IMRA Review Cycle 2024 Report

Publisher Name	Program Name
Kiddom	*IM360 Texas Math Powered by Kiddom*

Subject	Grade Level
Mathematics	4

Texas Essential Knowledge and Skills (TEKS) Coverage: 100%

English Language Proficiency Standards (ELPS) Coverage: 100%

Quality Review Overall Score: 220 / 227

IMRA Reviewers

Flags for Suitability Noncompliance 6

Indicator	Count of Flags
1. Prohibition on Common Core	**6**
2. Alignment with Public Education's Constitutional Goal	**0**
3. Parental Rights and Responsibilities	**0**
4. Prohibition on Forced Political Activity	**0**
5. Protecting Children's Innocence	**0**
6. Promoting Sexual Risk Avoidance	**0**
7. Compliance with the Children's Internet Protection Act (CIPA)	**0**

Flags for Suitability Compliance 1

Indicator	Count of Flags
Alignment with Public Education's Constitutional Goal, 2.1.1	**0**
Promoting Sexual Risk Avoidance, 6.2	**0**

Alleged Factual Errors 15

Public Feedback

Flags for Suitability Noncompliance 0

Rubric Indicator	Count of Flags
1. Prohibition on Common Core:	**0**
2. Alignment with Public Education's Constitutional Goal	**0**
3. Parental Rights and Responsibilities	**0**
4. Prohibition on Forced Political Activity	**0**
5. Protecting Children's Innocence	**0**
6. Promoting Sexual Risk Avoidance	**0**
7. Compliance with the Children's Internet Protection Act (CIPA)	**0**

Alleged Factual Errors 0

Public Comments 0

Quality Review Summary

Rubric Section	Quality Rating
1. Intentional Instructional Design	**52 / 53**
2. Progress Monitoring	**25 / 28**
3. Supports for All Learners	**31 / 32**
4. Depth and Coherence of Key Concepts	**23 / 23**
5. Balance of Conceptual and Procedural Understanding	**64 / 66**
6. Productive Struggle	**25 / 25**

Strengths

- 1.1 Course-Level Design: Materials include a scope and sequence outlining the TEKS, ELPS, concepts, and knowledge taught in the course, with suggested pacing guides for various instructional calendars, explanations for the rationale of unit order and concept connections, guidance for unit and lesson internalization, and resources to support administrators and instructional coaches in implementing the materials as designed.
- 1.3 Lesson-Level Design: Materials include comprehensive, structured lesson plans with daily objectives, questions, tasks, materials, and instructional assessments required to meet the content and language standards. They also provide a lesson overview outlining the suggested timing for each component, a list of necessary teacher and student materials, and guidance on the effective use of lesson materials for extended practice, such as homework, extension, and enrichment.
- 2.2 Data Analysis and Progress Monitoring: Materials include instructional assessments and scoring information that provide guidance for interpreting and responding to student performance, offer guidance on using tasks and activities to address student performance trends, and include tools for students to track their own progress and growth.
- 3.1 Differentiation and Scaffolds: Materials include teacher guidance for differentiated instruction, activities, and scaffolded lessons for students who have not yet reached proficiency, pre-teaching or embedded supports for unfamiliar vocabulary and references in text, and guidance for differentiated instruction, enrichment, and extension activities for students who have demonstrated proficiency in grade-level content and skills.
- 3.2 Instructional Methods: Materials include prompts and guidance to support teachers in modeling, explaining, and directly and explicitly communicating concepts to be learned. They provide

teacher guidance and recommendations for effective lesson delivery using various instructional approaches, and support multiple types of practice with guidance on recommended structures, such as whole group, small group, and individual settings, to ensure effective implementation.

- 4.1 Depth of Key Concepts: Materials provide practice opportunities and instructional assessments that require students to demonstrate depth of understanding aligned to the TEKS, with questions and tasks that progressively increase in rigor and complexity, leading to grade-level proficiency in mathematics standards.
- 4.2 Coherence of Key Concepts: Materials demonstrate coherence across courses and grade bands through a logically sequenced scope and sequence, explicitly connecting patterns, big ideas, and relationships between mathematical concepts, linking content and language across grade levels, and connecting students' prior knowledge to new mathematical knowledge and skills.
- 4.3 Spaced and Interleaved Practice: Materials provide spaced retrieval and interleaved practice opportunities with previously learned skills and concepts across lessons and units.
- 5.1 Development of Conceptual Understanding: Materials include questions and tasks that require students to interpret, analyze, and evaluate various models for mathematical concepts, create models to represent mathematical situations, and apply conceptual understanding to new problem situations and contexts.
- 5.2 Development of Fluency: Materials provide tasks designed to build student automaticity and fluency for grade-level tasks, offer opportunities to practice efficient and accurate mathematical procedures, evaluate procedures for efficiency and accuracy, and include embedded supports for teachers to guide students toward more efficient approaches.
- 5.4 Development of Academic Mathematical Language: Materials provide opportunities for students to develop academic mathematical language using visuals, manipulatives, and language strategies, with embedded teacher guidance on scaffolding vocabulary, syntax, and discourse, and supporting mathematical conversations to refine and use math language.
- 5.5 Process Standards Connections: Materials integrate process standards appropriately, nor do they provide descriptions of how they are incorporated and connected throughout the course, within each unit, or in each lesson.
- 6.1 Student Self-Efficacy: Materials provide opportunities for students to think mathematically, persevere through problem-solving, and make sense of mathematics, while supporting them in understanding multiple ways to solve problems and requiring them to engage with math through doing, writing, and discussion.

