November 2020

Houghton Mifflin Go Math! 3-5 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 3	100%	100%	N/A	100%
Grade 4	100%	100%	N/A	100%
Grade 5	100%	100%	N/A	100%

Section 2. Concept Development and Rigor

- Materials concentrate on the development of the primary focal areas outlined in the TEKS.
- Concepts sequence from concrete to representational to abstract (CRA), and materials provide some support to teachers in understanding and developing students' progression along the CRA continuum.
- Materials support coherence and connections between and within content at the grade-level and across grade levels. Resources build vertical content knowledge by accessing prior knowledge; however, lessons do not help teachers and students understand future 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 use and apply 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, little guidance is provided for teachers and students to monitor progress.
- 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; targeted instruction and activities are provided for students who struggle with content mastery.
- Instructional methods appeal to a variety of learning interests and needs.
- Materials include supports for English Learners (ELs) with sequenced and scaffolded linguistic accommodations commensurate with various levels of English language proficiency.

Section 6. Implementation

- Materials include a cohesive, year-long plan with practice and review opportunities that support instruction.
- Materials are designed in a way that allows Local Education Agencies the ability to incorporate the curriculum into district, campus, and teacher design and considerations; however, there is no specific guidance for implementation that ensures the sequence of content is taught in an order 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.

November 2020

Houghton Mifflin Go Math! Grade 5

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 provide students enough practice opportunities to master content as outlined in the fifth grade Texas Essential Knowledge and Skills (TEKS). Instruction is strategic and systematic, spending the majority of time dedicated to the primary focal areas for the grade level.

Evidence includes but is not limited to:

The materials spend the majority of time covering the primary focal points for grade 5, as outlined in the TEKS. According to the introduction to the "Teacher Edition," this is by design, as all instruction is "grouped around each Texas focal area." The table of contents supports this claim, identifying relevant focal areas covered in the first five to six units. These five units include the following focal points: four-arithmetic operations with fractions and decimals; expressions and equations to solve problems; perimeter, area, and volume; and organizing, representing, and interpreting data sets. The remaining two units reinforce learning by spiraling the focal areas and using them as the basis for higher-level math and personal financial literacy.

In the Teacher Edition, each unit has a scope and sequence summarizing the essential question related to the focal concepts. It also describes the necessary knowledge and skills, vocabulary, mathematical processes, and concepts for before, during, and after modules. Each unit contains smaller components, or modules, that target specific TEKS within the larger focal area. Sixteen of the seventeen total modules are solely devoted to grade 5 focal areas. Unit 6, which only contains one module, is the only unit that does not directly address a primary focal area.

However, according to the “Texas Essential Knowledge and Skills for Mathematics Correlations” within the Teacher Edition, TEKS from key focal areas are spiraled throughout subsequent units, including Unit 6, allowing for additional opportunities to apply and reinforce key concepts.

The Teacher Edition also summarizes the systematic philosophy behind the introduction and development of students’ mathematical understandings. Lessons open with a context-based problem before building to more abstract problems along the way. Throughout each lesson, students use a variety of manipulatives, representations, pictures, and symbols. These manipulatives, models, and rigorous problems allow students to “move beyond a basic level of learning to develop deep conceptual understanding.” The bulk of the beginning two units (6 modules) begin with simpler numeric and operational concepts. Instruction gradually progresses through algebraic concepts, geometry, measurement, and data analysis. Later models integrate previous concepts into instruction, but the materials devote a greater amount of time to concepts that are new to grade 5 students. For example, Module 14 covers graphing equations, a concept new to grade 5 students. Students first review concepts by identifying points, plotting them on a coordinate grid, and plotting table data on a graph. Later in the module, students progress to writing ordered pairs from data, completing input and output data, and plotting equations on a coordinate grid. They conclude with a discussion about how the table, the rule, and the graph all describe the same relationship in different ways.

Throughout the materials, students have ample practice opportunities to master content. The student edition includes practice problems for each lesson: “Share and Show” problems for students to practice with teacher assistance, problem-solving problems to practice either with a classmate or independently, “HOT” (Higher-Order Thinking) problems, and additional practice problems included at the end of the lesson. There is also a separate “Homework and Practice” section offering short-answer and multiple-choice problems for students to solve. While spiraled practice is not included in the student edition, previous concepts can be reviewed during “Are You Ready?” formative assessments at the beginning of each lesson. These assessments are in an ancillary resource and not in the student edition, and teachers can also access additional review opportunities in the online “Interactive Student Edition.”

Lessons in Module 1 follow an appropriate sequence to develop students’ content knowledge of place value and decimals. The module begins with defining the *commutative*, *associative*, and *identity* properties of addition and multiplication. Next, lessons cover the decimal place values to the thousandths place and the different ways to represent decimals in models and place value charts. Students move on to comparing, ordering, and rounding to the given place value using a place value chart. At the end of the module, students estimate sums and differences before finding the actual sum or difference with decimals through the thousandths place. For each lesson, the materials follow the 5E model: Engage, Explore, Explain, Elaborate, and Evaluate.

Similar sequencing can be seen in Module 6 when students are introduced to the multiplication and division of fractions. They first participate in a quick review of fractional parts, including an

emphasis on previous concepts of equal groups and fractions. During the module, they carefully progress through models and pictures to demonstrate the concept. While students never practice multiplying fractions with the algorithm only, this instruction follows a clear progression that appropriately increases rigor over time.

At the beginning of Module 7, students revisit expressions by first discussing the question, "How can you use a numerical expression to describe a situation?" The teacher then uses the Interactive Student Edition to digitally display strategies that can be used to match numerical expressions to words. Students then work independently, completing a set of problems on the digital platform to practice and show mastery. Platform capabilities include interactive manipulatives, engaging graphics, personalized interfaces, formative assessments, and rewards.

In Module 13, students practice converting metric units of measurement using tables or place value charts. In regards to the base-ten system, students discuss how they can move between different units. For example, students learn how they can convert meters into decimeters by multiplying by 10; Conversely, they can do the opposite and convert decimeters into meters by dividing by ten. The module also includes problem-solving requiring customary or metric conversions, some of which include multiplying by fractions. These concepts build upon Module 1's focus, Place Value and Decimals, and Module 6's focus, Multiplying and Dividing Unit Fractions and Whole Numbers.

November 2020

Houghton Mifflin Go Math! Grade 5

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 appropriately sequence concepts from concrete to representational to abstract (CRA). Instruction integrates a variety of models, manipulatives, pictorial representations, and abstract representations throughout. However, teachers do not receive adequate support in understanding and appropriately developing students' progression along the CRA continuum.

Evidence includes but is not limited to:

Materials state in the Introduction that "Lessons begin with context-based situations and then build to more abstract problems. All along the way, students use models, manipulatives, quick pictures, and symbols to build mathematical understandings." The "Interactive Student Edition" contains a tool button in which students can explore and manipulate items, helping them link manipulatives to symbols. These online manipulatives include: base-ten blocks, geometry sketches, and strip diagrams. "iTools Virtual Manipulatives" is another online resource students can use to interact with digital manipulatives. For non-virtual manipulatives and representations, the "Teacher Resources Blackline Masters" includes manipulatives that can be copied for student use, for example, fraction bars and three-dimensional shape nets. While lesson design and tasks acknowledge the CRA continuum, there is a lack of specific guidance for teachers to identify student understanding along the phases. Teachers do not have the support necessary to move all students through the CRA continuum. Teachers can move generally

between concrete and abstract representations, but students do not receive individualized intervention for this progression.

Each module includes instruction utilizing concrete models, manipulatives, pictorial representations, and abstract representations to introduce and review mathematical concepts. Not only do students interact with these representations, but instruction requires they create original representations as well. In Module 1, students actually revisit different representations from grade 4. When practicing place value and decimal usage, they manipulate decimal grids, place value charts, number lines, and solve problems in standard form, word form, and expanded form. In the previous grade level, students used these representations to the hundredths place value; this year, they use these representations to the thousandths place value.

In Module 3, students are reminded how to use base-ten blocks, quick pictures, and decimal models to solve decimal multiplication problems. Specific, step-by-step directions help students shade decimal squares to model multiplication. In this case, the teacher has access to questions meant to clarify thinking: “Why are some squares shaded twice?” and “Why is the answer a decimal?” These help students conceptualize a novel idea: multiplication can yield a smaller value. Additional student-friendly language is used to describe the product as a “part of a part of a whole.” This guidance helps students better understand at the current phase in the CRA continuum but does not help them progress along to the next phase.

In Module 5, students are given opportunities to progress along the CRA continuum when they are adding and subtracting fractions with unequal denominators. The beginning lessons focus on using concrete fraction tiles to add and subtract alongside a number sentence. Students use the fraction tiles throughout the lesson, including during independent practice. In the next few lessons, students use fraction circles/strips and physical number lines to estimate, add, and subtract fractions. Fraction tiles are still available for support as needed. Finally, students add and subtract fractions by abstractly determining the least common denominator between two fractions. This is then applied to adding and subtracting mixed numbers as well.

Later in the year, students move between concrete and abstract representations more fluidly. First, in Module 11, students identify polygons throughout real-world objects. They draw shapes, measure their sides, and then the teacher models how polygons can be combined to form more complex structures. Students then use concrete models of polygons to create numerous complex figures before dividing them back into basic polygons. In Module 15, the teacher reminds students of the relationship between data in a table and the number of bars in a representative graph. The teacher shows the class a bar graph summarizing the colors of tulips in a garden. She then has students draw a diagram of the garden and theorize how to find the solution to the problem without using a graph. Finally, the students discuss with each other how subtraction may be used to solve the problem.

November 2020

Houghton Mifflin Go Math! Grade 5

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

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

Partially Meets 2/4

Instructional materials appropriately and intentionally connect concepts so that students can access cross-curricular relationships and patterns. While they often build vertical content knowledge by accessing prior knowledge, there are no module or lesson overviews to help them understand future concept progression. Additionally, there are few teacher supports meant to help them understand how concepts build over time or how concepts connect within grade-level and across grade levels.

Evidence includes but is not limited to:

The Teacher Edition includes a “TEKS for Mathematics Correlation” table listing the grade-level TEKS. Spanning each unit and learning module, teachers can determine where specific standards exist in the curriculum; Learning opportunities and assessments are listed down to the page number. While this table allows teachers to see how standards are distributed

throughout the modules, there is little rationale explaining concept organization and development over time. There is no specific guiding document or integrated teacher supports meant to explain how concepts build in depth, breadth, or complexity over time.

Through lesson-specific "Are You Ready?" formative assessments located in the "Assessment Guide," each lesson requires students to access prior knowledge before moving forward. These daily two-problem reviews build some connections between lessons over time. There is no specific follow-up direction for teachers following these assessments, but according to the Assessment Guide, "If several students have trouble with the Are You Ready? items, teachers may wish to review concepts before teaching the next lesson." An example "Are You Ready?" assessment measures students' ability to read data from a stem-and-leaf plot prior to analyzing and solving problems with stem-and-leaf plots.

The beginning of each unit includes a "Unit and Modules at a Glance" section detailing prerequisite skills that apply to the unit. However, this section does not help teachers understand how module concepts build over time or how the materials vertically align with future grades. For example, Unit 1 identifies the following necessary prerequisite skills: identify decimal place value, estimate quotients using compatible numbers, and understand the meaning of division. An early lesson also includes a "Get Ready" Game meant to prepare students for the unit. The game "gives students an opportunity to practice dividing whole numbers in preparation for the content taught in this unit."

In Module 4, students recall previous knowledge about area models and connect it to multiplying and dividing decimals. A direct prompt from the Teacher Edition states: "You can use place value patterns to help you find quotients. Dividing by 10, 100, or 1,000 is the same as multiplying by 0.1, 0.01, or 0.001." Students then perform these operations with the number 560 and look for patterns. Through discussion, they reform their conceptual understanding in order to understand the concept deeper than "just moving the decimal point."

Instruction often integrates "real world" applications into Digital Lesson Openers and initial problems so students can access their prior knowledge. These problems are designed to engage students where they are in their understanding, yet the overarching tasks often integrate new learning from the upcoming lesson. They serve as an appropriate bridge between what students know and what they are about to learn. In Module 5, real-world problem-solving connections include combining ingredients for a recipe, finding the amount eaten and the amount left over, and the distance traveled and the distance remaining. Not only do these questions require the application of math concepts in context, but they ensure students connect two or more concepts almost daily.

