to disprove this thinking, such as  $181 \div 90$ , where the quotient is equal to 2.01 where the 1 is repeating. The students then use a calculator to check their work and prove this point.

In Module 3, the facilitation notes suggest several strategies students can use to plot an algebraic expression on a number line. One strategy involves substituting the same value for the variable (arithmetic). The other strategy requires rewriting each expression as a product of two factors (algebraic). Students review what it means to factor out a coefficient. No evidence was found that the materials sequence the anticipated strategies to achieve strategy sophistication so that teachers know how to push students from one strategy to the next. In Activity 1.2, students represent a problem situation using a bar model to build and sell dog houses during the summer. At the end of the lesson, students explain how the solution to the problem is represented in the equation.

In Module 4, Topic 1, students use a weather forecast of rain to convert percentages to decimals and fractions. In Topic 1.3, the facilitation notes have students use spinners to describe events, list possible outcomes, and calculate probabilities. Students also predict the probabilities of specified events occurring. In Module 4, Topic 2, students conduct experiments to determine theoretical and experimental probabilities using number cubes and spinners. Later, students use and create models to organize the probabilities of the outcomes. Students then use real-world situations to calculate probabilities.

In Module 5, Topic 2.2, the facilitation notes have students write equations, graph lines, and interpret intersection points to solve them. Students use patty paper to illustrate perpendicular lines, complementary angles, and supplementary angles. Module 5, Topic 2.3, introduces the misconception that students believe the orientation of angles fixed is presented. Teachers are encouraged to have students draw their angles in unique orientations, proving that right angles do not need to have horizontal and vertical rays. However, of the five lessons in this topic, only three have misconceptions identified.

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# Carnegie Learning Grade 7

**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.

## Partially Meets 2/4

The materials integrate fluency over the course of the year and include some teacher guidance and support for conducting fluency practice as appropriate for the concept development and grade; however, the materials do not include an explicit year-long plan for building fluency as appropriate for the concept development and grade. The materials integrate fluency at appropriate times and with purpose as students progress in conceptual understanding; however, the integration is not explicit and is not found throughout the materials. The materials include some scaffolds and supports for teachers to differentiate fluency development for all learners.

Evidence includes but is not limited to:

The Teacher's Implementation Guide provides detailed descriptions in the “Module and Topic Overview” that explain the plan for that module to build concept development and fluency and how it will address the targeted student expectation. This is consistently done throughout the materials for every module and topic; however, guidance is limited throughout the lessons and activities. The materials provide lessons and pacing structure that includes directions on helping students move through multiple fluency practice activities within a single lesson. Each assignment contains a review section that provides a spaced practice of concepts from the previous lesson and topic and the fluency skills important for the course. The materials include some opportunities within the facilitation notes of each activity for students to discuss their conceptual understanding behind the fluency practice by using questions listed for the teachers

to guide the students through this process. The materials provide a “Stretch” section for every lesson for students to extend fluency when they have already met the fluency expectations. The materials provide a section in the facilitation notes titled “As students work, look for.” This section lists for teachers certain key things that help the teacher determine if students need differentiated supports.

The online component, MATHia, provides individual practice for students to build their fluency throughout the school year and track their progress within each module and targeted skill. The table of contents in the materials shows each module’s alignment, topic, lesson, and activity with the student expectation and the MATHia workspace. However, there is no guidance on how and when to use resources in the scope and sequence or individual lessons. The materials include the Skills Practice Workbook with activities that focus on building student fluency.

In Module 1, Lesson 1.2, students label parts of a circle (radius and circumference) before working on the activity where they cut out sectors of a circle to derive the formula for a circle area. Activity 2.1 provides differentiation strategies to extend and support struggling students. For example, students determine the constant rate of proportionality using tables. For students who struggle, the text suggests using questioning to pull out the fact that there is no flexibility when writing a constant of proportionality; you have to know the input and output and use them to write the ratio. However, to extend the activity, students explore the statement after Question 1 in more depth. Students make the connection that the units of the constant proportionality multiplied by the units for the x-value yield the units for the y-value. In Lesson 4.1, students determine which of two options is the better deal on a back-to-school sale where the first cashier subtracts a \$10 student discount at the end after calculating the total with a 20% off promotion, and the second cashier subtracts the \$10 discount at the beginning. Because this activity consists of multiple steps beyond working with proportions to solve percent problems, the students extend their fluency.

In Module 2, Topic 1, the materials provide the students with several fluency activities and several choices of strategies they can use to add and subtract rational numbers. One activity teaches students to sketch and use several lines to show the addition and subtraction of integers. In the next activity, Walk the Line, students physically practice calculating sums of integers. In the third activity, students use two-color counters to model how to create zero pairs to subtract integers and then draw these models for given problem situations. These activities allow students to develop their own rules and conceptual understanding of operating with positive and negative integers.

The Module 3 Overview provides the teacher with an explanation of how fluency in the algebraic expressions, two-step equations, and inequalities help students develop the concept of multiple representations of equations in tables, graphs, and verbal descriptions. In Topic 1, the review section requires students to determine each quotient given fraction and decimal problems. In Lesson 1.2, the materials guide the teacher to look for students’ placement of algebraic expressions on a number line (e.g.,  $x+1$  to the right or the left of 0) and the evenly spaced intervals on the number line. Based on the teacher’s observations, students are

identified for needing differentiated support during the fluency activities. In Activity 2.2, the product of two numbers is shown by applying the Distributive Property in an area model. Students simplify algebraic expressions using area models, symbolic representations, and the Distributive Property. In Activity 2.3, students use the Distributive Property to factor an expression. For those who struggle, the materials suggest factoring out  $-1$  rather than just a negative sign if the GCF is  $-1$ .

Module 4, Lesson 3.2 guides the teacher through a two-day lesson that includes an engaging activity and three fluency activities on using random samples to draw inferences. The materials tell the teachers when to guide students, when they should be applying their knowledge, and when they should demonstrate what they have learned. These activities all support students in developing fluency.

In Module 5, Lesson 2.3, the teacher prompts students with questions about the base, height, and volume of a prism and a pyramid. The teacher provides discourse opportunities by asking the students how the prism and the pyramid are similar and if they are congruent. Because both shapes have the same similarities in dimensions, the teacher's guided questions provided in the materials help in promoting strategic discourse for students to discuss the difference between area and volume.

The materials integrate fluency at appropriate times and with purpose as students progress in conceptual understanding; however, the integration is not explicit and is not found throughout the materials. The materials include some scaffolds and supports for teachers to differentiate fluency development for all learners.

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# Carnegie Learning

## Grade 7

**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

The materials include some embedded opportunities to develop and strengthen mathematical vocabulary. The materials include some guidance for teachers to scaffold and support students' development and use of academic mathematical vocabulary in context.

Evidence includes but is not limited to:

The Teacher's Implementation Guide and the Consumable Student Edition include key terms listed and defined in the "Module and Topic Overviews." When appropriate, in the margins of the Consumable Student Edition, characters called "The Crew" use speech bubbles to highlight and define academic vocabulary. At the beginning of each lesson, the materials list the learning goals and key terms on the same page; however, the development of mathematical vocabulary is not addressed. Key terms are bolded in each activity's text and accompanied by the formal definition, which is used within the lesson context. At the end of each topic, a summary is included for the students and teachers to review key terms learned throughout the series of lessons within that topic. The lessons embed the introduction and use of vocabulary within the context of mathematical tasks requiring students to communicate mathematical ideas. For example, the Student Edition embeds academic vocabulary within each lesson.

The materials provide repeated opportunities for students to listen, speak, read, and write using mathematical vocabulary within and across lessons. At the end of each lesson, students complete three sections: "Write," "Remember," and "Practice." Students make connections to the previous activities in the lesson and also reiterate the formal language of mathematics. The materials do not explicitly build from students' informal language to the formal language of mathematics by making explicit connections throughout the materials. The materials provide a section for differentiation in most lesson activities; however, vocabulary development is not



one of the strategies provided. The Teacher's Implementation Guide prompts teachers to create a word wall of key vocabulary terms used through the materials.

In Module 1, Topic 1, the overview notes that one of the essential ideas in the module is the circumference definition. The materials provide repeated opportunities for students to listen, speak, read, and write using mathematical vocabulary within and across lessons. In Activity 1.2, the facilitation notes state that students sometimes use the terms *equal* and *congruent* interchangeably. The text directs teachers to remind students that equal is used for numbers, and congruent is used for shapes.

Module 2, Topic 1 defines additive inverse. Three lessons later, the students revisit the definition of additive inverse. Additive inverse is used again in Module 3 when students are solving equations.

In Module 3, Lesson 1.1, students demonstrate their learning by writing a 1–2 paragraph summary of the lesson and address two questions about evaluating an algebraic expression. In Module 3, Lesson 3.2, students work in a group to complete questions about linear equations and then share responses as a class. These activities are repeatedly used throughout the materials to promote reading the math question, listening to a group conversation, and speaking about their thinking process and response.