In Module 11, students explore quadrilaterals. The teacher discusses with the student the relationships between previously known shapes like rectangles, squares, parallelograms, rhombi, and the similar patterns that exist among them. The students use their new learning on

quadrilaterals to design a quilt square and generate rules for what shapes can be produced when you combine quadrilaterals.

One lesson in Module 12 requires students to share their knowledge about cubes prior to a lesson on finding the volume of rectangular prisms. The teacher asks questions, including, "How are the length, width, and height of a cube alike?" "What shape is the side of a cube?" "How would you describe the shape of 4 cubes set in two rows of two cubes?" "How would you describe the shape of a set of 4 cubes stacked in a set of 4 cubes?" In the next lesson, students make a connection between volume and a familiar outside context, a sandbox. Questions in this lesson include: "Have you ever seen or played in a sandbox? What shape was it? If you built a sandbox, how might you know the amount of sand to use to completely fill the sandbox?"

November 2020

Houghton Mifflin Go Math! Grade 5

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 are built around quality tasks that address content at the appropriate level of rigor and complexity. Contextual problems are integrated throughout, providing students the opportunity to apply math knowledge and skill to new and varied situations. Teachers receive some guidance outlining mathematical concepts, goals behind each task, and anticipated student responses. Additionally, the materials do not provide enough teacher guidance on executing strong task-based student discourse.

Evidence includes but is not limited to:

Students navigate CRA tools, models, and understandings with increasing depth and complexity. For example, they explore basic fraction concepts in Modules 3 and 4: generating equivalent fractions, naming a fraction in its simplest form, and using models to add and subtract fractions. By Module 14, students engage in new math concepts like relating fractional parts of a circle to angles. The lessons in Module 16 follow a logical sequence: starting with simple unit conversions (minutes to hours or weeks to days) and ending with word problems involving intervals of elapsed time. For a concept like multiplication that is revisited throughout the year, rigor increases appropriately. At the beginning of the year, students are multiplying by ten, and by the end of the year, students are multiplying interest rates in order to calculate

monthly payments. For example, they explore basic decimal concepts in Module 1: using model representations, rounding, and comparing. In Module 2, they first review how to multiply three-digit numbers by one-digit numbers before learning how to multiply three-digit numbers by two-digit numbers. These concepts are combined in Module 3 when students use area models to multiply a combination of decimals and decimal numbers. By Module 13, they use place value, abstract algorithm, and multiplication to solve multi-step problems involving decimal measurements and conversions.

Each Module begins with an Essential Question, mathematical process description, and a list of associated TEKS. However, teachers do not have access to a clear outline describing the mathematical concepts and goals behind each task. The Teacher Edition includes the "Texas Mathematical Process Standards" section providing a large list of questions designed to support mathematical instruction. For example, if a teacher wants to help a student access the standard, "create and use representations to organize, record, and communicate mathematical ideas," she can ask the following questions: "How does that drawing support your work?" "Why is that a good model for this problem?" "What conclusions can you make from your model?" "How would you change your model if…?" These questions are useful in one-to-one or small group contexts but lack lesson-specificity and do not promote group discourse. Teacher guidance is provided *while* students complete tasks, but not prior. Reminders generally occur in lesson call-out boxes and include key point reminders, questions to ask, and possible student responses.

Lessons include a "Math Talk" section meant to help teachers facilitate student discourse. While this section does not include redirections for student misconceptions, it provides students an opportunity to communicate their mathematical ideas. However, questions and prompts often limit student responses by looking for one specific answer instead of generating discussion. In Module 1, students make connections between the thousandths place value and being 1/10 of a number. The Math Talk for this lesson states: "Use Math Talk to focus on students' understanding of place value patterns." This is not enough guidance to ensure students have strong discourse. However, other Math Talk questions are somewhat open-ended: "Can both methods be used to find the answer?" or "Which method is your favorite and why?" Outside of this section, there are no additional resources that prepare teachers to facilitate student discourse. Nor are there any rubrics, evaluation tools, or feedback methods for teachers to measure student discussion.

Student misconceptions are primarily addressed in the "Common Errors" section of a lesson. These possible student responses are meant to help the teacher understand what to expect when teaching a concept. Only one Common Errors support is given per lesson, but each support is paired with a teacher tip meant to help students correct the error. For example, in Module 2, students create strip diagrams to represent division situations. A common error when students draw diagrams is that sometimes diagrams representing a relationship are not drawn correctly. The materials instruct students to "always begin by using one box to represent

the lesser quantity. The number of identical boxes used to represent the greater quantity is then determined by the relationship of the quantities in the problem."

Often modules require students to apply their math knowledge to contextualized problems and real-world situations. In Module 4, students practice dividing decimals and whole numbers. After practicing these concepts abstractly, they apply their understanding to divide a swimming relay into equal parts, determine individual ticket price when given total basketball revenue, and measure the width of each lane on a track when given the total width. These types of questions include a "Real World" symbol indicating they are contextual and require students to apply their math knowledge.

In Module 9, students investigate area, perimeter, and volume using everyday objects. Primarily, they are finding perimeter using a garden fence as context and finding area using painting a deck as context. Later in the module, students apply the volume formula when determining which size crate to buy for a dog. Additional contextualized problems can be found in Module 17 when students learn about different methods for paying bills. First, they discuss the advantages and disadvantages of each method (check, debit card, credit card, automatic draft). Then, students evaluate various methods of payment when purchasing a chemistry set if ten cents in interest is charged for every dollar used on a credit card. While this module integrates contextual problems throughout, no guidance helps the teacher revise content so that it is relevant to their specific students, backgrounds, and interests.

November 2020

Houghton Mifflin Go Math! Grade 5

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.

Meets 4/4

While there is no specific year-long plan for building fluency, students do receive integrated, appropriate, and purposeful fluency instruction throughout the year. Lessons progress as students develop their conceptual understanding, and authentic spiraling of content guarantees grade-level proficiency. Enough teacher guidance ensures fluency practice is appropriate for the concept development and grade. Additionally, teachers have access to high quality supports that aid fluency differentiation for all learners.

Evidence includes but is not limited to:

The core instructional tool “Go Math!” is paired with additional ancillary materials like “Strategies and Practice for Skills and Fact Fluency” (Primary K–3 and Intermediate 3–6) and “Achieving Facts Fluency.” Though not explicitly identified as fluency resources, the supplemental “Grab-and-Go” activities, “Mega Math” online games, and the digital “Soar to Success” resource provide additional opportunities for students to practice prerequisite and grade-level fluency skills. While there is no year-long plan for building fluency, the materials outline the correlation and sequence between these resources. For example, as the year progresses, the correlation guide in “Achieving Facts Fluency” specifically tells teachers which fluency practice to use with each lesson. Fluency lessons are organized into 15–30 minute “Basic Facts Workshops” that can be completed in pairs, small groups, or whole group. They come with clear, step-by-step instructions, including class structure, reproducible worksheets, and guiding questions.

These workshops range in level of fact fluency from level three to level six and are paced so they align with the “Go Math!” modules and lessons. Levels three and four cover basic facts for all operations, while levels five and six approach a given topic using number sense. These levels correspond to grade-level proficiency (three and four) and above grade-level proficiency (five and six). The “Strategies and Practice for Skills and Fact Fluency” (Primary K–3) resource also includes level one and two workshops for students who are struggling to meet grade-level fluency expectations.

The “Achieving Facts Fluency” program “gives students opportunities throughout the school year to learn, practice, and to master basic facts for addition, subtraction, multiplication, and division, as well as computational skills for whole numbers, fractions, and decimals.” Workshop lessons are paired appropriately and integrated authentically with lessons from the core curriculum. For example, when teachers are teaching multiplication of decimals in Module 3, the teacher should use Workshop Level 6, Lesson 11, to reinforce this skill. Later, when students practice calculating income and payroll taxes in Module 17, the teacher should use Workshop Level 6, Lesson 13, which is focused on strengthening students’ understanding of decimals and percentages. Helping students understand these algorithms will ensure they can accurately and efficiently solve grade-level fluency tasks. Workshops covering more foundational skills are understandably paired with more lessons in the curriculum.

Each lesson includes scripted instruction, routine description, and an explanation describing how the activity builds upon fluency skills. When teachers cover division word problems, the teacher can choose between small group or whole group instruction. Either way, the lesson begins with students discussing the scenario, “A town orders 1,248 park benches for its 24 neighborhoods. If each neighborhood gets the same number of benches, how many benches will each get?” After brainstorming the question, students use compatible numbers to estimate the quotient. Together they use the standard algorithm to solve 1248 ÷ 24 before practicing division independently. Later, when teachers introduce multiplying fractions, teachers follow step-by-step instructions promoting classroom discussion. First, the teacher reviews the meaning of multiplication and models how 4 × 1 means four groups of one. To follow, she asks the question, “About how much is 4 × ⅝?” Students are then given time to discuss this example and other examples that include a whole number and a partial number. Before engaging in partner and independent practice, the class discusses “other ways of thinking about the product of two fractions.”

Along with general workshop prompts and reminders, teachers can differentiate instruction using the many assessment materials. Each instructional unit begins with a diagnostic assessment producing tier one, two, and three recommendations that are specific to fluency. For example, when students practice numerical expressions in Module 7, teachers measure students’ understanding of prerequisite multiplication and division skills using the “Are you Ready” assessment 7.3 found in the Assessment Guide. Depending on how well students access the lesson concepts, the teacher can differentiate using the three provided lesson options as

needed. The “Strategies and Practice for Skills and Fact Fluency” resource also includes a “Cumulative Practice” section containing 30 facts for each skill taught in the workshops. After each set of problems, students evaluate themselves using self-reflection to determine which facts they should focus on moving forward. This section can “assist in basic facts practice, serve as a tool for review, or provide assessment.” This document offers additional lessons for practice to address potential areas of improvement. These ancillary lessons cover a wide range of topics: adding and subtracting with like denominators, using multiples to find a common denominator, and applying their knowledge to adding and subtracting unlike denominators. Most of these lessons begin utilizing concrete manipulatives and transition to computation, with many practice opportunities in between.

November 2020

Houghton Mifflin Go Math! Grade 5

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.

Meets 4/4

Students receive consistent and embedded opportunities to strengthen their mathematical vocabulary. This instruction is paired with contextual scaffolding and teacher guidance, promoting student development and use of mathematical language.

Evidence includes but is not limited to:

Each unit begins with a "Vocabulary Builder" section that introduces new vocabulary and reviews previous vocabulary. Each Vocabulary Builder has two components, "Visualize It" and "Understand Vocabulary." In the Visualize It section, students complete graphic organizers to interact with new terms, and in the Understand Vocabulary section, they match terms to their definitions. Students can complete these worksheets individually or with partners. While vocabulary development is not the specifically stated learning goal for the Vocabulary Builder section, they do include a "Mathematical Processes" icon indicating their tasks are aligned to a process standard. Additionally, units start with a cross-content "Reading and Writing Math" activity, usually a book where students can make connections to the math concepts and vocabulary. In one instance, students read on their own to make connections to math concepts and vocabulary in the upcoming unit; they are encouraged to write down their connections using new vocabulary. For example, in Unit 3, "students form groups to list five more things they know about angles and lines. Then generate a class list." Each group uses their list to generate a problem, then the teacher asks volunteers to share their problem. The rest of the class then attempts to solve each using an input/output table.

The Unit 1 Vocabulary Builder includes a Visualize activity where students first fill in a tree diagram graphic organizer with a series of vocabulary terms related to estimation. Students then complete a set of fill-in-the-blank sentences for a separate set of vocabulary words. In Unit 3, students complete a Visualize vocabulary word match related to familiar terms such as

factor, *area*, and *pattern*. The bottom portion of the Vocabulary Builder includes several fill-in-the-blanks for students to fill in the new vocabulary term that fits the definition. While some of these terms may be unfamiliar or new to grade 5 students, the class debriefs definitions before moving on. These consistent strategies provide students a strong foundation for mathematical language development.

Individual lesson guides begin with stating vocabulary words, defining them, and then modeling them in context. Words are then used throughout the lesson and reinforced in future lessons. Questions strategically use these words, and teachers rephrase sentence stems so students use them in their responses. For example, the vocabulary word *thousandths* is introduced in Module 1. It continues to be used in Modules 3 and 4 when students apply their knowledge of the decimals place value to multiplying and dividing decimals. Within the lesson, new vocabulary terms are highlighted and bolded for emphasis, and usually a definition is included. For example, in Module 7, Lesson 2, students use a grid to show all the possible arrangements of 12 and 13 tables. Materials state that a " prime number is a whole number greater than 1 that has exactly two factors, 1 and itself." Students compare the definition with the arrangements they drew and fill in a sentence stem for each using the new term. A Math Talk call-out asks students, "Is the product of two prime numbers prime or composite?" so students are being questioned with the new vocabulary and about the meaning. Finally, at the end of each module, a formative assessment is given in the textbook, which includes a vocabulary fill-in-the-blank section.

The "Teacher Resource Book" contains blackline masters for all vocabulary cards used during instruction. These cards include definitions written in student-friendly language paired with illustrations or pictures to help students visualize what the terms mean. Students organize their vocabulary cards in an easy to access format, and teachers "encourage students to consult their Math Word Files to confirm meanings and check spellings." The "Teacher and Students Interactive Editions" also includes a "Multimedia Glossary" where students can review lesson vocabulary through an interactive experience including audio, diagrams, world historical context, and hyperlinks to related words. For example, in Module 11, Lesson 1, the Multimedia Glossary defines *congruent*, *heptagon*, *nonagon*, *polygon*, and *regular polygon* and highlights the related words: *closed figures*, *line segments*, and *congruent*. There are also professional development videos available to teachers guiding them through precise mathematical language usage. During each video, a model teacher demonstrates how she works from current student knowledge, promotes mathematical connections, and achieves precise math language in her classroom.

November 2020

Houghton Mifflin Go Math! Grade 5

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 students numerous opportunities to apply mathematical knowledge and skills to solve problems in new and varied contexts. Many of these opportunities require real-world problem solving and demand data analysis through real-world contexts.

Evidence includes but is not limited to:

Most lessons provide students an opportunity to apply math concepts to real-world problems; some of these opportunities include making sub sandwiches, fishing, and making chili for a cook-off. For example, in Module 6, Lesson 5, students solve real-world, multi-step problems using a “drawing diagram” strategy. The opening problem describes how Erica makes submarine sandwiches by cutting them into thirds, and students have to determine how many parts she has created. Given provided sentence stems, they have to analyze the situation, identify a plan, and describe how drawing a diagram will help them solve the problem. A provided teacher support offers a step-by-step description of how to draw the strip diagram. To push rigor, the Math Talk call-out asks students to justify their answers using multiplication and explain the relationship between fractions, division, and multiplication. Each lesson also contains at least one “HOT” (higher-order thinking) multi-step problem presented in a real-world context. For example, the HOT problem from Module 8 Lesson 4 states, “Francois is rolling coins. He has 3 rolls of 40 quarters. He has 8 rolls of 50 dimes. He exchanges 2 rolls of dimes for 1 roll of quarters. How many coins does Francois have?” Students must integrate their newly developed multiplication skills with previously learned addition knowledge in order to solve this multi-step problem.

While problem-solving tasks are present in every lesson, several lessons are solely dedicated to problem-solving: making sense of the problem, planning a strategy, and constructing an answer justification. In these lessons, students first read the problem, break down what they are trying to accomplish, identify which information is necessary, and decide on a strategy or method to solve the problem. Teachers can provide workspace suggestions and sentence stems to help scaffold appropriately. Some of these suggestions include making a table, drawing a diagram, or acting the problem out. After solving each problem, students discuss the successful and most efficient solution strategies. As a general classroom resource, students have access to the problem-solving "MathBoard." This graphic organizer was introduced in a previous grade level and helps students unlock word problems. It has the following sections: Read, What do I need to find? What information am I given?; Plan, What is my strategy?; and Solve, Show how to solve the problem. The reverse side is for "Show how you know" with suggestions for Quick Pictures, Share and Show, and Essential Questions.

The materials provide opportunities for data analysis as well. For example, in Module 1, students learn about decimals to the thousandths place value and make comparisons. They compare table data showing various real-world situations like the length of bees in meters, average annual rainfall in meters, mountain heights in miles, and insect speeds in meters per second. In practice, students use this data to convert rates and make comparisons. Later, in Module 4, Lesson 3, they analyze a table listing the greatest 7-day snowfall from three different states. They respond to the following prompts: "Estimate the average daily snowfall for Alaska's greatest 7-day snowfall." "How does the estimate of the average daily snowfall for Wyoming's greatest 7-day snowfall compare to the estimate of the average daily snowfall for South Dakota's greatest 7-day snowfall?" "The greatest monthly snowfall total in Alaska is 297.9 inches. This happened in February 1953. Compare the daily average snowfall for February 1953 with the average daily snowfall for Alaska's greatest 7-day snowfall. Use estimation." Finally, Module 16 is dedicated to data analysis. In this module, students have multiple opportunities to analyze data in dot plots, stem-and-leaf plots, and scatter plots. The context of these figures include measurements of weight, height, mass, distance, capacity, and time. These real-world problems are grade-level appropriate and require students to record, interpret, and analyze data.

The ancillary resource, "TX English Teacher Edition STEM Activities Grade 5," provides lessons and activities that link science and math concepts together. These opportunities provide students a stronger understanding of how mathematics can be used in their own lives. Several of these activities integrate familiar student contexts like graphing the classes' favorite sport and creating a summary table describing the types of books checked out from the school library. The "Grab-and-Go" kit also includes activities requiring students to analyze science content area data. In Activity 9, they explore state mean temperature data for each month of a given year. Individually they choose one state and create their own data table. Next, they use this data to draw a bar graph, being careful to use the range of temperatures as the foundation for the y-axis intervals. To conclude the lesson, they use the table and graphs to answer questions related to the real-world problem.

November 2020

Houghton Mifflin Go Math! Grade 5

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.

Partially Meets 2/4

While introductory components cite some research and materials seem to follow a research-based design, the research scope is limited. Of the research that was cited, there was a lack of Texas-specific context and demographics. There is a limited bibliography that does not span the full extent of instructional materials, and there is little instructional guidance meant to enrich educators' understanding of math concepts.

Evidence includes but is not limited to:

Prior to the first unit of instruction, the Teacher Edition cites research about the design of instructional materials. The Introduction states, "Our unique organization lets you completely focus on your grade-level TEKS, with all instruction grouped around each Texas focal area. The process standards are completely integrated — weaving knowledge and skills together so students use and apply math." One section titled "Mathematical Process Standards" lists the specific curriculum features that support the process standards. In this section, some important research-based instructional techniques remain general: "representing problems in different ways is a useful tool for building understanding and communicating mathematical ideas (NCTM, 2000)." The section also discusses how the "Math Talk" and "Go Deeper" sections provide students opportunities to communicate their mathematical ideas, citing the following research: "the most productive discussions around mathematical ideas seem to happen in classrooms

where students question each other about their work (Kline, 2008).” The same section notes that students engage in problem-solving activities when using the Problem-Solving MathBoard: “understanding is a result of solving problems and reflecting on the thinking done to solve the problems (Lambdin, 2003).” Materials go on to describe their concrete, representational, abstract (CRA) approach to developing students’ conceptual understanding and procedural fluency. Lessons begin with “context-based situations and then build to more abstract problems. All along the way, students use models, manipulatives, quick pictures, and symbols to build mathematical understandings.”

The section, “Texas Essential Knowledge and Skills for Mathematics,” includes research by author Matthew R. Larson, Ph.D. K–12 Curriculum Specialist for Mathematics of Lincoln Public Schools. Larson asserts that the materials use TEKS as a starting point for its “comprehensive system of mathematics instruction that provides teachers the tools and resources to support students’ successful mastery of the TEKS.” The section describes the curriculum’s deep integration of the mathematical process standards with the content knowledge and skills of the TEKS. The curriculum is “research-based and includes multiple instructional approaches, diagnostic assessments linked to differentiated instructional resources, tiered interventions, and technology solutions” designed to ensure student success. Larson states that the program is “research-based,” however, he does not reference specific research for this claim beyond what is cited in the article.

This limited research is somewhat current, academic, relevant to mathematics, and applicable to Texas-specific context. Cited research ranges from 2000–2012 and comes from sources like *Education Week, Teaching Children Mathematics, Teaching mathematics through problem-solving: Prekindergarten–Grade 6*, the National Center for Education Statistics, and the National Council of Teachers of Mathematics. The most dated citation comes from the National Council of Teachers of Mathematics in 2000. The program does not describe the context and demographics of the research used to design the program. Citations only include national data sets, such as the Nation's Report Card and national mathematics standards. A bibliography is present for the two sections in the introduction but not throughout the instructional materials. Additional cited research remains minimal, and educators have few opportunities to deepen their own understanding of mathematics.

November 2020

Houghton Mifflin Go Math! Grade 5

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.

Meets 4/4

Throughout the materials, students use and apply a problem-solving model that is both transferable across problem types and grounded in the TEKS. When finished, students reflect on their problem-solving approach, and teachers have the necessary guidance to support this reflection when necessary.

Evidence includes but is not limited to:

The "Mathematical Process Standards" section of the Teacher Edition states: "students are expected to use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Students engage in these problem-solving activities when they use a structured plan such as the 'Problem-Solving MathBoard' to solve problems. This offers a consistent approach to unlocking problems that builds success." The problem-solving model for this grade level is a continuation of the previous two; the Problem-Solving MathBoard includes three parts: *Read*, *Plan*, and *Solve*. In the *Read* section, guiding questions include, "What do I need to find and what information am I given?" The *Plan* section asks, "What is my plan or strategy?" Finally, the *Solve* section gives students space to solve the problem using computations, record necessary steps, describe how to act out the problem, draw a diagram to explain the answer, and complete tables or sentence stems; this section varies based on the type of problem students solve. This problem-solving model is first introduced in Module 1, where students are adding and subtracting money. After

reintroduced, the problem-solving model can be found explicitly modeled and/or practiced in the many subsequent modules.

For modules that include the problem-solving model, lessons begin with two problems for students to fill in. After these two problems, students follow a routine called “Unlock the Problem.” Teachers have access to different tips to help students if they are struggling with the content. This routine usually begins with the teacher and student working together on a problem. Then, students follow a step-by-step format to answer a related question with teacher support. This routine is useful in that it explains in detail the multiple steps necessary to complete a task.

For example, in Module 1, Lesson 8, students make a table to organize and keep track of a bank account balance. After students read the problem, they determine what the question is asking, what information is given, and what plan or strategy to use. Students complete the table to show deposits and checks before discussing the question, “How can you tell if you answered the question, and if your answer is reasonable?” The materials help teachers measure and respond to student understanding by offering the possible answer: “I can use estimation to determine my answer is reasonable.” Many times teachers present one way to solve a problem and then follow up with another way to solve the problem.

The teacher also has access to certain prompts that promote student reflection, other times, the “Math Talk” call-outs prompt students to reflect on their problem-solving approach. One example of these Math Talk speech bubbles can be found in Module 3, Lesson 5, when students use the Read, Plan, Solve problem-solving model to draw diagrams representing decimal multiplication. After the lesson, students respond to the prompt: “Describe a different diagram you could use to solve the problem.” Later in the module, students use modules again to represent decimals. In Lesson 8, teachers have access to the following prompting questions: “What problem are you asked to find?” “What information are you given in the problem?” “What operation can you use to solve the problem? Why?” “What models can you use to represent 0.2 and 0.35?”

In Module 6, Lesson 5, students transfer the problem-solving model they used to represent fractions and apply the concept to multiplication. After completing the first half of the lesson, students reflect and answer the question, “Explain how the diagram you drew for the division problem helps you write a multiplication sentence?” Students continue through multiplication practice and at the end of the lesson reflect by justifying their answer with the discussion question, “How do you know your answer is correct?”

By Module 11, Lesson 4, students move beyond the problem-solving modules they have used so far. First, they complete the Read, Plan, Solve model for a given problem. As usual, they answer the questions, “What do I need to find?” “What information am I given?” “What is my plan or strategy?” They work together, discuss possible strategies, and complete a graphic

organizer. To extend the lesson, teachers give “students an opportunity to invent other strategies that could have been used to solve the problem.” Students finish by modeling their invented strategies on the board.

As an additional resource, teachers have access to professional development videos that guide them through problem-solving techniques. During each video, a model teacher demonstrates how she works from current student knowledge and promotes mathematical connections. In one of the videos, the teacher helps her students identify their own errors when calculating an amount of money. She models how to critique reasoning aloud, and then students try it themselves. In another video, the teacher guides her students through fraction questioning and discussion as they analyze their own reasoning. The materials also provide some problem-solving resources in the “Teacher Resources Blackline Masters” for student usage.

November 2020

Houghton Mifflin Go Math! Grade 5

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

Students have substantial opportunities to select appropriate real objects, manipulatives, representations, technology, and algorithms as they work. These opportunities reflect task need, concept development, grade, and age. Additionally, teachers receive enough instructional guidance to ensure students select tools that are appropriate and efficient for each task.