In Module 4, Lesson 1.3, the key terms listed are *theoretical probability* and *experimental probability*. One of the learning goals states that students will calculate the difference between theoretical prediction and the experimental results, which can only be done by understanding the listed vocabulary. In Lesson 2.2, students explain in writing which events in a given question represent complementary events. The Teacher's Implementation Guide provides possible correct explanations on the answer key section of that lesson that includes vocabulary.

In Module 5, Lesson 1.2, students explain their drawing of supplementary angles, perpendicular lines, adjacent angles, and complementary angles. Students are reminded of the key vocabulary in the lesson to guide them in their writing assignments. Finally, students read and solve 10 practice problems that only include the formal language of mathematics. Module 5, Topic 1 includes a differentiation strategy to help all students make connections and distinctions among the lesson's key terms. The teacher distributes a sheet of colored paper to each student, and then, using landscape orientation, students create three columns titled *Terms Related to 180°*, *Terms Related to 90°*, and *Other Terms*. As the terms are introduced, students enter them into the appropriate column along with a diagram or written definition. Students are encouraged to add any new terms introduced. Students make sure their diagrams and definitions are specific enough to differentiate among the terms. At the end of Lesson 2, students have a patty paper vocabulary study guide; students use these definitions to answer questions and then write and solve equations involving special angle pairs.

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# Carnegie Learning

## Grade 7

**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.

### Meets 4/4

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

Evidence includes but is not limited to:

The program requires students to integrate knowledge and skills together to make sense of a context and develop an efficient and successful solution strategy. For example, each topic includes an open-ended performance task that allows students to be creative in demonstrating what they learned. The task presents a scenario that includes student directions for acceptable work and a detailed rubric, teacher notes, and a sample answer. The materials include opportunities for students to solve real-world problems from a variety of contexts. For example, each lesson in the materials contains real-world problems such as buying back-to-school supplies, taking a bike ride home from school, and making brownies for the class.

Module 1, Lesson 1 requires students to use a grade-appropriate graph of lemon-lime to club soda ratios for Jade and Kim's recipes. The data is developmentally and thematically appropriate for grade-level students. In Module 1, students analyze the size, numbers of slices, and costs of pizzas to determine the unit rate in a variety of ways. In Lesson 2.3, students apply their knowledge of ratios to proportional problem situations about how scientists estimate shark populations based on tagged sharks. As students investigate different scenarios, they are asked to represent these situations using proportions. In Activity 2.3, students compare

different sized pipes to analyze which combination of pipes provide the most water flow to residents. In Lesson 3.2, students have the opportunity to analyze data from tables and determine if the relationship between a television show and its corresponding commercial lengths is proportional. They also analyze data from a table showing the total number of students at a school and the number of students taking band as their elective. They again have to analyze the data and determine if the relationship shown in the table is proportional. In Lesson 3.3, students analyze a graph that represents the relationship between the time and distance of a runner measured in kilometers per minute. Students determine the constant proportionality, write an equation to represent the situation, and then use that equation to solve for unknown quantities.

In Module 3, Topic 1, students model a real-world situation by writing algebraic expressions for a limousine rental company. Students determine how much tax Katie must collect as well as the rental fee amount. Additionally, Module 3 requires students to work with four contexts that require a two-step equation. For example, students combine terms to determine prices with discounts and sales tax for toys, clothes, and a bike. In Activity 1.1, students study a translator's job to determine fees and payment for the numbers of pages translated, and then analyze data from the costs of translating different numbers of pages of a document to graph the information while learning about discrete and continuous data.

In Module 4, Lesson 1.4, students use a coin toss to simulate the experimental probability of the percent of female babies born at a hospital. Students start their experiment with only four tosses and record and analyze their data. They then increase to 8 tosses and record and analyze their data. Finally, they increase their experiment to 50 tosses and record and analyze their data and note that the experimental probability approaches the theoretical probability as the number of trials increases. In Topic 2, students use the birth order of four children in a family, identified only by gender, to determine the probability of each of the children's birth order. In Lesson 2.3, students calculate the probability of adopting one of five different kinds of pets at a pet shelter if the next pet is randomly selected. Students answer questions about compound events and determine the probability of the event occurring. In Lesson 4, students calculate the theoretical probability of many compound events, such as the likelihood of how many free throws a basketball player can make when given the total number of shots attempted.

In Module 5, Topic 1, students receive two drawings of lines crossing with angles marked by algebraic expressions and determine the measures of those angles. Students need to identify vertical, supplementary, and congruent angles to solve the expressions and determine the angle measures.

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# Carnegie Learning Grade 7

**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 do not show how they are supported by research on how students develop mathematical understandings. The materials do not include cited research throughout the curriculum that supports the design of teacher and student resources. The materials provide limited research-based guidance for instruction that enriches educators' understanding of mathematical concepts and the recommended approach's validity. Cited research that is current, academic, and relevant to skill development in mathematics, and applicable to Texas-specific contexts and demographics is not evident in the materials. A bibliography is not present.

Evidence includes but is not limited to:

At the beginning of the Teacher's Implementation Guide, there is a section titled "Our Research" where research is mentioned. Still, no actual research or synopsis of research is cited or included in the materials. Although the materials speak of their research, known in the materials as "The Carnegie Learning Way" founded by Carnegie Mellon University, teachers' guidance does not include the physical research behind Carnegie Mellon's research; the actual research is not cited.

On their home page, the materials briefly describe that educators from Pittsburg Public Schools teamed up with Carnegie Mellon University to create these materials. However, the materials have no evidence that their research is current, academic, and relevant to skill development in

mathematics. The program does not describe the students' context and demographics in the research used to design the program. It is not applicable to the Texas-specific context and demographics.

The instructional materials do not have a bibliography present but do include an acknowledgment page.

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# Carnegie Learning

## Grade 7

**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

The materials provide guidance to prompt students to reflect on their approach to problem solving. The materials also provide guidance for teachers to support student reflection of approach to problem solving. The materials do not prompt or guide students in developing and practicing the use of a problem-solving model that is transferable across problem types and grounded in the TEKS.

Evidence includes but is not limited to:

At the beginning of the Consumable Student Edition, students are introduced to a section called “Habits of Mind.” This section explains mathematical practices divided into five sections, four of which have an associated icon that can be found through the activities. Each section includes an overall approach to problem solving and lists 3–4 questions a student should ask themselves when they see the related icon. However, this is not a problem-solving model because it is not grounded in the TEKS mathematical process standards. It does not include analyzing given information, formulating a plan or strategy, determining a solution, justifying the answer, and evaluating the problem-solving process and the reasonableness of the solution in an organized format.

Although the Teacher's Implementation Guide speaks of problem solving several times as an important mathematical practice, the materials do not develop or practice a consistent and specific problem-solving model. The materials include activities grounded in the TEKS mathematical process standards where students analyze information, formulate a strategy, determine and justify a solution, and evaluate the problem-solving process and the solution,

but a specific problem-solving model is not included. There are several guiding questions to help students problem-solve through each activity in the materials, but no specific model for them to use while problem solving.

Module 1, Activity 2.3, the Teacher's Implementation Guide provides questions to support students in evaluating the cost of services using proportion or percent equation problem strategies. Activities 3.1 and 3.2 include questions to guide students to develop and practice using a problem-solving approach in a variety of problem types such as graphs, tables, and equations. In Module 1, Topic 3, a graphic reminds students that it is helpful to draw a model when identifying the constant of proportionality. In Lesson 4.4, students calculate the percent increase and decrease for different problem situations using two different approaches: proportions and multiplying the original amount by the decimal representation of the percent. The facilitation notes provide the teacher with questions to ask about the differences between both methods and if there is any other way to come up with the same answer. The questions guide teachers to ask about the advantages of the methods used. These questions help teachers guide students in reflecting on their problem-solving approach and the efficiency that different approaches provide in determining the percent increase or decrease.

In Module 3, Lesson 2.3, students explore different strategies for applying inverse operations such as the addition, subtraction, multiplication, and division properties of equality to solve two-step equations. The activity prompts students to apply each of the properties to solve different equations and then asks the students which property they prefer to use and if their preference changes based on the equation. The problems and questions help students reflect on their approach to problem-solving different types of equations.

In Module 4, Lesson 4, "Talk the Talk" asks students several open-ended questions about simulations. Students answer reflection questions such as "Describe a simulation to model each situation and then describe one trial," and "How many questions would you get correct on a 10-question true/false test simply by guessing?"

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# Carnegie Learning Grade 7

**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.

## Meets 4/4

The materials provide students with opportunities to select and use real objects, manipulatives, representations, and algorithms as appropriate for the stage of concept development, grade, and task. The 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. The materials provide some teacher guidance on tools that are appropriate and efficient for the task.

Evidence includes but is not limited to:

The materials provide activities where students have to select from various tools, including a graphing calculator, an interactive whiteboard, and the online software MATHia for solving a problem. MATHia is an online, 1-on-1 adaptive math coaching software students can use throughout the course. MATHia includes various electronic tools, including virtual manipulatives, an expression editor, and a calculator that students can use. As students progress through MATHia, they choose the tools most appropriate for them to use on their current tasks. Students explore tools, use animations, categorize answers, and select problem-solving tools within MATHia.

MATHia allows students to use virtual representations for each of the topics in the materials that include grade-appropriate concepts such as area, circumference, proportions, graphing, integers, the order of operations, probability, angle measures, volume, and surface area. Within



each module, the MATHia software provides students virtual manipulatives and embedded tutorial hints for lessons.

In Module 2, Topic 1, the overview in the Teacher's Implementation Guide describes the uses of physical number lines, drawn number lines, and two-color counters for adding and subtracting rational numbers.

In Module 3, Topic 2, students use the MATHia software to create visual models to represent real-world situations and solve using reasoning. Then, students write and solve expressions from a given real-world problem using tables. Students use double number lines to solve equations. The facilitation notes in the Teacher's Implementation Guide include a section that explains the use of the double number line in solving equations.

In Module 4, Topic 1, the overview states that students must select appropriate tools or assignments of numbers or values in simulations. Students use various tools, including number lines, six-sided cubes, probability models, spinners, and random number tables in the introduction to probability. In Lesson 3.1, students learn how to set up their calculators to generate random numbers for them to collect samples to draw inferences. The materials provide seven specific steps that the teacher guides the students through. The materials offer the teacher a list of three tools to choose from to collect random samples. In the facilitation notes, the materials suggest using either a spreadsheet, graphing calculator, or random number apps instead of physically drawing numbers for their random sample. In Lesson 4, students select a tool to simulate real-world compound events. The students are given the following scenario: "John is also the team's top 3-point shooter. Suppose John is fouled while attempting a 3-point shot; he then attempts three free throws. What might be a good simulation tool for John attempting the free throws?"

In Module 5, Lesson 1, students use the MATHia virtual protractor to solve an equation for the sum of angles. In Lesson 1.1, students draw geometric shapes with given conditions. Students use five different grade-appropriate tools: ruler, protractor, compass, technology, and freehand. As students use these different tools, they are introduced to math vocabulary specific to this lesson, such as a *point*, *line*, *line segment*, *plane*, and *arc*. In previous lessons within this topic, students have been taught how to use a ruler, protractor, compass, technology such as a word processor, and freehand drawings to produce a shape. After three lessons, the materials now allow students to select the most appropriate tool to solve the task.

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# Carnegie Learning

## Grade 7

**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.

### Meets 4/4

The 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. The materials support teachers in understanding the appropriate strategies that could be applied and how to guide students to more efficient strategies. The materials provide opportunities for students to solve problems using multiple appropriate strategies.

Evidence includes but is not limited to:

The “Habits of Mind” are tips used throughout the materials to guide teachers and students towards the appropriate strategies for problem solving. The Habits of Mind are introduced and explained at the beginning of the Teacher's Implementation Guide for teachers to refer to all year long.

In Module 1, the materials provide teachers a detailed module overview with information about the strategies previously used by students when they explored proportionality. The overview provides details about using graphs and equations and moving away from strategies like double number lines and tape diagrams for students to start formalizing their algebraic reasoning. The overview also explains why a cross-product strategy is useful when numbers are more challenging but should not be introduced until students have had many experiences with intuitive and conceptual methods. Lesson 3 provides two students’ work for shaded region problems. Students analyze, compare, and describe each method used in Activity 3.3. In Topic 4, students learn multiple strategies to solve percent problems with proportions. Students solve

tip problems using both of the strategies they learned in this lesson: using a proportion and using the percent equation. In Lesson 4.2, students are introduced to calculating tips, commission, and simple interest. The activity prompts students to use mental math to calculate 10% of the total amount billed. It also prompts them to use estimation to find 15% of the bill amount. Students select between a proportion or a percent equation to find a tip for a restaurant bill.

In Module 2, students learn multiple strategies to add and subtract rational numbers. Strategies include physical motion, two-colored tiles, number lines, and integer rules. The materials provide students with five lessons and multiple activities to use and practice these strategies. In Activity 4.2, students are prompted to use mental math and pattern recognition to rewrite and solve expressions involving addition and subtraction.

Module 3 provides facilitation notes that outline how bar models connect to creating algebraic expressions and why this strategy is used to develop this procedure. In Lesson 1, "Multiple Representations of Equations," the teacher asks students questions on why using a graph may not be the best method and evaluates other techniques to solve equations. In Topic 2, students begin by representing equal expressions with bar models and then gradually move towards formalizing the process and language of solving two-step equations, including literal equations. The Teacher's Implementation Guide explains how students model problem situations and gradually move to solving strategies using algebraic equations. Students learn several strategies to solve equation problems. For instance, students learn the Properties of Equality to rewrite equations and increase efficiency with solving equations. These strategies for solving an equation are based on the structure of the equation.

Module 4, Lesson 2.4 guides students through different strategies when simulating the probability of compound events. The materials suggest guiding students through organized lists, tables, tree diagrams, and simulations. The facilitation notes prompt the teacher to ask certain questions to help move students along with the lesson and guide them toward using efficient strategies.

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# Carnegie Learning

## Grade 7

**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.

### Meets 4/4

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

Evidence includes but is not limited to:

The materials include tasks designed to support students in productive struggle as they make sense of the problem and solve it. "Habits of Mind" encourages experimentation, creativity, and false starts to help students tackle difficult problems and persevere when they struggle. For instance, the materials provide students with worked examples throughout that have a thumbs up and thumbs down icon next to it. At times, students determine if the thumb should be up or down based on the example. If the solution is correct, students identify connections between the steps. If the example is incorrect, students indicate a thumbs-down icon, identify the error made, and then correct it.

The materials challenge beliefs and biases that conflict with all students seeing themselves as mathematical thinkers. For example, a section called "Myth" at the beginning of each topic debunks common misconceptions about math. The following are examples of math myths busted that demonstrate all students are mathematical thinkers: "I don't have the math gene," "Asking questions means you don't understand," "There is one right way to do math problems," "I'm not smart," and "Faster = smarter." Each module also includes a family guide. One topic of

the family guide focuses on debunking common myths that students might believe about being a poor mathematician and replacing the myth with positive and encouraging statements about being a successful mathematician.

The materials provide suggestions for sequencing the discussion of student strategies for solving the problem. For example, each activity includes facilitation notes in the Teacher's Implementation Guide, a detailed set of guidelines that walk teachers through implementing the "Getting Started," "Activities," and "Talk the Talk" portions of the lesson. Each lesson includes an activity overview, grouping strategies, guiding questions, possible student misconceptions, differentiation strategies, student look fors, and an activity summary. The materials provide instructional supports for facilitating the sharing of student's approaches. The materials provide teachers with "listen fors," so teachers can be prepared for how to respond to students' thinking while solving problems. Each activity contains an extensive list of sequential questions for teachers to ask students to work through learning tasks individually, in small groups, or in large groups.

The materials provide instructional supports for facilitating the sharing of student's approaches. For instance, alternative grouping strategies, such as whole class participation and the jigsaw method, are sometimes recommended for specific activities under differentiation strategies in the Teacher's Implementation Guide. Additionally, grouping suggestions appear to help chunk each activity into manageable pieces and establish the lesson's cadence.

In Module 1, Activity 2.1, a thumbs-up icon indicates Jeremiah's solution for determining the constant of proportionality is correct. However, Keisha, Susan, and Jamie have thumbs-down icons, so students must explain why their reasoning is not sound. In Lesson 3.4, students use diagrams, equations, tables, and graphs to represent proportional relationships. Students are given plenty of opportunities through five activities within the topic to practice each of the pathways to solve proportional relationship problems. In Lesson 4.3, students explore sales tax and income tax using tables, graphs, and equations. These three methods are used throughout the lesson through three different activities and allow students to choose between the three methods to make connections between the proportional relationship and the unit rate seen in each of the representations.

In Module 2, students play a game as an introduction to signed numbers. Students learn several strategies for working with signed numbers through discussion and working with partners and in small groups. The topic concludes with several problems that can be solved using the students' multiple strategies. There is no instruction for students to memorize a set of rules or procedures for solving problems with signed numbers on this topic. In Lesson 1.2, students practice adding integers using a number line. In the facilitation notes, teachers are guided in the "As students work, look for..." section to look for students counting tick marks on the number line rather than the spaces. The materials also ask teachers to look for common errors made when the phrase *less than* is used. In Activity 3.2, students create a model representing a sum of -3 and write a number sentence. As part of this activity, students must share their models with classmates and compare and contrast all models. In Lesson 4, the Teacher's Implementation Guide provides questions for the teacher to use during the whole group

activity as students explore number properties and how they can be used to analyze the structure of numeric expressions.