Evidence includes but is not limited to:

In the interactive Student Edition, students have ample opportunities to use both physical and virtual tools during instruction. They use student pages to draw on directly, photographs for analysis, and computation depictions for modeling. Throughout the lessons, the "Problem-Solving MathBoard" provides students the opportunity to "show how you know" and justify solutions using their chosen method. In the online Student Edition, students have access to a range of virtual manipulatives such as base-ten blocks and coordinate grids. Each virtual manipulative includes a *Help* section instructing students how to use different tools for different purposes. "Math on the Spot" videos provide additional guidance to both students and teachers if necessary. These videos go into further depth description of which tool to use and how to use them correctly. A toggle feature allows students to explore different virtual manipulatives within the same task and decide for themselves which object, manipulative, or

tool is appropriate. Also available to teachers, the “Teacher Resources” section of each lesson provides further tool guidance. For example, when teaching division strategies, this section scripts out how to reinforce strategies, addresses common errors, suggests digital base-ten blocks as a manipulative, and provides intervention strategies.

An additional virtual resource called “Math iTools G3-6” provides students a library of online manipulatives that allow them to explore mathematical ideas through various representations; these tools include virtual base-ten blocks, number lines, fraction strips, graphs, and tables. Relevant iTools are listed and summarized at the beginning of each Unit and Module at a Glance. When a lesson references a physical manipulative or tool, the same manipulative or tool can be accessed digitally. Each “object” comes with provided tutorials and prompts to support student and teacher understanding. For example, when a student needs counters to complete a multiplication question, they can find virtual Math iTool counters along with a specific set of instructions for the activity. A separate set of instructions is available when students use counters for addition or subtraction.

Whenever students first interact with a new tool, teachers explain how the tool connects to grade-level tasks. For example, in the first module of the year, teachers remind students: “When you solve problems in your head without using paper and pencil, you are using mental math. Using properties can make mental math easier.” For this lesson, students use mental math with the Distributive Property to solve problems. Often, teachers present more than one way to solve problems within a lesson. They may model a concrete process before then allowing students to explore methods or tools during independent practice. Later in the module, students practice using both *benchmarks* and *rounding* to estimate decimal sums and differences. After answering questions with each method, students may choose either technique when working independently in the “Problem Solving” portion of practice.

Many times students begin a concept using one tool before transitioning to another because the second is more efficient. For example, in Module 7, Lesson 1, students begin exploring factors and divisibility using physical mosaics and arrays. Over some time, they learn that the division algorithm is a much more time-saving and efficient method. Then in Module 9, students work on using formulas to find area, perimeter, and volume. First, they use physical visuals in the textbook to calculate these measurements. Next, they move on to virtual iTools squares, rectangles, cubes, and prisms to solve similar problems. This online tool allows for immediate feedback and quicker mathematical reassurance. Since the tools used in the textbook are aligned to the iTools, students can practice with both before selecting which is best.

In Module 10, Lesson 1, students first interact with input and output tables. To help students understand how to use the tool, students are reminded, “You can use an input/output table or a list to show a pattern. When a pattern is shown in a table, it shows the relationship between the inputs and outputs. When a pattern is shown in a list, it only shows the outputs in order.” Teacher sidebars are available for additional guidance. They remind teachers to model

completing the table with the pattern rule, and even suggest extending the input and output table so students can see the relationship.

Sometimes instruction requires students to apply new, non-traditional tools during practice. In Module 11, Lesson 4, instead of using pattern blocks from the Teacher Resources, the teacher challenges students to either find and print polygons from online sources or to find them in magazines, cut them out, and bring them to class. Once they have these polygons at their disposal, they fold the paper to investigate congruence, determining which figures have congruent sides without measuring. To complete the lesson, students discuss their findings, classify each polygon, and confirm their findings using more traditional methods.

November 2020

Houghton Mifflin Go Math! Grade 5

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

Students have ample opportunity to select appropriate strategies and techniques for the work, concept development, and grade. These opportunities include solving problems using multiple strategies. Teachers receive enough support to understand each strategy and ensure students consistently choose the most efficient one.

Evidence includes but is not limited to:

The instructional design integrates authentic opportunities for students to learn multiple appropriate strategies for solving problems. When lessons introduce a concept, often there are example problems that show “One Way and Another Way” or “One Way and Other Ways.” Multiple strategies are modeled and practiced in these examples. For example, when students estimate the sum of two fractions, “One Way” is to use a number line; “Other Ways” include using mental math or multiplying denominators. Throughout the remainder of the lesson, students have the opportunity to explore all possible strategies and techniques before choosing which method is best. Both students and teachers receive support helping them understand fully the different strategies that could be applied to a problem. Students have multiple “Math Talk” prompts that guide reflection and consideration of the similarities and differences between strategies. For teachers, the Teacher Edition includes additional information regarding the purpose of Math Talks, as well as the specific understandings that students should gain by the end of each lesson. For example, when students practice division strategies, the teacher

explains that using base-ten blocks or drawing a model can be time-consuming. Using the division algorithm is a more efficient method.

In Module 1, students learn different techniques to round decimals. One technique is to use a place-value chart and follow the following rule: “Underline the digit to the right of the place to which you are rounding. If the digit to the right is less than 5, the digit in the place value to which you are rounding stays the same. If the digit to the right is 5 or greater, the digit in the rounding place increases by 1.” The next technique is similar, except without a place-value chart. The last technique introduced is using benchmarks of 0, 0.25, 0.50, and 0.75 with number lines and mental math. While several methods are presented one by one, students may choose the most appropriate technique when solving problems in the “Problem Solving” portion of practice.

In Module 3, Lesson 1, students multiply decimals by 10, 100, and 1,000. Teachers have clear guidance in helping students understand the pattern and why the pattern is efficient. A teacher sidebar directs teachers to “Be sure students understand that there is a pattern to the way the decimal moves when numbers are multiplied by 10, 100, and 1,000, and that pattern can be used to find the product. Be sure students notice that, when a number is multiplied by 10, 100, and 1,000, the decimal point moves to the right, and when a number is multiplied by 0.1 and 0.01, its decimal point moves to the left.”

Module 7, Lesson 1 covers several techniques for finding whether one number is a factor of another number. For the first strategy, students draw a model on grid paper, and if a rectangle can be made, then the number is a factor. Next, students can divide each number, and if there is no remainder, then the number is a factor. Finally, students can reference a divisibility rules table, analyze the patterns, and determine if the number is a factor that way. When given practice problems, students can use any of the methods they have covered in the lesson.

Students first learn how to find area, perimeter, and volume in Module 9. Each lesson includes step-by-step instruction modeling how to apply the formulas. When introduced to perimeter, the Teacher Edition has facilitation notes for a discussion comparing the addition formula (L + W + L + W) and the multiplication formula (2L + 2W). Students try both and discuss which they find easier to use, and the teacher guides students toward understanding that the multiplication formula is the more efficient strategy. When measuring volume, students follow a similar procedure. Students compare two formulas for volume, V=Bh, and V=(l x w) x h. In this case, teachers have additional context to help them better understand and explain the concepts: “Students should understand that volume is the amount of space occupied by a solid figure. Reinforce that by adding layers, you are adding height. Each layer has the same area.”

In Module 12, students apply what they learned in Module 9. In Lesson 4, they review how to find volume for rectangular prisms and discuss why they should be using *B,* the area of the base, instead of *l x w*, length times width. In the next lesson, students apply what they learned

to a practical, real-world question. “Mrs. Wilton is planning a rectangular flower box for her front window. She wants the flower box to hold exactly 16 cubic feet of soil. How many different flower boxes, all with whole-number dimensions and a different-size base, will hold exactly 16 cubic feet of soil?”

November 2020

Houghton Mifflin Go Math! Grade 5

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

Students successfully develop self-efficacy skills and a mathematical identity through opportunities to share with one another. Engaging in reflection and discussion, they build an understanding that there can be multiple ways to approach a problem. Teachers help facilitate this skill, and by the end of the year, students successfully see themselves as mathematical thinkers.

Evidence includes but is not limited to:

Students have daily opportunities to communicate their thinking to peers and teachers. Lessons begin with a "Making Connections" lesson opener meant to engage all students in a discussion about mathematical concepts. While completing practice problems, different student and teacher "Math Talk" prompts help students to build their math identity. Some questions have students reflect on struggle: "What can you do if you don't know how to solve a problem?" Other questions promote student discourse and critical thinking: "What do you think about what she said?" "What do you want to ask her about that method?" "Why did you decide to use…?" Teachers also have access to questions that help facilitate the sharing of students' approaches: "Why did you choose that operation? What did you do first? Why? Why does that operation represent the situation? Why is that a good model for this problem?" Also, many lessons include a "Share and Show" section during which students complete their work on whiteboards using their own strategies. They then share their work with the teacher and the class, justify their methods, and discuss their understanding.

Higher-Order Thinking (HOT) questions are another major instructional practice that help students develop their confidence, work through productive struggle, and share their approach to tasks. While these problems are designed to offer students a challenge, “Math on the Spot” video tutorials are available in case students need additional support. “Through the Math on the Spot Video Tutor, students will be guided through an interactive solving of this type of HOT problem. Use this video to also help students solve the HOT problem in the Interactive Student Edition.” When students solve a multi-step equation to determine the total number of coins a person rolls, the Math on the Spot teacher models a think-aloud analyzing problem, creating a strip diagram, and solving for the variable. Additionally, teachers have access to anticipated student errors that could help students better develop their approach to problem-solving. With each mistake in the “Common Errors” section, teachers have suggestions to address the error. This tool is useful for facilitating productive struggle and showing students there can be multiple ways to solve a problem. For example, when students divide using a two-digit divisor, sometimes their subtraction produces a number that is greater than or equal to the divisor. Teachers remind students to compute the result by increasing the corresponding digit in the quotient by 1.

Essential Questions serve as a useful tool for teachers to ground discussion and promote sharing. Module 3, Lesson 1 begins with the essential question: “How can patterns help you place the decimal point in a product?” Then throughout the lesson, teachers relate strategies and tasks back to this question. The teacher “hooks” the students with an engaging topic (spider webs) and holds their attention by returning to that easily understandable example. Teacher prompts from the “Making Connections” section help them facilitate student share-out: “Invite students to tell you what they know about spider webs. Why do spiders spin webs? Have students estimate how large in diameter they think spider webs can be. Discuss places that spiders might make a web. Why are these helpful places to have a web?” As the teacher begins incorporating other place-value patterns into the conversation, students transition from passive math learning to active math learning; They share their approach more and more as they become confident with the concept.

In Module 4, Lesson 5, students approach problems in multiple ways. When dividing decimals by two-digit whole numbers, they learn how by using place value and using estimation. Later, the teacher facilitates a discussion comparing the two strategies: “How is dividing a decimal by a whole number similar to dividing a whole number by a whole number? How is it different?” By promoting multiple pathways to a solution, the materials frame problem solving as efficient and generalizable, as opposed to a set of memorized procedures.

Throughout Module 10, Lesson 4, teachers have access to numerous prompts meant to facilitate critical thinking and reflection. As students create and graph unit pairs, the teacher can ask, “What is the input?” and “What is the output?” to ensure students connect their actions to math vocabulary. Teacher sidebar supports offer responses to potential student misconceptions: “The input is used to find the output values by replacing the letter *m* in the equation with a number.” For students, a Math Talk call-out asks them to explain what each

number in the number pair represents. These different prompts help students learn to solve problems themselves instead of having teachers model and explain *to* them.

The Module 16, Lesson 4 HOT question focuses on the number of text messages Chester received more than 50 text messages. Students explore stem-and-leaf plots to answer the question: “On the days that Chester received more than 50 text messages, he responded to only 1/3 of the messages. How many text messages did Chester respond to?” Students do not just provide their answer; teachers require students to explain and discuss *how* they found their answer.

November 2020

Houghton Mifflin Go Math! Grade 5

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

Throughout the instructional materials, students have ample opportunities to effectively communicate mathematical ideas and reasoning. These opportunities require them to solve problems and communicate their implications using multiple representations. Teachers receive the necessary guidance to prompt student communication, both verbally and through writing, as appropriate for the task.

Evidence includes but is not limited to:

Each lesson begins with a "Literacy and Mathematics" section that prompts students to effectively communicate ideas through explaining, writing, discussing, and sharing. For example, when students practice modeling, responding to the following prompts: elicit the meaning of the word *model*...as used in this context" and "Brainstorm situations that could require the use of models." This practice provides students a familiar and consistent opportunity to communicate their math ideas. During practice, they are routinely asked to describe their reasoning with real-life examples, verbal and written explanations, tables and graphs, manipulatives, diagrams, and symbols. Lessons include specific teacher prompts through "Math Talk" and "Go Deeper" sidebars that often include potential student responses. Generally, teachers can also reference the page of questioning prompts found in the introduction to the Teacher Edition. At the end of each lesson, a "Write Math" prompt requires students to write and respond to the lesson's essential question. These questions usually require justification or explanation of an idea, reasoning, or strategy: "How can you find the volume of a rectangular prism?"

To ensure students use mathematical vocabulary, teachers have access to a list of terms for review, preview, and practice. Each unit begins with a "Vocabulary Builder" section introducing students to the different mathematical vocabulary found within the unit. Throughout the unit, vocabulary is defined, reviewed, and used in conversation; teacher question prompts prioritize these terms, and teacher guidance helps promote vocabulary usage in student responses. Students can freshen up on their knowledge either through the Student Edition glossary or the online multimedia *e*-glossary. These resources offer definitions, pictures, diagrams, and in some cases, world history so students can better grasp vocabulary meaning and usage.

The first three modules of the year focus on decimals. For example, in Module 1, students learn different ways to represent, compare, and order decimals. These representations include: place-value charts, decimal squares, standard form, word form, and expanded form. Depending on the problem or task, students learn how to choose the correct tool and use it appropriately. In Module 3, Lesson 1, students have to communicate a mathematical position. Teachers facilitate discussion based on the following prompt: "persuade other students, in paragraph form, why patterns are helpful when multiplying decimals." Then in Module 4, Lesson 2, students use two different models, equal groups and an area model, to explore dividing decimals by whole numbers. After practicing with each, students consider how the two models are similar and different. Then in Lesson 5, students have to apply their learning to the following Math Talk prompt: "What other manipulatives or models could you use to solve this problem?" At the conclusion of these three modules, students should have built a strong understanding of the different decimal representations.

In Module 6, Lesson 2, students use concrete manipulatives to model multiplying fractions. Their task is to model $3/4 \times 2$ using fraction bars. Each student attempts to respond to the prompt, but before checking to see if they are correct, they must explain their rationale. Their responses should explain why they placed four fraction strips with the same denominator under the two one-whole strips. Once confirming their understanding, students have to use the same method to solve a similar problem. At the end of the lesson, students write about how a model can be used to show the product of a fraction and a whole number.

In Module 12, Lesson 2, teachers introduce the terms *cubic units* and *volume.* First, teachers model the concept using centimeter cubes to model the volume of a rectangular prism. During instruction, lesson-specific teacher prompts require students to use these vocabulary terms during discussion. The teacher asks, "Why do you give the answer in *cubic centimeters*?" This question requires more than a one-word answer, forces students to justify their ideas, and ensures students use mathematical vocabulary in the process. The materials provide teachers a possible student response to measure student success and keep students on the right track: "Because I am using centimeter cubes to measure the volume of the prism, and each centimeter cube has a volume of 1 cubic centimeter."

Students learn about gross and net income in Module 17, Lesson 13. After presenting the two concepts, students analyze different scenarios trying to identify income. For one scenario, a

grocery worker earns $8.00 per hour at the deli counter, 18 hours each week. Students discuss if the worker's net income can be identified with the given information. This lesson is intentionally unstructured, allowing students to explore the concepts and solve the problem before communicating their reasoning. To increase rigor, teachers "encourage students to consider how the problem would change if Daniel had other sources of income." To conclude the lesson, students write a short response explaining the relationship between *gross income*, *payroll tax*, and *net income*.

November 2020

Houghton Mifflin Go Math! Grade 5

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.

Partially Meets 2/4

Students engage in math discourse in a variety of settings, developing and strengthening their content knowledge and skills. These opportunities are grade-level appropriate and are often integrated throughout; however, teachers receive limited guidance in structuring and facilitating these discussions.

Evidence includes but is not limited to:

Each lesson begins with a Lesson Opener that provides students an opportunity to discuss math concepts. These introductions consist of a short digital video and sometimes a shared experience, usually in the form of a modeled problem the students and teacher complete together. Following the quick activity, students discuss prior knowledge, the topic of the day, or provided teacher prompts. During lessons, the materials include continual built-in discussion points. Though the daily lesson structure remains the same, student discussion opportunities reflect where students are within the concept development of the current mathematical idea. When students are at the concrete level of a concept, questions help them think through how to transition from concrete representations to more abstract representations. "Math Talk" call-outs provide students daily open-ended discussion opportunities. Often they consider the questions on their own before discussing with a peer or in a group. As students are introduced to new strategies, these Math Talks center around why a particular strategy would be useful or preferred over others.

The Teacher Edition includes its own set of Math Talks, "Go Deeper" prompts, and sidebars that offer some discussion interventions. There are scripted sentence starters, sentence stems,

questions, and possible student answers to promote mathematical discussion. Though teachers have access to these provided prompts, they are lacking guidance in structuring and facilitating intentional discussion. There are no suggested norms, routines, or grouping strategies for the teacher to move beyond informal and short interaction. The introduction of the Teacher Edition includes a page of general questions to help promote critical thinking, but they are to be used more on a one-to-one teacher-student basis and do not always help peer or group discussion.

Module 1 reviews decimal concepts and introduces thousandths. Students discuss how micro-models can represent relationships between decimal places: "What is the relationship between one hundredth and one thousandth?" Students compare, round, and estimate decimal sums and differences. This is a quick review of concepts introduced in grade 4; Grade 5 discussions integrate real-world applications like, "Have you ever used estimation before making a purchase? If an item costs $4.26, why would you use the benchmark of 5 instead of 4?" These prompts are good examples of open-ended questions that promote discourse.

In Module 2, Lesson 3, students begin by discussing what they know about whole numbers and models. The Lesson Opener starts with a short video about using models for division. when practicing division with base-ten blocks, teachers ask questions like, "Describe how you can use base-ten blocks to find the quotient 176 ÷ 16" and "How is the quick picture you drew to find the quotient of 180 ÷ 15 similar to the quick pictures you have drawn to find products?" Then in the Math Talk call-out, students explain how their division models show the *quotient*. Teachers use this Math Talk to help students recognize how an area model represents the *dividend*, *divisor*, and *quotient* of a division problem. These discussions occur in a whole group setting, and no guidance is given for conducting them in a variety of settings.

Module 3, Lesson 2, covers multiplying whole numbers with decimals. The lesson begins with a discussion about units of measurement:

"What are some units of weight?" "What is something that weighs about one gram? about one kilogram?" In this case, discussion questions are looking for a specific answer instead of promoting discourse. But during Math Talk, the teacher asks a more discourse-ready question: "Explain how renaming decimals is like renaming whole numbers." However, there are no additional structure or facilitation suggestions for teachers to further the depth of conversation.

In Module 7, Lesson 1, students attempt to answer the question, "How can you tell whether one number is a factor of another number?" Questions like to guide discussion include: "When can you use division to solve a problem?" "What do the numbers in a division problem tell us?" "How are the numbers in a division problem related to multiplication?" After some practice, the teacher leads a discussion about using models to represent division problems. The overall point of the discussion is that for greater numbers, using tiles or drawing a model can be time-

consuming, and using division is a more efficient method. Finally, the students discuss divisibility rules and give examples to explain their thinking. Once again, these discussions occur in a whole group setting with no guidance offered for alternative groupings.

November 2020	Houghton Mifflin Go Math! Grade 5

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

Students are given opportunities to construct and present arguments that justify mathematical ideas. Consistently, they are required to use multiple representations and precise mathematical language. Teachers have the appropriate resources and guidance to support these opportunities.

Evidence includes but is not limited to:

The Teacher Edition includes an introductory section titled “Texas Mathematical Process Standards” that provides teachers discussion prompts and student discussion rationale. In this section, the instructional materials communicate the importance of students forming positions and explaining their work; “the most productive discussions around mathematical ideas seem to happen in classrooms where students question each other about their work. Math Talk and Go Deeper features in Texas GO Math! provide opportunities for students to communicate their mathematical ideas. When students explain and justify their conjectures and ideas, they apply Process (G)” of the mathematical process standards. “At first, students may need prompting to explain their thinking, but they will eventually offer explanations and react to explanations from other students.” To achieve this goal, teachers have access to general/universal teacher prompts, including: “Will that method always work? How do you know?” “Why do you agree/disagree with what he said?” “What do you want to ask her about

that method?" "How can you use math vocabulary in your explanation?" While these prompts are excellent in helping students construct arguments, they are not unique to specific lessons. Instead, teachers have access to Math Talk, Go Deeper, sidebar prompts to help them facilitate strong student arguments.

Additionally, each lesson has an "Enrich" section that often includes opportunities for students to extend their mathematical arguments and explain their reasoning. For example, when students classify triangles, they play a "True or False" triangle game during the Enrich section of the lesson. In pairs, each partner writes down true or false statements about triangles that begin with *All*, *Some*, and *No*. To help make sure students are on the right track, the teacher models two examples: "All right triangles are *scalene*" and "Some *scalene* triangles are *obtuse.*" By using proper mathematical language in the models, students will be more likely to use correct language in their work. One partner reads aloud the statement, while the other proves or disproves the statement using drawings and explanations. They work through each statement until all have been analyzed.

Sometimes lessons offer "Sense or Nonsense?" activities for students to practice their critical thinking skills. In this type of activity, students criticize models, sentences, or algorithms, determining if the specific example makes *sense* or is *nonsense.* In Module 1, Lesson 1, students must determine whether Julie's equation makes sense or is nonsense; Julie wrote (15 − 6) − 3 = 15 − (6 − 3). In their justification, they must include whether the Associative Property works for subtraction.

Sometimes Math Talk prompts require similar levels of critical thinking. For example, in Module 4, Lesson 3, students analyze two different approaches to estimating quotients, specifically, when decimals are divided by whole numbers. In this example, students must, "Explain which estimate you think will be a better estimate of the cost of a ticket." The goal of this question is to get students to understand: using a greater estimate might be better in order to have enough money to buy something. Teachers are aware of this goal and can facilitate discussion accordingly.

Later in Module 13, students practice converting units of measurement. A Go Deeper prompt tells teachers to "Ask students to suggest reasons why we use multiplication to change a larger unit to a smaller unit and division to change a smaller unit to a larger unit." An additional prompt offers teachers one way to help students justify their answer: in this case, generalizations about unit increases and decreases will best explain why we use multiplication and division accordingly. These types of prompts sufficiently help students construct arguments. However, explicit debate routines and structures could make positions, justifications, and discourse even stronger.

In Module 16, Lesson 6, students evaluate different scatter plots that present plant height data. On one axis, the plot measures the number of weeks since a seed was planted; on the other

axis, the plot measures the height of the plant. Students are asked to make sense of the data. The challenge: this specific plot shows a negative correlation. In their answers, they have to explain why this representation of the data is incorrect. Teachers receive guidelines for student justifications: the scatter plot currently communicates that a plant decreases in height as the number of weeks increases; that is not how plants actually grow. Next, they compare this scatter plot to a correct scatter plot with the question: “How do you know both the x- and y-values are increasing on this scatter plot?” This new but related question gives students an additional justification opportunity that should further their understanding of the concept.

November 2020

Houghton Mifflin Go Math! Grade 5

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 developmentally appropriate diagnostic tools for teachers to monitor student progress. These assessments measure all content as outlined in the TEKS, and appropriate guidance ensures teachers can successfully administer these tools. However, there is no such guidance for students to track their own progress and growth. Additionally, tools to measure Mathematical Process Standards are not included.

Evidence includes but is not limited to:

The “Assessment Guide” includes most diagnostic tools, assessment rationale, and administration guidance within the instructional materials. This document also includes “Individual Record Forms” (IRF) meant to help teachers monitor student performance and guide teachers’ instructional choices. The record forms are aligned to the Texas Essential Knowledge and Skills for this grade level.

The “Prerequisite Skills Inventory” is an assessment administered at the beginning of the school year or as needed when a new student arrives. The data obtained from this assessment provides teachers “information about the review or intervention that students may need in order to be successful in learning the mathematics related to the TEKS for the grade level.” All questions are open-ended, with several asking students about their strategies of thinking instead of a specific numerical answer. For example, one of the questions asks, “What benchmark fraction could be used to determine whether this answer is reasonable?”