In Module 3, Activity 1.1, students work independently on Question 1 and complete Question 2 with a partner or group to compare Bella's and Tito's number lines. Then, students share responses as a class. In Topic 2, the materials provide a section called "Myth: Just give me the rule. If I know the rule, then I understand math." This section gives students information about this myth. It explains that rules without meaning will not be remembered nor learned. In Lesson 2, Getting Started, students locate algebraic expressions on a number line and discuss their strategy. The activity's goal is for students to connect that related linear expressions have specific number lines. In Lesson 2.4, students solve inequalities with inverse operations. Students solve a few problems with partners. The facilitation notes guide teachers to have students shape their responses as a class and then ask students how many different solutions the inequality has. The materials frequently show this type of question throughout the modules so that students can share their solving process and listen to their classmates and their approaches.

In Module 5, Lesson 2.5, the facilitation notes explain an activity for finding the volume and surface area of prisms and pyramids. The guide starts with a whole group activity where students identify prisms and pyramids and work through strategies for calculating the volume and surface area of these shapes. The guide then provides suggestions for the teacher to move students into partners to use the volume formula and solve problems. For students who struggle, the materials suggest having the shape nets available for students to calculate each face instead of finding the total surface area. The materials challenge students with questions about finding the cylinder's volume and surface area as an extension.

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# Carnegie Learning

## Grade 7

**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.

### Meets 4/4

The materials allow students to communicate mathematical ideas and solve problems using multiple representations, as appropriate for the task. The 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.

Evidence includes but is not limited to:

The materials include multiple opportunities within every module, topic, and lesson to communicate mathematical ideas. Students are able to solve problems and communicate their thinking process with small groups, partners, and the whole class. At the end of each lesson, the materials provide a “Talk the Talk” and a “Write” section where students are usually asked to communicate their ideas in written format. Throughout the materials, teachers engage students with higher-level questions during the teaching process. The questions happen in small groups and in large groups. Students communicate their learning within those groups in a variety of ways.

Throughout the materials, in every module, topic, and activity, the materials provide a series of questions for teachers to ask students. Sometimes students answer those questions in writing in their Consumable Student Edition, and other times they answer the questions orally in their small groups. Both oral and written responses are included multiple times during each topic. The materials provide students a Write section at the end of every lesson throughout every module. Every topic within each module starts by giving the teacher an overview of the topic’s focus to include essential vocabulary. Within every topic, the lessons begin with vocabulary

development. To review each topic, the materials include a section where the vocabulary is summarized for students.

In Module 1, Activity 1.1, students match three different representations with a partner. When pairs finish, they share their answers, and the teacher asks the following questions as student work is monitored: “How does the scenario relate to the graph?” and “Do all the equations look the same? What is the same and different as you compare the equations?” In Lesson 3, the Teacher's Implementation Guide notes an EL tip that suggests grouping intermediate ELs in pairs so they can support one another while using math vocabulary accurately. In Lesson 3.4, the materials provide a lesson on constant proportionality in multiple representations. Students solve problems using diagrams, equations, tables, and graphs to develop their understanding of proportionality. In Activity 4.5, the teacher guide provides questions to ask as students demonstrate the use of multiple representations of proportional relationships and complete a graphic organizer showing examples of each. Students are encouraged to use different representations to express their answers. In Activity 5.5, students use a blueprint to determine the scale used to draw the blueprint. They are then given an example of another student's work and asked to explain why it is incorrect.

In Module 2, students demonstrate their understanding of additive inverses and zero by generating an example using a number sentence and real-life situation, writing an example in words, creating a number line model, and creating a two-color counter model. Students are asked to demonstrate using words and models why the product of  $-1$  and any expression is the opposite of that expression. In Activity 3.1, students work in partners or groups to solve problems with rational numbers and then share their findings with the class.

In Module 3, Activity 1.1, students use scenarios, tables, equations, and graphs to determine the relationship between the number of pages that Mrs. Jackson translates and her total fees. In Activity 1.2, students use a graphic organizer to explain each representation of the equations' advantages and disadvantages. In Activity 1.3, the Teacher's Implementation Guide scripts questions to ask students when working in groups. Then, the whole group shares their responses for discussion. In Topic 3, students use multiple representations, including graphs, tables, and equations, to solve problems. In Lesson 3, the teacher prompts students to consider areas of interest when developing a written scenario for given equations.

In Module 4, Lesson 1, students use arrays, lists, and tables to represent sample space for calculating probability. In Activity 1.1, the teacher guide provides a differentiation strategy to help struggling students create a graphic organizer to make sense of vocabulary in probability lessons.

In Module 5, Topic 2, the facilitation notes prompt the teacher with several questions to ask students throughout the whole topic of “Three-Dimensional Figures” to elicit communication of mathematical ideas. This is done several times as a whole class, in partners, in small groups, and also when students work individually. This is evident throughout the materials in every lesson, topic, and module. In Lesson 2.3, the materials give students an activity where they calculate



the volume of a triangular prism and a triangular pyramid using 3-dimensional models, 2-dimensional nets, and the formula for volume. The materials then provide students several questions to answer where a written explanation is required to demonstrate student's reasoning in reference to two shapes with the same height but different bases and how the formulas connect to their observations.

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# Carnegie Learning Grade 7

**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.

## Meets 4/4

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

Evidence includes but is not limited to:

Throughout the materials, in every activity, there is at least one opportunity for students to engage in mathematical discussions with a partner, a small group, or the whole class. Most activities include multiple opportunities for these discussions. Every activity includes at least one opportunity for discussion in various groups, including the beginning, middle, and end of concept and skill development. The Teacher's Implementation Guide provides teachers with a series of questions to ask students to prompt discussions in every activity throughout the materials. Sometimes those discussions are guided by the teacher, and other times the discussions are guided by the students.

Each lesson is designed to have students work with a partner or in groups to answer specific lesson questions and then share responses with the class. Each lesson is designed to have an active discussion engagement. Materials are designed to move from student discussion to classroom discussion with teacher guidance. Each lesson guides differentiated grouping strategies, such as whole group or jigsaw, in the "Differentiated Strategies" section of the teacher guide. The materials offer teachers guidance on how to structure discussion that is

appropriate for the grade level and choose a grouping structure for discussion that will support students in developing content knowledge and skills.

In Module 1, Activity 2.2, students solve real-world problem situations involving either circumference or area with a partner or a group and then share responses as a class. In Activity 4.1, materials provide questions to ask as students progress through a percent increase/decrease partner activity; materials suggest the level of discussion connected with previous lesson work, and students share discussion as a class.

In Module 2, the materials include four lessons and 12 separate activities within those lessons to multiply and divide rational numbers. As students work through the activities with the teacher's guidance, the concept starts with introducing multiplying integers as repeated addition and moves into the use of models to include number lines and colored tiles to represent multiplying and dividing integers visually. The last lesson and activities move students to create a rule that can be used to determine the product and quotient of any given integer problem. Every one of the 12 activities includes opportunities for students to discuss in whole group, small groups, and partners at each phase of the concept development (beginning, middle, and end). In Lesson 2.1, students use a two-color counter method and the number line method in a given example that is already completed. Students answer questions about what they observed. The facilitation notes guide the teacher to have students first work independently and write out their observations, then share in the whole group as a class. Next, the materials prompt the teacher to move students into partners or groups to discuss the worked examples and answer questions in the student workbook. After they finish, students come back to the whole group and share responses as a class. In Lesson 2.4, the materials provide activities to use number properties to interpret expressions with signed numbers. The facilitation notes guide the teacher in starting this activity in the whole group and ask students to answer a question using mental math and then share their strategies with the whole class. The materials suggest repeating this process two more times before moving the students into partners or small groups to answer and solve more problems. This type of example is evident throughout the materials in every lesson.

In Module 3, Lesson 2, students analyze double number lines and write equations to represent the information presented in double number lines; then, they read their equations to the whole class and discuss. In the next activity, students continue to discuss with a partner or group and then share with the whole group. In the conclusion of the lesson, students work with a partner and then share with the whole class about how to generate an equation given a solution.

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# Carnegie Learning Grade 7

**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.

## Meets 4/4

The materials reviewed for grade 7 meet the criteria for the indicator. The materials provide opportunities for students to construct and present arguments that justify mathematical ideas using multiple representations. The materials assist teachers in facilitating students to construct arguments using grade-level appropriate mathematical ideas.

Evidence includes but is not limited to:

The materials follow the same structure for all topics and lessons. This structure includes introducing a concept in a whole-class setting, then moving students into partners or small groups to answer questions. Within these group settings, teachers use the materials' facilitation notes, which provide prompts for the teacher to assist students when constructing arguments. Each module of the Teacher's Implementation Guide includes "Questions to Ask" that structure the facilitation of constructing arguments. Students consistently have to reflect and ask themselves, "How can I justify my answer to others," indicating that whenever students explain their reasoning, they need to be able to justify their answer.

The materials provide a "Thumbs Up/Thumbs Down" section throughout the lessons that give students a problem that has been worked out by a fictional student. Sometimes the problem shown is worked out correctly, and sometimes it is incorrect. The student analyzes the method used to solve the problem shown and either gives it a thumbs up or a thumbs down. Students write if they agree with the method and the solution or not and explain their reasoning behind their stand. Based on the student's answer, teachers help students redirect their misconceptions or confirm their understanding of a concept.

In Module 1, the Teacher's Implementation Guide's facilitation notes share what to look for as students work and provide questions to ask as the teacher observes student work. Students

answer a series of true/false questions and justify their answers with one or more examples and an explanation. In Lesson 2, questions guide teachers to have students justify their reasoning on true or false statements on rates. In Lesson 4, students move through lessons on multiple representations of constant proportionality and share findings with the class at the end of each lesson using written scenarios, tables of values, equations, and graphs.

In Module 2, the materials provide three activities to help students understand adding integers. Students use multiple representations, such as physically walking a number to visualize adding integers, visually drawing number lines and models, using two-color tile manipulatives to group positive and negative numbers then add them, symbolically learning the notation of writing an integer expression, and contextually learning the rules that work for any integer problem. The materials ask students to answer a question model about how they know if their classmate's model of computing the sum of two integers is correct. Students refer to one of the representations they have learned to justify their answers.

In Module 3, students determine if a proportional relationship exists between the number of pages translated and Ms. Jackson's earnings. Students must justify their answers using the table, equation, and graph. In Module 4, students justify their answers when deciding if a survey sample accurately represents all students in a class.

In Module 5, students are given a "Thumbs Up/Thumbs Down" question about two fictional students disagreeing about a rectangular prism volume when its height is doubled. One fictional student believes the volume will also double while the other believes it will quadruple. After reading this problem, the student is to decide who is correct. Before students can agree or disagree and construct an argument for their statement, they have to calculate the volume themselves and use those calculations to prove their argument. The side note on the activity gives the teacher the correct answer. This allows the teacher to assist students when it is observed that they do not fully understand the concept.

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# Carnegie Learning Grade 7

**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

The materials include a variety of diagnostic tools that are developmentally appropriate (e.g., observational, anecdotal, formal). The materials do not guide teachers to ensure consistent and accurate administration of diagnostic tools. The materials include some tools for students to track their own progress and growth; however, some of those tools were not accessible for review. The materials include diagnostic tools to measure all content and process skills for the grade level, as outlined in the TEKS and Mathematical Process Standards.

Evidence includes but is not limited to:

Based on the Texas Education Agency’s definition of diagnostic tools, “systematic assessments and instruments to gather information to monitor progress and identify learning gains,” the materials reviewed include diagnostic tools. The homepage of the material’s website has a brief description of two assessments used to check student progress. One of them is “MATHia,” which is a computer-based component of the materials. MATHia includes a formative assessment for each skill. There is an indication that MATHia may provide the opportunity for students to track their own progress and growth throughout. The second is a partnership with “Edulastic,” described as a separate addition to the materials that includes summative assessments addressing K-12 standards. The MATHia component was available for review in a limited demo. Edulastic was not available for review.

Formative assessments are provided throughout each lesson and workspace, providing the teacher with ongoing student performance feedback. A variety of topic-level summative

assessments are provided to measure student performance, a designated set of standards. Before, during, and after each topic, the materials offer opportunities to assess students' learning appropriately. This is done throughout the materials in the Teacher's Implementation Guide through suggested questions for the teacher to check for understanding during the activities within each lesson. The materials also provide pre- and post-assessments by topic.

The materials are designed to allow students to demonstrate understanding in a variety of ways. For example, in the "Demonstrate" portion of each lesson, students solve questions in multiple ways. In Module 3, Topic 2, students determine how the list of equations is similar and describe what it means to solve an equation. In Module 5, Topic 1, students use the given sides and angles to complete different constructions requested and then identify the key characteristics of the two models they created.

For each module, students learn the lesson goals and set their own goals. Students reflect on the lesson's main idea, ask questions to clarify their learning, and revisit questions posed at the lesson's opening. There is no explicit student tracker for data; it is suggested that students track progress independently. Diagnostic tools are not included to measure all content and process skills, as outlined in the grade-level TEKS. Still, various topic-level summative assessments are provided to measure student performance on a designated set of standards.

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# Carnegie Learning Grade 7

**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.

## Partially Meets 1/2

The materials include diagnostic tools; however, some of the tools were not accessible to review. The materials support teachers with some guidance and direction to respond to individual students' needs in all mathematics areas, 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 some resources and teacher guidance on how to leverage different activities to respond to student data. The materials do not provide guidance for administrators to support teachers in analyzing and responding to data.

Evidence includes but is not limited to:

Materials include "LiveLab" data monitoring tools to analyze student usage of MATHia. The tool provides teachers with a monitoring section where students are listed in order from those struggling the most to the students that have mastered the concept. When a teacher clicks on a specific struggling student, LiveLab provides an at-risk predictive warning at the top of the page with remediation suggestions on skills or concepts needing to be re-taught or reviewed to be successful in that specific topic. LiveLab provides teachers with a tour video to explain how to understand the diagnostic tools' results. Although limited access was provided to the Texas Resource Review to evaluate the videos, it is clear that more videos similar to the tour video exist for teachers to access. The MATHia software component includes a reporting platform



where data can be analyzed for each student, class, and the whole school. This platform's reports are the Adaptive Personalized Learning Score (APLSE) report, session report, standard report, and detailed student report.

In the "Edulastic Assessment Suite," reports are color-coded to help identify areas for improvement and strengths. The materials provide various suggestions and activities for teachers to use to address the results of student assessments. For example, in MATHia, access, facilitation, and follow-up suggestions after a formative assessment are available via the "CL Online Resource Center." The Edulastic Assessment Suite allows teachers to view assessment summaries, sub-group performance, question analyses, response frequency, performance by standards, and students' performance. Furthermore, teachers can view individual student assessment profiles and mastery profiles.

Based on the limited access to MATHia, Livelab, and the Edulastic Assessment Suite, it is not evident that the materials meet the indicator.

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# Carnegie Learning

## Grade 7

### 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.

### Meets 2/2

The materials include routine and systematic progress monitoring opportunities that accurately measure and track student progress. The frequency of progress monitoring is appropriate for age and content skills.

Evidence includes but is not limited to:

Formative assessments are provided throughout each lesson and workspace, providing the teacher with ongoing feedback on student performance. A variety of topic-level summative assessments are provided to measure student performance over a designated set of standards. For example, before, during, and after each topic, the materials offer multiple opportunities to assess students' learning appropriately. This is done throughout the Teacher's Implementation Guide through suggested questions for the teacher to check for understanding during the activities within each lesson. The materials provide pre- and post-assessments by topic. The materials also provide progress monitoring through MATHia and the Edulastic Assessment Suite; however, these were not accessible to review.

Each lesson includes a "Demonstrate" section known as "Talk the Talk." This section is essentially an ongoing formative assessment that helps the teacher make decisions about helpful connections that need to be made in future lessons. Each topic includes specific aligned assessments: pre-test, post-test, end-of-topic test, standardized test practice, and performance task. In the Teacher's Implementation Guide, each lesson includes "As students work, look for" sections that note specific language, strategies, and errors to look and listen for as the teacher circulates and monitors students working in pairs or groups. Each lesson embeds "Questions to Ask" and "Misconceptions to Look For" that help teachers monitor progress.

In Module 3, in the Talk the Talk activity, students write a paragraph describing their basic strategy for evaluating any algebraic expression based on the order of operations they have been learning throughout the lesson.

The “LiveLab” data monitoring tools in the materials are used to analyze the students’ use of MATHia. The materials provide teachers a tour video to explain how to understand the results of the diagnostic tools. Access to reviewers is limited to just a tour video. Materials also include the Edulastic Assessment Suite; however, the Texas Resource Review did not have complete access to evaluate assessment guide checkpoints, timelines, or teacher tips for tracking progress.

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# Carnegie Learning Grade 7

**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 some guidance, scaffolds, supports, and extensions that maximize student learning potential. Materials provide recommended targeted instruction; however, the materials lack sufficient activities for students who struggle to master content. Materials provide recommended targeted instruction and activities for students who have mastered content. Materials provide some additional enrichment activities for all levels of learners.

Evidence includes but is not limited to:

The materials provide some recommended targeted instruction; however, there is a lack of evidence that the materials include activities for students who struggle to master content. Throughout the materials, the lessons provide differentiation strategies, tasks, and questions for struggling students. The Teacher's Implementation Guide provides a "Facilitation Notes" section embedded at the beginning of each lesson, including "Differentiation Strategies," such as additional scaffolding or alternative methods to help struggling learners. Materials help teachers identify and provide students with opportunities to develop precursor skills and concepts necessary to the content and aligned to the "Where Have We Been?" section of each lesson. There is limited evidence of additional lessons or activities for targeted instruction that include differentiated instructional approaches. The materials include limited instructional strategies that address various accessibility needs such as vision or hearing impairment; for example, the materials' digital component (MATHia) includes audio narratives.