There are three formal multiple-choice assessments students take throughout the year. The Beginning-of-Year Test determines which grade-level skills students may already understand. The Middle-of-Year Test assesses the same TEKS as the Beginning-of-Year Test, allowing teachers to track student progress. Like the Beginning-of-Year Test, all questions are multiple-choice, and the format mimics the Texas state assessment. The End-of-Year Test also helps teachers document student growth; this should give them a fair understanding of how well students will perform on their state assessment.

Individual Units and Modules also have their own assessments and tests. Located in the Student Edition, "Module and Unit Assessments" indicate "whether additional instruction or practice is necessary for students to master the concepts and skills taught in the module or unit." These tests include multiple-choice, griddable, and constructed-response items. Then, located in the Assessment Guide, the "Module and Unit Tests" evaluate student mastery of the module or unit. They mirror the structure of the Texas state assessment, including both multiple-choice and griddable items.

Integrated lesson-specific diagnostic tools also help teachers monitor student progress: primarily "Show what You Know" assessments, "Are You Ready?" checks, "Lesson Quick Checks," and the "Daily Assessment Task." The Show What You Know assessments occur early in the unit or module; they measure how well students grasp content from previous grade levels and in previous lessons. The Are You Ready? checks occur at the beginning of each lesson, include two quick multiple-choice questions, and help teachers determine if students have the prerequisite skills necessary to access the content. For example, students complete an Are You Ready? check before making dot plots. This asks students to complete two tasks: first, they need to solve a problem involving data given in a table, and second, they order a list of decimals from least to greatest. Next, Lesson Quick Checks occur partway through a lesson and help teachers make data-driven instructional decisions. Finally, students complete the Daily Assessment Task at the end of most lessons. This assessment consists of three multiple-choice problems formatted to look like the Texas state assessment. Depending on how well students perform, teachers are directed toward interventions or next steps to take.

Outside of the Assessment guide and lesson-specific diagnostic tools, students also have access to the digital Personal Math Trainer (PMT). This online tool is used in conjunction with the Assessment Guide; it monitors student assessments, quizzes, and homework, providing individual targeted support to students. Additional formative assessment opportunities are also available for intervention. Another digital component with assessment capabilities is the *Soar to Success Math Intervention* software. The program adaptive and responds to student proficiency levels throughout each lesson. Program-specific assessments are used to monitor progress and provide customized interventions.

While diagnostic tools measure all content TEKS within the grade level and some from prior grade levels, process skills, as defined by the Mathematical Process Standards, are not directly

measured. They are indirectly assessed through the many different formative assessments, but teachers are not equipped to track student progress over time. Additionally, there are no student-facing progress trackers so they can measure their own growth throughout the year.

November 2020

Houghton Mifflin Go Math! Grade 5

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 some guidance for teachers and administrators to analyze and respond to data from diagnostic tools. Teachers have access to a variety of resources meant to help them plan differentiation. While administrator guidance helps them support teachers as they analyze this data, it does help them support teachers responding to data.

Evidence includes but is not limited to:

The "Assessment Guide" includes Individual Record Forms (IRF) for all tests. This resource correlates each test item to its related TEKS, and it recommends intervention resources to address student areas for growth. For each test item, teachers have access to common errors, suggestions *why* students may have difficulty with the question, and next steps for intervention through "Soar to Success Math" and Response to Intervention (RTI) Tier 1 lessons. The web-based Soar to Success intervention program includes additional diagnostic testing, prescriptive data reports, and individualized adaptive instruction. It correlates with TEKS and assessments from the Assessment Guide and the Student Edition. Alternatively, Tier 1 RTI lessons reteach concepts, usually in a whole-group setting. While administrators can support teacher planning using data from these IRFs, the data does not include class, grade level, and school information. Additional administrator-specific guidance is not included. The "Online Assessment System" mentioned in the Assessment Guide could provide relevant data reports; however, reviewers do not have access to this resource.

Additionally, results from the "Prerequisite Skills Inventory" provides information about incoming skills students may need extra support to master. Throughout the school year, Beginning-, Middle-, and End-of-Year Tests help teachers measure and document student growth. The online component could be used to track year-long data, but teachers who only have access to the paper-and-pencil resources will not have the same data-tracking capabilities.

At the beginning of each unit, "Show What You Know" assessments measure student comprehension of content from previous grade levels and content taught earlier in the year. Teachers can use this information as needed to differentiate for the upcoming lessons. Teachers use this data to identify students in need of small-group, Tier 2 support and one-on-one, Tier 3 support. Based on student results, teachers receive specific intervention recommendations integrating the RTI ancillary, Soar to Success Math, the online *Enrich Book*, and the "Grab-and-Go Differentiated Centers Kit."

The differentiated math centers found in the Grab-and-Go Differentiated Centers Kit are often integrated into module lessons. However, teachers can also implement them one-on-one based on student needs. Activities include activity cards, games, and short grade-level texts based on a mathematical concept. Teachers can utilize grab and go activities for both reinforcement or extension, but there is limited guidance directing *when* and *how* to leverage them. There is no administrator-specific guidance for this resource.

Within each lesson, the "RTI Quick Checks" provide teachers with information useful when deciding how to move instruction forward. If students miss the questions from the RTI Quick Check, the teacher can differentiate instruction for those students with a specific RTI Tier 1 Lesson. If students need further support, additional Tier 2 and 3 supports are provided. Tier 1 activities are used to reteach a concept, Tier 2 activities address prerequisite skills gaps, and Tier 3 activities include scaffolded examples. All of the RTI activities can be done whole group, small group, or individually with a student. The RTI resource includes instructional strategies that are typically hands-on and utilize manipulatives or pictures to represent mathematical ideas. All of this information is organized in a table, making it easy to interpret and implement for individualized intervention.

Lessons also include a "Daily Assessment Task," usually a three to four multiple-choice problem set. Based on student results, these assessments also include teacher directions for moving instruction forward. For example, in Module 1, Lesson 1, a sidebar support asks teachers: "Can students use properties of operations?" There is an If/Then flowchart directing teachers on how to respond and with what resource. If a student cannot use properties of operations, teachers are directed to several Soar to Success Math Warm-Ups for intervention. If the student can complete the task, teachers can offer extensions like the Enrich 1 activity or the Homework and Practice Lesson 1.1. After the Daily Assessment Task, students also complete a "Texas Test Prep Coach" question. These questions offer students an opportunity to complete a multiple-choice question that mirrors the Texas state assessment. In response, teachers have access to a brief

error analysis describing why students reached the wrong conclusion. For example, in this lesson, if students selected A or D, they may not understand the Distributive Property. If students selected answer choice C, they interchanged the addition and multiplication symbols when applying the Distributive Property.

November 2020

Houghton Mifflin Go Math! Grade 5

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 meet the requirements of this indicator by including frequent, integrated formative assessment opportunities. The 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.

Evidence includes but is not limited to:

The materials outline the assessment options in the Teacher Edition and the separate "Assessment Guide." Included is a suggested timeline of when to administer each assessment. The Assessment Guide "contains several types of assessment for use throughout the school year," including diagnostic, formative, and summative assessments. The assessment tools are designed so students demonstrate their understanding in a variety of ways; tasks types include: short answer, vocabulary questions, fill-in-the-blank, simple computation questions, constructed response, multiple-choice questions, and griddable items. Diagnostic assessments include the "Prerequisite Skills Inventory," "Beginning-of-Year Test," and "Show What You Know."

Formative assessments are offered at the beginning of every lesson and at specific points within the lesson. These tools help teachers informally assess student understanding of lesson materials. They are administered in response to student progress and the difficulty of the content skill. These assessments include: "Module Assessments," "Module Tests," "Are You Ready?," and the "Middle-of-Year Test." Teachers also have access to in-lesson assessments that could also serve as formative assessments when necessary: "Response to Intervention (RTI) Quick Checks," "Daily Assessment Tasks," "TEXAS Test Prep," and "Homework and Practice."

Finally, summative assessments occur at the end of each unit and cover all modules within the unit. They include the “Unit Assessment,” “Unit Test,” and the “End-of-Year Test.” These tests are integrated with the overall curriculum and provide teachers accurate measurement data. An “Online Assessment System” can also be used for summative assessment. This supplemental tool provides assessments to each child based on individual TEKS. Results are automatically scored by the Online Assessment System, and this data can easily be used to track student progress over time.

Each unit begins with a Show What You Know assessment consisting of numerical-response items. Based on this data, teachers decide whether students need intervention for the unit’s prerequisite skills. For example, in Unit 2, a section of the Show What You Know requires students to add and subtract fractions with common denominators in their simplest form. If a student misses more than one of these four problems, teachers should intervene with a specific RTI Tier 2 lesson or “Soar to Success” lesson. These assessments are intuitively connected to the beginning of each unit and provide teachers an appropriate opportunity to monitor progress.

Each lesson begins with a short Are You Ready? assessment to determine if students have the prerequisite skills for the day’s particular content. Similar to Show What You Know assessments, teachers can use this information to intentionally address gaps before moving forward with new instruction. As students progress through a lesson, teachers monitor progress using specific RTI Quick Check problems. These problems are open-ended and may or may not require numerical responses. For example, the RTI Quick Check-In Lesson 4.2 requires students to use a model to solve a problem involving division with decimals. After students complete the RTI Quick Check, teachers are directed to a specific RTI Tier 1 lesson if students struggle. Lessons end with a Daily Assessment Task that includes several multiple-choice questions and a specific teacher question. For example, the teacher question in Lesson 12.1 asks: “Can students use unit cubes to build solid figures?” If the answer is yes, teachers are pointed towards a specific enrichment activity. If the answer is no, the materials recommend a specific Soar to Success lesson for intervention.

November 2020

Houghton Mifflin Go Math! Grade 5

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.

Meets 2/2

The materials include guidance, scaffolds, supports, and extensions that maximize student learning potential. There are recommended targeted instruction and activities for students who struggle and for students who have mastered the content. All learners are provided with additional enrichment activities.

Evidence includes but is not limited to:

The Teacher Edition provides differentiated activities at the beginning of each unit to target the prerequisite skills necessary for all students to access the content. Teachers perform a “Quick Check” on individual students to assess mastery of each lesson, and the curriculum provides a specific Response to Intervention (RTI) lesson to help struggling students master that specific content. For example, in Lesson 3.1, the teacher does a Quick Check on independent practice problems 3 and 4. If the student misses those problems, the teacher provides additional instruction through a lesson from the RTI Tier 1 resource. These resources are designed for small group or individual instruction, depending on the level of intervention needed. The Tier 1 lessons are for reteaching grade-level lessons; Tier 2 resources provide targeted practice in prerequisite skills; Tier 3 resources provide scaffolded examples of real-world problems that can be used in conjunction with Tier 2 lessons.

Each lesson within the module provides teachers with formative assessment points in order to identify students who need differentiated support. These assessments include the “Are You Ready?” pre-assessment, the Quick Check, and the “Daily Assessment” task." The Are You Ready? checks occur at the beginning of a lesson and measure students’ understanding of the prerequisite skills for that lesson. If students struggle, intervention suggestions are given in the Teacher Edition. After the “Module assessment” at the end of each lesson, interventions for individual use or whole class instruction are provided.

Throughout each 5E-IA lesson, there are multiple points where recommendations and scaffolds are offered. For instance, when giving models, teachers have access to a teacher script listing additional ways to think about a concept. Questions and possible student answers are also included throughout lessons. Sidebar supports in the Teacher Edition identify common student errors and suggestions for how to eliminate errors. For example, in Lesson 2.6, students begin to divide using a two-digit divisor. A sidebar support says that when dividing, their subtraction may produce a number that is greater than or equal to the divisor. A tip suggests having students compute the result by increasing the corresponding digit in the quotient by 1. There are also “Go Deeper” sidebars that help the teacher personalize and extend each lesson. In Module 5, Lesson 4, students find a common denominator for two fractions and then the least common denominator by listing out multiples of each denominator. The Go Deeper activity asks students to compare the least common multiple of two denominators with their product. Students are led to generalize that the least common multiple can never be greater than the product.

The Teacher Edition also provides targeted extensions at the beginning of each new unit. For instance, students can find additional independent activities from the “Enrich Book,” the “Grab-and-Go Differentiated Centers Kit,” or “HMH Mega Math.” The Enrich Book provides an additional extension activity for each lesson. The Grab-and-Go Differentiated Centers Kit includes activities that extend mathematical concepts and skills. Grab-and-Go Math Center Activities and practice games are also available throughout the lessons. Some practice games for Module 9 are *Around the Block* and *Triple Play*. In *Around the Block*, players use the spinner to move the number of spaces indicated; the number landed on represents a perimeter. Players have a chance to draw as many rectangles as possible with the given perimeter. In *Triple Play*, players use a number cube to find the length, width, and height of a rectangular prism. Players use these dimensions to determine volume.