Module 3, Activity 1.2 guides teachers to have students who struggle with seeing the structure of the equation write the equation in words first. For example, "Carla's share + Jamal's share + my share = 450." Then, have students substitute the algebraic expressions in their

corresponding positions in the equation. In Lesson 2.3, the teacher supports students who struggle with factoring by using the area model to factor expressions.

In Module 4, Activity 1.1, students who struggle can create a graphic organizer to make sense of the vocabulary introduced in this topic.

The materials provide recommended targeted instruction and activities throughout for students who have mastered content. Each lesson includes differentiation strategies that include additional challenges for students ready to advance beyond the scope of the activities within the lesson. The materials include a “Stretch” section in each lesson for advanced learners who have already mastered the lesson’s concepts. Furthermore, the materials include recommendations for upward scaffolds or extensions to deepen grade-appropriate learning by providing “Questions to Ask” in the material’s facilitation notes.

In Module 2, Topic 1.5, students extend their learning not only by adding and subtracting rational numbers but also by substituting variables to solve problems. In Activity 3.3, students who have mastered ratios and proportions extend their knowledge by completing posters explaining connections between the terms *ratio*, *part-to-part*, *part-to-whole*, *fraction*, *percent*, *rate*, and *proportion*.

In Module 3, Activity 2.1, students review examples of strategies that plot expressions from the previous activity on a number line. To extend this activity, students investigate  $x+1=0$ , the relationship among  $x$ ,  $x+1$ , and the interval size between expressions on a number line, and how multiples would be generated if the original expression was  $x+5$ . In Activity 3.1, students use inverse operations to solve two-step equations. To extend this activity, students redo a sample student’s work by multiplying by  $\frac{1}{2}$  rather than dividing by 2.

The materials include some additional enrichment activities for all levels of learners. The materials provide students opportunities to explore and apply new learning in various ways by including activities that allow students to analyze and internalize target instruction. Each topic includes a performance task or an open-ended question where students can be creative in showing how they can demonstrate their learning.

In Module 2, Lesson 4, in “Talk the Talk,” students are given a lollipop recipe. Students then determine the amount of each ingredient needed to make different batch sizes. Students must add and subtract equivalent ratios to form new equivalent ratios and complete a table.

Module 4 provides an enrichment activity to have students flip a coin 30 times and determine the probabilities of heads and tails based on the results of the experiment. The activity is designed to engage students in thinking about experimental probability from an intuitive perspective.

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# Carnegie Learning Grade 7

**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

The materials include a variety of instructional approaches to engage students in the mastery of the content. The materials support developmentally appropriate instructional strategies. The materials support some flexible student grouping. Although the materials provide routines and activities across all modules, the routines and activities are primarily designed for large and small group instruction. The materials lack teacher guidance for students who need one-on-one attention for a particular skill or concept acquisition. The materials support multiple types of practices and provide some guidance and structures to achieve effective implementation.

Evidence includes but is not limited to:

The materials include hands-on, concrete practice with manipulatives, visual representations, and symbolic abstractions throughout all modules. Students use models to solve problems and then solve problems without the use of models. “Think-Pair-Share,” hands-on activities, and discovery-based learning are examples of the different instructional approaches used to engage students in the mastery of the content across all instructional materials’ modules.

The materials provide an online component called MATHia, where students work on self-paced instruction incorporated for individual exploration. MATHia provides unit overviews, step-by-step instructions, hints, and a glossary. The materials offer learning experiences included for individual exploration.

The Teacher's Implementation Guide provides suggestions for teaching strategies but includes limited support on when to use a specific strategy. Throughout the materials, there are examples of several different teaching strategies that include but are not limited to teaching with multiple representations, accessing prior knowledge, creating and using models, and students participating in authentic mathematical discourse. Common misconceptions are provided for the teacher to address throughout the lesson, but there is a lack of activities to meet all individual students' needs. Differentiation strategies in each lesson are geared primarily for students who struggle; however, these strategies generally suggest a grouping rearrangement and offer limited indicators to help teachers understand when a student needs these interventions.

In Module 1, Activity 2.1, students follow steps to “decompose a circle and compose it into a new figure.” Students cut a circle into fourths and rearrange the parts to look like a parallelogram. The students analyze the parallelogram and answer a series of questions that lead to the formula for the area of a circle.

In Module 2, Topic 1, teachers are encouraged to work problems together as a class and allow students to work in small groups during the teaching process. In Lesson 2.3, the materials suggest the students work with a partner or in groups to complete questions and share responses with the whole group. While the materials suggest students work in pairs or groups to solve a given problem, there is a lack of evidence that the materials for seventh grade support students who need one-on-one interventions for skill or concept acquisition.

In Module 3, Activity 1.3, the materials note that students may complete question 2 with a partner or in a group and then share student responses with the whole class. The materials provide learning experiences in individual exploration. In Activity 3.1, students independently use two-color counters and physically group them like the example provided, and then students must answer assigned questions.

In Module 4, Lesson 1.1, students conduct several probability experiments; students use a six-sided cube, a spinner, and marbles in a bag. Students calculate the experimental and theoretical probabilities for different events and answer questions. In Activity 1.2, the facilitation notes suggest incorporating technology such as spreadsheets, graphing calculators, or random number apps to help students select a random sample. Module 4, Activity 3.2 states “Have students work with a partner or in a group to complete questions 7 through 9.” Although flexible grouping is an option, the activity is not intentionally designed for either grouping structure, and the task can be completed as an individual assignment.

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# Carnegie Learning Grade 7

**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 accommodations for linguistics; however, the accommodations are broad for all English Learners, and accommodations commensurate with various English language proficiency levels are limited. The materials do not offer scaffolds for English Learners. The materials provide limited opportunities to encourage the strategic use of students' first language to develop linguistic, affective, cognitive, and academic skills in English.

Evidence includes but is not limited to:

The seventh-grade course materials include no reviewable evidence of various linguistic accommodations for students who are learning English, particularly regarding their English language proficiency level. The materials provide mostly general EL tips that are not specific to developmental levels of English language proficiency.

The Teacher's Implementation Guide serves as the resource for teachers to provide extra modifications within the lessons and activities. The materials include EL tips to make these modifications intentional and natural to the specific activity and lesson. For example, the materials provide multiple opportunities for interaction between students while working on problems in small groups or partners. Some of the EL tips guide the teacher in grouping strategies that are appropriate for specific activities. Although there are several suggestions throughout the materials for EL students to be paired or work in a small group that includes native English speakers, these groups' focus is not to develop language development. The instruction is not sequenced to support students at varying levels and does not allow for playful and interactive repetition.



In Module 1, Lesson 3, the Teacher's Implementation Guide suggests the teacher group intermediate EL students in pairs so students can collaborate to discuss work and support one another with math vocabulary accurately. In Activity 3.3, the Teacher's Implementation Guide suggests grouping intermediate ELs in pairs and having them discuss Jimmy and Matthew's work before answering parts (a) and (b). While in pairs, teachers remind students to support one another using math vocabulary accurately or if a peer is struggling to name a word.

In Module 4, Activity 2.1, students may struggle with the word uniform. Something uniform has only "one form" from the Latin word *unus*, meaning *one*, and *forma*, meaning *form*. Teachers lead students in discussing how this relates to a uniform probability model.

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# Carnegie Learning Grade 7

**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.

## Meets 2/2

The materials include a cohesive, year-long plan to build students' mathematical literacy skills and consider how to vertically align instruction year to year. The materials provide review and practice of mathematical skills throughout the span of the curriculum.

Evidence includes but is not limited to:

The instructional materials include a cohesive, year-long plan to build students' concept development and consider how to align instruction that builds year to year vertically. The materials include a year-long plan of content delivery based on 160 instructional days. The Teacher's Implementation Guide provides a map that shows the sequence of topics and the number of blended instructional days (1 day is 50 minutes). The materials include a content plan that is cohesively designed to build upon students' current level of understanding with clear connections within and between lessons and grade levels. For instance, each module includes three sections: "Connections to Prior Learning," "Overview," and "Connections to Future Learning." Additionally, the Teacher's Implementation Guide provides a course content map that shows connections between lessons in the modules. The materials include guidance that supports the teacher in understanding the vertical alignment for all focal areas in Math Texas Essential Knowledge and Skills in preceding and subsequent grades. In the Teacher's Implementation Guide, each module overview begins with Connections to Prior Learning and Connections to Future Learning.

Within the Teacher's Implementation Guide, there is a resource map, "Middle School Math Solution Content at a Glance," that shows the instruction sequence for the year and the number of instructional days allocated for each year. In the Teacher's Implementation Guide, the "Course Standards Overview" document provides a mapping of how standards are targeted

and reviewed within each lesson. The material includes the following five overarching modules and their corresponding, focused topics, and lessons that require a complete year-long plan to deliver the content: “Module 1: Composing and Decomposing”—3 subtopics and 12 lessons and multiple activities within each lesson; “Module 2: Relating Quantities”—3 subtopics and 12 lessons and multiple activities within each lesson; “Module 3: Determining Unknown Quantities”—3 subtopics and 13 lessons and multiple activities within each lesson; “Module 4: Moving Beyond Positive Quantities”—2 subtopics and 6 lessons and multiple activities within each lesson; “Module 5: Describing Variability of Quantities”—2 subtopics and 7 lessons and multiple activities within each lesson. These five modules are sequenced to develop students’ understanding by providing a plan that connects modules and lessons. The Teacher’s Implementation Guide includes a description of the connections made with a table showing each of the five modules and the Connections to Prior Learning, Overview of the module, and the Connections for Future Learning.

The materials include a detailed module and topic overview in the Teacher’s Implementation Guide, which teachers can read before lesson delivery to learn the vertical alignment in previous and subsequent grades. These module and topic overviews do not mention specific TEKS, but they do all fall under one of the focal areas that align directly to the TEKS. All five modules in the seventh-grade materials include at least one of the focal areas for seventh grade: rational numbers and operations, proportional relationships, expressions and equations, and comparing data sets. At the beginning of each module, a section explains how each topic is connected to prior learning. At the beginning of each topic, there is a section entitled “What is the entry point for students?” that clearly states the connections to prior learning. At the beginning of each topic, there is also a section entitled “Why is the topic important?” that clearly explains when students will use the knowledge learned in the topic in subsequent lessons during the current school year and future math courses. At the end of each lesson, there is a section called “Talk the Talk,” which serves as a cumulative review of all of the lesson’s activities. Each lesson within each topic provides opportunities for practice through teacher questioning, the Consumable Student Edition, the Skills Practice Workbook, and the MATHia software. The practice materials within a topic build upon previously taught content from within that topic. The final section of each assignment is “Review” and includes problems from previous lessons and modules.

In Module 1, the overview notes that students will use their prior knowledge with ratios, unit rates, and proportional relationships they experienced in sixth grade to develop algorithms that replace strategies such as using strip diagrams and double number lines to solve proportion and percent problems.

In Module 2, Topic 1, students practice adding and subtracting rational numbers by drawing models of two-color counters and number lines to represent each number sentence and solve. Students continue to practice addition and subtraction word problems using the same strategies listed above.

In Module 3, Topic 1, students explore and practice evaluating algebraic expressions, rewriting expressions using the Distributive Property, and combining like terms. In Lesson 1.1, students evaluate algebraic expressions. Lesson 1.2 builds on that knowledge and focuses on using the Distributive Property and rewriting expressions. In Lesson 1.3, students combine like terms that could not be done without first exposing students to the previous two lessons. Students learn to combine like terms and answer five problems at the end of the lesson to review and practice the skills previously taught. The questions review rewriting expressions, determining the product or quotient of problems involving fractions and whole numbers, and finding the unknown variable in a proportion that includes decimals. In Module 3, Topic 3, students review multiple representations of equations by defining independent and dependent variables and change unit rate. Students then use a double number line to solve equations and proportions to solve for an unknown. In Module 3, in the “Family Learning Guide,” the materials identify the skills brought in from sixth grade and how these skills with factors and properties of numbers will serve as a foundation for future work in algebraic structures.

In Module 4, the Teacher's Implementation Guide supports teachers in understanding how analyzing populations and probabilities builds from students' experiences in sixth grade and prior work in seventh grade on proportional reasoning, including percent error. In Lesson 1, at the end of the lesson review, students answer review questions on independent and dependent quantities.

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# Carnegie Learning Grade 7

## 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 are not 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. The materials include supports to help teachers implement the materials as intended. The materials do not have resources and guidance to help administrators support teachers in implementing the materials as intended. The materials include a school years' worth of math instruction, including realistic pacing guidance and routines.

Evidence includes but is not limited to:

The materials include a webpage with a link to the alignment to standards by state. The TEKS alignment to the scope and sequence of the materials can be accessed through this page. The materials include a table that shows the Course 1 materials' correlations to the 2012 Texas Essential Knowledge and Skills. The table is a 15-page list of all the TEKS included within the materials. The TEKS listed show that they are all content SEs; however, the process standards are not shown on this table. The table shows the textbook number, the module, topic and lesson, and the MATHia software location where the student expectation will be presented. The materials include a standards overview in the Teacher's Implementation Guide and provide a mapping document that identifies where the standard will be targeted and where it will be reviewed within each module, topic, and lesson. This standards overview does not list the standards using TEKS. A Texas teacher would have to reference the correlation table to align the materials' standards overview to the TEKS. The materials do not include a scope and

sequence that describes how the essential knowledge and skills build and connect across the grade levels. However, each module in the materials includes an overview that provides a connection across grade levels described in detail, but this is not listed on the scope and sequence document that aligns with the Texas standards.

The instructional materials for grade 7 include support to help teachers implement the materials as intended. The materials support teachers in understanding how to use the resource as intended. The Teacher's Implementation Guide provides teachers with consistent lesson structure and walks teachers through key features of each lesson: "Learning Goals," "Connections," "Getting Started," "Activities," "Talk the Talk," and "Assignments." The Teacher's Implementation Guide provides facilitation notes by activity, a detailed set of guidelines that walks the teacher through implementing the various components of the lesson. These guidelines include an activity overview, grouping strategies, guiding questions, possible student misconceptions, differentiation strategies, student look fors, and an activity summary. The Teacher's Implementation Guide describes the depth of understanding that students need to develop for each standard and a pathway for all learners to succeed. The facilitation notes provide detailed support for the planning process and are the primary resource for planning, guiding, and facilitating student learning. Materials can be accessed online or in print.

The materials include a digital version of the materials and modules that include a "MyPL" Professional Learning app with videos to give teachers background knowledge for a particular lesson and ideas on how to implement it. MyPL includes custom learning sessions, led by Master Math Practitioners, in an online video library accessible. They also include a PowerPoint presentation for each lesson that could be used by teachers. This is also available in Google Slide format. The materials provide links on their homepage to a "LiveLab Tour" for teachers to learn how to use this assessment tool within the materials. There is also a "Help Center" link on the homepage that supports teacher implementation and provides quick "how-to" guides. The materials are available in print and digital format. Accessing the materials on the materials' webpage is easy to follow. Each module's format, topic, and lesson materials follow the same format, making it consistent and organized.

The instructional materials for grade 7 do not include resources and guidance explicitly stated to help administrators support teachers in implementing the materials as intended. Nor do the materials provide tools explicitly stated to support the administrator in recognizing best instructional practices and arrangements in a math classroom. However, administrators can use many of the materials mentioned above to support teachers in implementing the materials. For example, the scope and sequence, including the list of math essential knowledge and skills, can be used by administrators to support teachers in their implementation of the materials.

The seventh-grade materials include five modules that span for the pacing of 160 days of the standard 180 days of instruction to allow for flexibility for assessments, an extension of lessons, and differentiation for students. The Teacher's Implementation Guide contains "Middle School Math Solution Content" at a glance with pacing outlined by unit and lessons to allow extra days to address assessments, differentiation, and extended opportunities. Each lesson includes

pacing suggestions. Additionally, each module overview includes pacing information and a topic overview, which includes more detailed information to help teachers with pacing. The lesson structure and pacing are included for each lesson and are provided for the entire course to be completed in a school year.

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# Carnegie Learning

## Grade 7

**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 guidance for strategic implementation without disrupting the content sequence that must be taught in a specific order following a developmental progression. The materials are not designed in a way that 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 instructional materials for grade 7 provide guidance for strategic implementation without disrupting the sequence of content that must be taught in a specific order following a developmental progression. The materials include strategic guidance on implementation that ensures the sequence of content is taught in the order consistent with the developmental progression of mathematics. For instance, the Teacher's Implementation Guide provides a table in the "Content and Alignment" section that demonstrates how the sequence of modules, topics, and lessons are developed to coherently build new understanding onto the foundations developed in prior grades or previous lessons of the course. Additionally, supporting standards are positioned to reinforce the readiness standard of the grade. In grade 7, students are taught algebraic expressions before solving two-step equations. Each course materials' Table of Contents delineates modules and topics to ensure students learn about precursor concepts



first. All courses include all focal areas within the years' instruction without disrupting the content's sequence.

However, the materials do not include guidance that supports teaching focal areas aligned to a classroom/school context without disrupting the content's sequence. While this is the case, at least one of the focal areas for seventh grade (rational numbers and operations, proportional relationships, expressions and equations, and comparing data sets) is included in each of the five modules designed for seventh grade. The module and topic overview supports teachers on how that module/topic aligns with focal areas in mathematics; the materials do not guide teachers on how lessons could be taught if the given sequence is disrupted.