Enrichment activities are provided for every lesson under the *Explain* section in the Teacher Edition. For example, in Lesson 6.1, students use picture models to name fractional parts of sets. Each student receives three multiplication problems written on separate index cards. Then, students have to draw a model to represent each multiplication problem in a separate deck of index cards. All cards are combined, and students match problems and models stating the answer in a complete sentence: “Three-fourths times 20 equals 15.”

November 2020

Houghton Mifflin Go Math! Grade 5

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.

Meets 2/2

The materials provide a variety of developmentally appropriate instructional methods to engage students and appeal to needs. These methods are flexible, interesting, and utilize different structures, including guided, independent, and collaborative.

Evidence includes but is not limited to:

Each instructional lesson is grounded in a consistent instructional routine. They begin with an "Engage" video and discussion before progressing to an "Unlock the Problem" section. Here, teachers provide step-by-step guidance through a problem or concept. This is followed by a "Share and Show," which gives students a chance to practice problems and explain their thinking. The next practice opportunity is through "Problem Solving." This opportunity offers skill-based problems, word problems, real-world connections, and Higher-Order Thinking (HOT) problems. This is followed by a "Daily Assessment Task" and "TEXAS Test Prep," giving students practice problems with multiple choice. Finally, each lesson concludes with "Homework and Practice," which is a combination of all the types of practice throughout the lesson. All lessons

include additional practice opportunities through an “Enrich” section, “Enrich Activity Guide,” and “Grab-and-Go Activity Center Cards.”

In Module 1, students begin by defining the properties of addition and multiplication and applying the properties to computations. Students then explore decimals to the thousandths place using decimal grid models and place-value charts. They continue comparing, ordering, and rounding decimals using place-value charts and number lines. Finally, towards the end of the module, students apply their knowledge to a situational money problem using the algorithm and grid paper. Activities and games in the Enrich section of the “Differentiated Centers Kit” provide students opportunities to apply their skills in different ways. For example, they play a card game called “War.” In this game, partners compare different decimal cards, determining which of the decimals is greater. When you get the comparison correct, you keep hold of that individual card. The game continues until one partner has all the cards. The activity listed explicitly states that the activity is for partners and gives clear directions for what the students will do.

In Module 3, Lesson 2, students use quick pictures or base-ten blocks to help them solve a multiplication word problem. The materials support changing grouping structures for students based on their needs. For example, in Lesson 8, the students work individually to show mastery of place value and zeros in products. If students struggle to show mastery, they start working through the RTI process individually or in a small group with the teacher’s support. The Texas GO Math! RTI Tier 1-2-3 Teacher Edition instructs the teacher on how to assist students who need additional one-on-one support; This includes reinforcing concepts, prerequisite skills, and scaffolding.

In Module 6, Lesson 2, students use fraction strips to model multiplying fractions with whole numbers. Students discuss the difference between fraction strips used for one whole compared to using fraction strips with like denominators. Students draw a picture showing their fraction bar models and write a number sentence. Many lessons contain an investigation component in which students work alone or with a partner using manipulatives to solve a problem. For instance, in Lesson 4, students use fraction strips to act out dividing fractions by whole numbers. Students create number lines partitioned with the same-sized denominator intervals to represent the fraction strip model.

In Module 12, Lesson 3, Unlock the Problem tasks allow students to investigate real-world applications of the content. Students investigate how to find the volume of rectangular prisms: “Sid built the rectangular prism shown at the right, using 1-inch cubes. The prism has a base that is a rectangle and has a height of 4 cubes. What is the volume of the rectangular prism that Sid built?” The same lesson also includes a HOT Problem task that asks students to apply new concepts in novel ways. This HOT Problem requires students to explain how to find the volume of a cube if they know that the area of the base is 25 sq cm. Additional problem-solving applications used within the materials include “Pose a Problem,” “What’s the Error?,” and “Sense or Nonsense?”

In Module 14, Lesson 2, students perform an error analysis on a mock student problem. In this error analysis, students criticize miniature car speed data organized in a data table; the mock student problem also has a corresponding coordinate grid. Students determine where the error was made, discuss the error, and graph the data correctly on a separate coordinate grid.

November 2020	Houghton Mifflin Go Math! Grade 5

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).

Meets 2/2

The materials include supports for English Learners (EL) to meet grade-level learning expectations. Linguistic accommodations are communicated, sequenced, and scaffolded, and they are commensurate with various levels of English language proficiency. They often include students' first language as a means to linguistic, affective, cognitive, and academic development.

Evidence includes but is not limited to:

The "ELL Activity Guide" describes strategies for effective language teaching specifically related to math instruction. Each of the four stages of language development is described in detail, and the document offers correlated supports and strategies for each. For example: "Help Beginning students by giving simple, clear directions and using gestures and facial expressions to convey meaning. Be sure to model correct English sentence structure and pronunciation and provide

many hands-on experiences." Similar suggestions are made for students at the Intermediate, Advanced, and Advanced High levels. General recommendations include giving opportunities to use academic vocabulary in various group settings, allowing English Learners additional processing time, and encouraging them to justify and explain work. The correlated activities can be completed in pairs or small groups, usually within 15 minutes or less. Activities cover a wide range of student actions, including: draw, describe, identify relationships or patterns, define, explore context, rephrase, restate, model concepts or language, and create.

The Vocabulary Charts found in this resource are broken down by relevant grade-level concepts. Each chart includes the English vocabulary word, a Spanish cognate if available, a definition, and "Teacher's Tips." These tips sometimes utilize students' first language as a means to linguistic development, but consistently they help students access mathematical concepts in English. For example, one tip helps students differentiate between symbol usage: "decimals used instead of commas to separate digits to indicate place value." Another tip states: "Terms like difference/diferencia and dividend/dividendo are cognates. If students are familiar with the Spanish term, help them relate it to the English term by pointing out similarities and differences between the Spanish word and the English word." While the Vocabulary Charts are helpful, students' use of their first language would only apply when a term has a Spanish cognate. Still, general suggestions can be applied more broadly.

"Strategies for Effective Language Teaching" also provides suggestions that utilize students' first language. These strategies are "Build Background" and "Provide for Primary Language Support." For Build Background, the materials state: "Video clips, pictures, magazines, trade books, and printed materials in students' primary language can all be used to provide the background knowledge needed for success." For Provide for Primary Language Support, the materials state: "English Learners who do not receive formal content-area instruction in their primary language need support. Teachers can use peer and cross-age tutors as well as parents and community volunteers. If a paraprofessional is available to provide primary language support, have them preview the upcoming lesson in the students' primary language. After the lesson is taught by the teacher in English, have the paraprofessional review the lesson to identify any misunderstandings that could be related to language barriers." These suggestions are more broadly applicable beyond just students that speak Spanish.

In Module 2, Lesson 4, teachers receive level-specific guidance when students locate fractions on a number line. Beginning students work in pairs to draw a long number line and label only the first and last numbers. Next, each student writes five fractions on index cards and then turns them all upside down. Partners take turns turning over a card and placing it at the correct position on the number line. During the activity, teachers "encourage discussion as students order numbers: they can state that the number is less than or greater than another number, to the left or right of another number, and so on." Intermediate students participate in an "Identify Relationship" activity; they work in small groups sorting vocabulary words into two categories, in this case, multiplication words and division words. Here, teachers "encourage students to discuss the meaning of each word to reinforce their decision. If they don't know the

meaning of a word, provide them with a definition and examples. Have students try to explain to each other before helping them." Advanced students use the "Rephrase" strategy in an activity called "What's the Problem?" Students listen as the teacher reads a story problem, then work in pairs to make a list of the important information. Afterward, partners rephrase and discuss while also pointing out any unnecessary information. Finally, partners discuss how to solve each part of the problem and write their answers in complete sentences. Advanced High students also participate in a Rephase strategy, but instead read explanations for a math problem. Individually they rewrite the explanation in their own words. Teacher guidance for this activity states: "Tell them to imagine that they are teaching a friend who does not know the math process they are describing. Have them include pictures to illustrate the steps and demonstrate their understanding."

In Module 9, students apply formulas to find area, perimeter, and volume. One of the ELL Language Support activities focuses on the "Model Concepts" strategy. In this whole class activity, students use cubes to understand the words *base*, *area*, and *volume*. They physically build a rectangular prism, trace the base, and discuss its connection to the word *area*. Another support activity, "Activity 20: Semantic Map," helps Beginners better access these vocabulary words. In partners, they fill out a semantic map using a word bank of module vocabulary. For Intermediate students, they complete "Activity 40: Math Definitions." In pairs, they write vocabulary words on index cards, define the words, and include an illustration as needed. These cards can be used as flashcards when needed.

In Module 14, Lesson 2, students use coordinate grids to display experiment data. In this lesson, a verbal linguistic scaffold is integrated directly into instruction. The teacher models sentences that use *label*, *title*, *scale*, and *plot* in context. While doing so, they are showing students how to interpret data from an outdoor temperature table. After each sentence, students repeat together until they themselves say the sentences correctly. After this interactive model, students work together to make a graph of the data. If anyone needs additional support, teachers work with them one-on-one, reading the directions aloud.

November 2020

Houghton Mifflin Go Math! Grade 5

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

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

Partially Meets 1/2

The materials include a year-long plan with practice and review opportunities that support instruction. However, this plan does not show how instruction vertically aligns or year to year. Some review and practice of foundational skills is provided throughout the span of the curriculum.

Evidence includes but is not limited to:

The "TEKS for Mathematics Correlation" table found at the beginning of the Teacher Edition lists out the grade-level TEKS, the learning opportunities and page numbers, and when TEKS appears on an assessment. This table does allow for teachers to see if a particular TEKS is found in multiple modules, though the teacher would have to look through the page numbers to see the exact module and lesson. "Unit and Modules at a Glance" provide an additional plan for teachers. This breaks down each unit, shows the sequence of the modules and lessons within, and includes the module and lesson titles, the big ideas, and the TEKS.

The year-long plan spans 129 days and includes module, unit, and diagnostic assessments. There are six units containing 17 modules and 97 lessons within those modules. Each unit

overview clearly outlines each module and its module and unit tests. In most cases, the last lesson of each unit includes these two assessments. Unit overviews do not mention how or when to administer additional diagnostic assessments, but there are extra days in the calendar that can be used to complete those assessments. There are no assessment reviews to help teachers contextualize each exam.

The primary student and teacher resources, the Teacher and Student Editions, provide practice problems applicable to the content within the associated lesson, but they do rarely include practice problems that are aligned to previously taught content. Materials do not contain consistent reviews in each unit or module. However, ancillary materials, such as the "Grab-and-Go" Kit, "Mega Math" games, "Soar to Success Math" Program, and "Personal Math Trainer" online practice component could serve as review for previously taught content.

Instead, content is designed to build upon students' current level of understanding. For example, Unit 1 begins with a "Show What You Know" diagnostic assessment that measures students' prior knowledge of three prerequisite skills: the meaning of division, place value of decimals, and estimation quotients using compatible numbers. Students then have an opportunity to practice some of these prerequisite skills during a "Get Ready" Game. Each individual lesson also helps students access prior knowledge with two "Are You Ready?" assessment questions specific to the prerequisite skills. For example, before using models to divide decimals by whole numbers in Module 4, Lesson 2, the Are You Ready? questions ask students to (1) match a whole number division model to an equation and (2) solve a whole number division problem with a three-digit dividend and one-digit divisor.

Later in Module 9, students discuss a story about the distance walking around the block. In this discussion, they recall their knowledge of using addition to determine perimeter. The lessons review the formula for area using multiplication, as well as both formulas for finding perimeter (addition and multiplication). Students then complete practice problems asking them to apply the formulas to squares, rectangles, and complex figures. All practice up to this point builds upon knowledge and skills from previous modules. In the next few lessons, students are introduced to the formula for volume of a rectangular prism. The formula is given initially as Volume = Base x height (V=Bh), and the materials make the connection that the base of the prism is a rectangle. To find the Base, students must find its area using the formula students are already familiar with. With this connection, students can also think of the formula for volume as Volume = length x width x height. This formula is connected to finding the volume of a cube as well, with the clarification that all of the dimensions will be the same for the cube. Finally, the materials provide students practice applying the formula to finding the volume of rectangular prisms and cubes using multiplication and previously learned strategies.