The material design offers some variety to allow for easy implementation of school designs. Printed materials and digital materials are available. The Teacher's Implementation Guide allows for extensions of the lessons, and grouping options are often mentioned. Suggestions for co-teaching, multi-grade classrooms, and varying lengths of times for mathematics instruction are not included in the materials. According to the materials, the materials are designed for daily instruction in a 50-minute class period. There is no guidance on implementing the materials in any other school setting.

The Module 1 Overview in the Teacher's Implementation Guide supports teachers in identifying how students build on experiences with ratios and proportional relationships to algebraic reasoning. Module 1 in the materials focuses on thinking proportionally, which is the next developmental progression from sixth grade, where students were introduced to ratios and proportions.

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# Carnegie Learning Grade 7

**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.

## Partially Meets 1/2

The materials provide some support for the development of strong relationships between teachers and families. The materials specify some activities for use at home to support students' learning and development. The materials reference literature for parents and at-home support; however, some of the materials referenced were not accessible to the reviewers.

Evidence includes but is not limited to:

The materials provide "Home Connections" in the MyCL portal, including a video detailing basics about the materials and the use of it in class and at home. The MyCL portal includes a "Community Tools" section with helpful study skills and tips and additional math practice exercises. It also includes a parent/caregiver webinar offering strategies for supporting student learning at home. This webinar was not available for a deep evaluation by the Texas Resource Review.

The materials include a "Math Power for Parents Handbook" to help parents understand the course materials by giving them a summary and examples of each math topic. This is offered in both English and Spanish. The example available to the reviewers online was for elementary. It is unclear if this is also offered for middle school students. The online component of the materials, called MATHia, is available to students anytime and anywhere. However, it is unclear if the parents have access to MATHia to view their student's progress and work or if they just help support them as they work on it at home.

The materials' website notes "Family Math Nights," where students can present their work; however, examples of what is included in the materials are not evident. The materials provide a "Family Guide" at the beginning of each topic intended to be sent home to keep parents informed of what their child will be learning in that topic. Family Guides, available in English

and Spanish for each topic, overview the mathematics that will be taught, what the student should have previously learned, and how it will be used for future learning. They include real-world examples, standardized test question examples, and some key vocabulary students will learn.

Each topic within each module includes a Family Guide. The Family Guide includes an overview of the topic, “Where Have We Been?” and “Where Are We Going?” sections, examples of problems to be learned in the topic, key terms to be introduced during the topic, talking points, and an explanation of a false myth that many people believe about math. However, there is no guidance or recommendation for teachers to use the Family Guide or develop strong relationships between teachers and families.

In Module 1, Topic 1, the materials suggest that parents support their student’s learning by asking questions about the work they are doing in class about mathematical relationships involving multiplication, area, and number properties. The materials also provide “Questions to Ask.”

In Module 1, Topic 4, the Family Guide states that students will learn about proportional relationships and outlines what students have learned before and where their learning is going. There is a scale drawing that is used to solve problems, and an explanation is included. The Family Guide also includes a debunked myth, key terms, and talking points parents can discuss with their students about the topic.

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# Carnegie Learning

## Grade 7

**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 materials include appropriate 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.

Evidence includes but is not limited to:

The Teacher's Implementation Guide follows a clear and consistent design for information. This guide includes a module and a topic overview, facilitation notes, materials needed for the lesson, lesson and activity overviews, standards addressed, essential ideas, lesson structure, pacing, differentiation strategies, and a summary.

The materials include intentional white space in each margin so that teachers can make additional planning notes or reflect on the lesson's implementation. This appears in every lesson throughout the material next to the facilitation notes section of the activity overviews and the section labeled, "Questions to Consider." The Student Edition is consumable; the pages include an appropriate amount of white space to show work. The graphics are simple, clear, and concise. Visuals are placed with purpose throughout the materials, i.e., tables, graphs, models.

The material includes fonts that are clear and easy to read. Headings are bold and identified through a colorful box for emphasis. Lessons and activities include pictures, tables, and graphs that do not distract from the text on the page or interfere with learning. Numbers within the tables, grids, and graphs are large enough for students to read easily.

The Student Edition includes "The Crew" images that have thought bubbles with reminders about previous content, questions to help students think about different strategies, and fun

facts. The teacher aide's images guide students by making connections and reminding students to think about the details. Models are placed throughout the materials, and "Habits of Mind" icons trigger students to ask themselves reflective questions as they work.

The materials adhere to User Interface Design guidelines. For instance, the materials have a consistent layout and color scheme: green, black, and white; it is not distracting. The overall aesthetic of the materials is visually appealing and includes a minimalist design. Workspace and note sections are provided in the Teacher's Implementation Guide and Student Edition to provide space for reflection or for documentation purposes.

In MATHia, animation offers user control and freedom to rewatch demonstrations of various math concepts. MATHia software contains familiar options such as play, volume, enter full screen, and print icon images and terminology for easy student use. Resources also provide a glossary with definitions and graphic images, such as for x-axis and solid volume.

In Module 3, Lesson 1, the "Differentiation Strategy" guides teachers to use a template to show substitution and evaluation for evaluating expressions' instructional support. In "Picture Algebra," students use pictorial bar models to represent equations in given situations. In Lesson 3.4, students use multiple representations to solve problems, including several tables and graphs that are large enough for students to read clearly. The titles for the graphs and the titles for the x-axis and y-axis are easily readable, and so are the numbers displayed on the graphs. The tables include enough space for the students to write inside and enough space around the graphics to show their mathematical thinking process.

In Module 4, Lesson 2.1, the Teacher Guide includes facilitation notes with supports such as a detailed description of what is needed for students to find the mean and absolute value of given data sets and what questions to ask during the lesson. These sections are labeled with larger bold fonts that allow for easy identification. In Lesson 3.3, the students can see the warm-up section as the starting point because the font is bold and blue. The learning goals are to the side in a black font, which indicates that students do not have to write or answer anything in that section. The rest of the lesson follows the same pattern with questions and problems to answer in blue and directions in black font. The lesson includes pictures of tables and number lines and enough white space to work problems out and answer the questions. Side notes are included throughout the lesson to help students answer questions or remind them of something important. Tables and plots are big enough for students to write in and read clearly. The topic number, title, and page number are included at the bottom of each page for easy access. At the end of each activity, the materials intentionally provide an empty blank page for students to show math work, make notes, or summarize their thinking throughout the activity.

In Module 5, Lesson 2.5, the materials include an activity on volume and surface area of prisms and pyramids. On the activity pages, pictures of nets for different pyramids and prisms are shown with directions for the students to identify the shapes. This allows students to pull information from their prior knowledge before building on their learning from the current

lesson. The materials also include pictures of students with a quote to give students important tips and reminders to help them answer the questions on that page in the activity.

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# Carnegie Learning Grade 7

**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

The materials include online components that are grade-level appropriate and provide learning support. The online elements align with the curriculum’s scope and provide support and enhance student learning as appropriate, as opposed to distracting from it, and include teacher guidance.

Evidence includes but is not limited to:

The materials reviewed include a computer-based software called MATHia that can be accessed anytime and anywhere by students and teachers. Each lesson in the materials has a corresponding lesson in MATHia and is included in the pacing guide for each module, topic, and lesson. MATHia is a 1-to-1 adaptive math coaching program that provides a personalized learning path and ongoing formative assessment. MATHia contains a mini video, “Why this Matters,” that students watch to see a real-world connection to learning. MATHia technology supports include videos, immediate feedback in practice problems, interactive tools, and manipulatives. Additional activities and assessments for each topic and lesson are found in MATHia. It creates a personalized learning path for each student with feedback and hints that are embedded within the software. It also provides teachers with reports of class and individual student’s progress by standards.

In the Teacher’s Implementation Guide, the materials outline how MATHia can be incorporated into each module and what topics it will cover. Additionally, there are “Learning individually with MATHia” or “Skills Practice” sections in the “Module Overview” that summarize how MATHia will be used for each topic and standard and how many instructional days are needed using the software. The individual student practice helps support their learning in the classroom when interacting with the materials since the concepts in MATHia overlap and reinforce the

targeted learning standards. The MATHia computer-based software in the materials promotes student participation by providing additional practice for each topic. Since MATHia is accessible at any time and any place, students can continue participating and interacting with the materials at home and even on the weekend to enhance their learning. The Teacher's Implementation Guide provides teachers information about MATHia, how it is structured, how it is aligned to each lesson, and the type of problems included within the software that students will work on. The guide also includes a description of the reports and how to access them. The materials provide teachers with a MATHia browser in the MyCL portal to view and experience the software as a student would. This allows teachers to read a report, review, and reteach a student who is not successful in a MATHia module.