While the content clearly builds upon students' prior knowledge, the vertical alignment of TEKS within and between lessons and grade levels is not explicitly stated. The materials lack guidance for the teacher in understanding the vertical alignment between the preceding, current, and subsequent grade levels. For example, the Show What You Know assessment for Unit 2

assesses prior knowledge according to three skills: writing fractions to name the shaded part of a whole, adding and subtracting fractions with a common denominator, and writing equivalent fractions. While the materials list these skills and reference RTI resources for intervention, the associated TEKS or grade level are not included. Without this information, teachers will not understand the depth and complexity of the relevant standards.

November 2020	Houghton Mifflin Go Math! Grade 5

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

While materials are accompanied by an extensive TEKS-aligned scope and sequence, there is no explanation of how the knowledge and skills build and connect across grade levels. Some supports are included to help teachers implement the materials as intended, but there are no supports specifically for administrators to help in this process. There is a year's worth of math instruction, but a pacing guide is not included at the unit and lesson levels.

Evidence includes but is not limited to:

The sequence of the lessons follows that of the TEKS. There is no stand-alone scope and sequence or year-long plan to guide the teacher. Instead, the curriculum is designed to follow the sequence grade-level TEKS. This sequence can be located in the table of contents for both the Teacher and Student Editions; The Table of Contents lists each unit, module, individual lesson, and corresponding TEKS. There is also a "Texas Essential Knowledge and Skills for Mathematics Correlations" resource in the introductory portion of the Teacher Edition. This

table lists out the grade-level TEKS, the learning opportunities and page numbers, and when they appear in an assessment. This table does allow for teachers to see if a particular TEKS is found in multiple modules. The teacher would have to look through the provided page numbers to see the exact module and lesson where the TEKS is revised. Though some grade-level alignment can be found when searching through the materials, there is no explicit description of how the essential knowledge and skills build and connect across grade levels.

While included lessons and activities cover all grade-level TEKS, there is no included pacing guidance at the unit and lesson level aside from the table of contents and unit outlines. Instruction spans 141 days, based on one day per lesson within each module. However, in practice, some lessons could take more than one day. The materials do not make mention of which lessons may span multiple days.

Materials are available in both print form and digital format to support ease of use for the teacher. This also limits the need for additional technology equipment if a classroom is unable. The Teacher's Edition includes a page that describes the digital resources: the "Interactive Student Edition," "Math on the Spot" videos, and the "Interactive Teacher Digital Management Center." Each resource has a corresponding picture and brief overview. For example, the "Interactive Student Edition" offers a tablet-based environment where "students rapidly move beyond procedural knowledge to in-depth understanding and application of TEKS content and processes."

While materials do not include a program guide for teachers, each unit contains a comprehensive list of modules, lessons, print and digital resources, and correlating RTI resources. Additionally, units also have an essential question for the unit to help teachers connect ideas within the unit and how they are grouped. For example, the Essential Question for Unit 1 is, "How can you add, subtract, multiply, and divide with decimals?" A narrative description of the unit and how the ideas and concepts within the unit connect and build to other units is not included. For administrators specifically, there are no resources and guiding documents to help them support teachers in implementing the materials as intended. Teachers, students, and administrators all have the same implementation guides and tutorials intended to support data access on the online platform. There is no administrator guidance for evaluating and supporting the classroom environment or for implementing the lessons.

November 2020

Houghton Mifflin Go Math! Grade 5

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

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

Partially Meets 1/2

The materials provide some implementation guidance to meet programmatic design and scheduling considerations. However, there is no evidence of specific guidance for strategic implementation, ensuring content is taught following a developmental progression. Additionally, there are no supports allowing easy adjustment and incorporation into varying school designs.

Evidence includes but is not limited to:

The design of the units, modules, and lessons allow for interconnections between the development of conceptual understanding and procedural fluency. However, there are no specific suggestions for implementation that ensure this sequence is taught consistently in other formats. Instruction does follow a logical sequence aligned to the grade level Math Texas Essential Knowledge and Skills. All lessons follow the order of grade-level TEKS and not a stand-

alone scope and sequence or year-long plan. For example, modules and lessons introduce concepts of multiplication and division before specific strategies and fact fluency. Any alternative implementation runs the risk of disrupting the sequence of content.

As well, there are no suggestions allowing LEAS the ability to incorporate the curriculum into a predetermined schedule and design. Suggestions for how to implement the materials with school years of varying length, varying lengths of time for mathematics instruction, options for full class and small group intervention times, co-teaching, multi-grade classrooms, and online schools are not included. While instruction is such that it can be incorporated into district, campus, and teacher programmatic design, the onus is on the LEA in adjusting materials appropriately.

November 2020

Houghton Mifflin Go Math! Grade 5

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

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

Does Not Meet 0/2

There is little guidance on fostering connections between home and school; while some online activities could be used at home, there are no specific activities for use at home. Additionally, materials do not support the development of strong relationships between teachers and families.

Evidence includes but is not limited to:

In the Student Edition, the only resource available for home distribution is an introductory letter that provides a general overview of the program. A parent communication form letter is included within the fact fluency Support Masters as well. In this form letter, students can denote where they need additional practice; Home support can record the date and who helped the student with those facts. This resource is auxiliary and not integrated into the core curriculum.

The "Personal Math Trainer" online component includes a four-page tip sheet designed to help parents implement assignments at home. However, tips are limited to practical information about the online platform and do not communicate how adults can support students with the instructional material itself.

There are no additional activity recommendations for parents to connect to the classroom, nor are there suggestions and examples of exemplary family engagement practices. The materials do not include resources to guide teachers as they plan effective communication systems.

Students do have online access to certain materials; Through their student-accounts, they can access “Things to Do,” “My Library,” and “My Scores.” If the teacher assigns Things to Do online, students can view their scores in the My Scores section. In the My Library section, students have access to the “Student Edition ebook,” “Interactive Student Edition,” “Math on the Spot” videos, “Math Concept Readers,” “Math iTools,” and “Mega Math” games. While there are numerous online materials, there are no resources specifically built so adults can work with children at home. Students can access the online “Personal Math Trainer” assignments at home, but it is not meant to be a home program, nor are there family resources. There are no school-to-home supports, tips for parents to practice new skills, or suggested real-world home activities.

November 2020

Houghton Mifflin Go Math! Grade 5

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

Student and teacher materials are visually supportive of learning and engagement. Whether in print or digital, materials are neither distracting nor chaotic. There is an appropriate use of white space, design pictures, and graphics throughout.

Evidence includes but is not limited to:

Visually, mostly all materials are appropriately designed to support student learning; they include appropriate use of white space, large font, and easy-to-read graphics. Pages are not cluttered and leave plenty of room for students to work out problems in the consumable Student Edition. For example, in Lesson 2.3, seven questions is the greatest number of questions on any single page. Each page provides a large space for showing work and multiple lines so students can justify an answer. All tables, charts, and visuals are clear and concise. They are easily identifiable and support student learning.

However, the *Elaborate* and *Evaluate* components of the "Personal Math Trainer" sometimes include response areas that offer too few lines for students to respond comfortably. For example, in Lesson 16.3, students practice analyzing figures, tables, and graphs. One problem in

Lesson 16.3 states: “Explain how making a stem-and-leaf plot with hundreds data is similar to making a stem-and-leaf plot with tens data. Explain how it is different.” This is a two-part explain question that normally requires plentiful space to respond, yet students are then given three lines for their answer. That being said, this quality is rare; most response areas provide appropriate space for student answers.

The “Interactive Student Edition” makes use of “User Control and Freedom” by allowing students to easily “go back” if they make a mistake in navigation. It uses “Error Prevention” by providing a brief description or label for each online tool when a user hovers over it, ensuring users choose the proper tool for the task at hand. Some of the support features include bookmarks, note-taking documents, and varied page views. A “Resources” tab also includes links to lesson-level resources and core instruction resources. The pictures and graphs used throughout instruction are colorful and easy to understand without being distracting. For example, Module 12 includes a photo of a child building a rectangular prism with unit cubes. This visual is located next to a set of instructions for building rectangular prisms with unit cubes. This is supportive of student learning, providing an intuitive scaffold for students who may struggle with the English language. Additionally, authentic photographs, clear drawings, and interesting figures help students visualize and recall concepts. Auxiliary “Math Concept Readers” incorporate pictures and charts that are clear and pertinent to instruction; The font used for this resource is clear and easy to read.

Teacher guides are intuitive, designed in a way that teachers can easily locate important information. Each unit begins with an overview, including the essential question, TEKS, vocabulary, RTI interventions, enrichment opportunities, materials needed, and a list of necessary print and digital resources. Its structure, look, and the location is consistent throughout the year. Each lesson is then outlined in the “Lesson at a Glance,” including: lesson number, title, focus, essential question, TEKS, process standards, vocabulary, materials needed, relevant print resources, relevant digital resources, and space for teacher notes. All instructional support is clearly stated and easily identifiable. The first page of each lesson includes a summary box listing all digital resources, a list of vocabulary, and the TEKS addressed within the lesson. A clear sidebar summarizes process standards and offers a reminder to use the “Are You Ready?” assessment to diagnose student understanding. Then throughout the lessons, additional sidebars provide suggested questions in bold and possible student answers in pink. Distinct “Common Errors” call-out boxes offer error look-fors, examples, and potential solutions. “Differentiated Instruction” supports are clearly shown and are organized by specific EL support strategies.

November 2020

Houghton Mifflin Go Math! Grade 5

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

Technology components provide support for learning and are grade-level appropriate. They align to the curriculum's scope and approach to math instruction, include appropriate teacher guidance, and enhance student learning.

Evidence includes but is not limited to:

There are technology components for both students and teachers that support and enhance student learning as appropriate. Resources include: "Math on the Spot" videos, "Mega Math" games, the "Interactive Student Edition," and the "Soar to Success" online intervention resource. Math on the Spot videos guide students through higher-order thinking (HOT) problems. Mega Math games enhance students' learning and facilitate review. Students can listen to audio from the Interactive Student Edition, access its glossary, and utilize its built-in manipulatives. This resource also increases student usability since each lesson is isolated; Students do not have to find lessons in the 400-page physical Student Edition. Finally, the Soar to Success provides mini intervention lessons and reteaches concepts to students in a different format.

The digital resources are listed at the beginning of each unit and lesson and include all virtual items mentioned during instruction. For example, Module 12, Lesson 1 lists the following digital resources: the Interactive Student Edition, Math on the Spot video tutor, *iTools* virtual manipulatives, Soar to Success Math Online Intervention, eTeacher Edition, and online assessment system. The digital materials are all accompanied by a comprehensive "help" section, which includes FAQ sheets, how-to-videos, and step-by-step instructions. These resources help teachers utilize the technology and support student use.

Students are able to complete practice problems in the Interactive Student Edition, similar to those in the physical Student Edition. However, this resource also provides immediate feedback through the "Personal Math Trainer." In the print version of Module 4, Lesson 2, one problem states, "Aida is making banners from a roll of paper that is 4.05 meters long. She will cut the paper into 3 equal lengths. She uses base-ten blocks to model how long each piece will be. Describe Aida's error." Students must then analyze a pictorial model of base-ten blocks divided into three equal groups to find the error. Students can find a similar question to the Personal Math Trainer: "Aida is making banners from a roll of paper that is 3.96 meters long. She will cut the paper into 3 equal lengths. She uses base-ten blocks to model how long each piece will be. Complete the description of Aida's error." In the Personal Math Trainer, however, students must also analyze an additional pictorial model of base-ten blocks and complete a related sentence stem. If a student still has difficulty answering the question, she has several options: view another example, have the problem broken down step by step, watch a "Math on the Spot" video, or preview a PDF of the textbook lesson. If the student answers incorrectly, the "Personal Math Trainer prompts them to try again with a helpful explanation of why their original answer was incorrect.

Each lesson in the Teacher's Edition contains sidebar supports for digital resources, both for the student and for the teacher. For example, in Module 1, Lesson 1, a sidebar denotes digital resources for the students: Interactive Student Edition, Math on the Spot video tutor, iTools virtual manipulatives, and Soar to Success online intervention. The sidebar also denotes teacher resources like the "Digital Management Center," which allows teachers to organize program resources by TEKS. Teachers can also use the "Browse" option on the online platform to identify all digital materials that align with a specific TEKS. For example, if a teacher is searching for TEKS 5.3D, they will receive suggestions like the virtual iTools, the Personal Math Trainer practice problems and assessments, Mega Math games, physical manipulatives, and specific Math on the Spot videos.