- 6.2 Facilitating Productive Struggle: Materials support teachers in guiding students to share and reflect on their problem-solving approaches, offering prompts and guidance for providing explanatory feedback based on student responses and anticipated misconceptions.

Challenges

- 1.2 Unit-Level Design: Materials do not include the academic vocabulary necessary to effectively teach the concepts in the unit.
- 2.1 Instructional Assessments: The materials do not align diagnostic, formative, and summative assessments to the TEKS.
- 3.3 Support for Emergent Bilingual Students: Materials do not provide linguistic accommodations for more than one level of language proficiency.
- 5.3 Balance of Conceptual Understanding and Procedural Fluency: Materials do not explicitly state how the conceptual and procedural emphasis of the TEKS are addressed.

Summary

IM360 Texas Math powered by Kiddom is a Mathematics 3–5 program emphasizing real-world problem-solving. This practical approach is designed to engage students in learning, enhance their critical thinking skills, and increase student outcomes. The program is student-centered, discovery-based, and incorporates student communication. It also promotes collaborative learning, providing teachers with a consistent daily lesson structure. The lessons are problem-based, use real-world situations, and are detailed, including various questions, tasks, and assessments. Materials include teacher guidance for Lesson Narratives, Lesson Synthesis, Number Talks, Centers, and Responding to Student Thinking. Additionally, the program shows coherence across units by connecting content and language learned in previous courses/grade levels.

Campus and district instructional leaders should consider the following:

- While the product features comprehensive and detailed lessons with guidance for differentiation and various instructional approaches.
- The program includes multiple opportunities for students to collaborate and learn from each other through hands-on experiences relevant to everyday life. Materials connect previous and future learning through shared language and vocabulary.

Intentional Instructional Design

1.1	Course-Level Design	15/15
1.1a	Materials include a scope and sequence outlining the TEKS, ELPS, concepts, and knowledge taught in the course.	5/5
1.1b	Materials include suggested pacing (pacing guide/calendar) to support effective implementation for various instructional calendars (e.g., varying numbers of instructional days – 165, 180, 210).	2/2
1.1c	Materials include an explanation for the rationale of unit order as well as how concepts to be learned connect throughout the course.	2/2
1.1d	Materials include guidance, protocols, and/or templates for unit and lesson internalization.	2/2
1.1e	Materials include resources and guidance to support administrators and instructional coaches with implementing the materials as designed.	4/4

The materials include a scope and sequence outlining the TEKS, ELPS, concepts, and knowledge taught in the course. Materials include a pacing calendar with options to accommodate various calendars, an explanation of the rationalized order of the course, and guidance for concept and lesson understanding. Materials include guidance, protocols, and templates for unit and lesson internalization. Materials support administrators and instructional coaches in implementing materials.

Evidence includes, but is not limited to:

Materials include a scope-and-sequence outlining the TEKS, ELPS, concepts, and knowledge taught in the course.

- The materials provide TEKS, ELPS, and subject materials applicable to grade 4 math. For example, the *Course Guide Overview* and *Teacher Resource Guide* both include a year-long TEKS-aligned scope and sequence for instruction. The scope and sequence includes all eight units for grade 4. Each unit contains student learning goals, vertical alignment to grade 3, concepts and how they build across the unit, and knowledge. The guide outlines grade 4 concepts broken into units and the lesson progression within each unit.
- Materials incorporate learning targets containing concepts and knowledge taught. Each unit includes the learning goals with an explanation of the correlation of standards addressed in each unit and the concepts and knowledge addressed in the explanations. A clear progression of knowledge and concepts is outlined for each unit covering the grade 4 TEKS.

Materials include suggested pacing (pacing guide/calendar) to support effective implementation for various instructional calendars (e.g., varying numbers of instructional days–165, 180, and 210).

- The materials provide a flexible pacing calendar with opportunities to adjust as needed. The Texas Scope and Sequence materials include a year-long breakdown of estimated time frames for teachers with suggested pacing for each unit. For example, Unit 1 suggests eight instructional days and one day for extension, review, and assessment. The suggested pacing guide is for a 34-week cycle.
- The guide for pacing includes a range of instructional calendar days. The scope and sequence provide suggestions for implementing over 176 total days and provide an alternate calendar of 165 days. The Texas Scope and Sequence page states "To reduce the number of instructional days, omit the 11 lessons noted as optional. This will reduce the number of instructional days to 165 days." This gives two calendar options: 176 days and 165 days.

Materials include an explanation for the rationale of unit order as well as how concepts to be learned connect throughout the course.

- Materials explain the reasoning of unit order and the concept flow throughout the course. For example, the Coherent Progression section found in the *Course Guide* explains how concepts learned connect throughout the course. It states, "Grade-level, unit, lesson, and activity narratives describe decisions about the organization of mathematical ideas, connections to prior and upcoming grade-level work, and the purpose of each lesson and activity. The basic architecture of the materials supports all learners through a coherent progression of mathematics based both on the standards and on research-based learning trajectories. Activities and lessons are parts of a mathematical story that spans units and grade levels." The materials also state, "Every unit, lesson, and activity have the same overarching design structure: The learning begins with an invitation to the mathematics, is followed by a deep study of concepts and procedures and concludes with an opportunity to consolidate understanding of mathematical ideas."
- The materials include a thorough explanation of the learning goal for each unit. In the course overview, the scope and sequence consist of a unit-lesson progression guide. In grade 4, the materials found in the scope and sequence digital resources provide a detailed explanation of the learning goals for each unit with information on how these learning goals build upon concepts learned in previous grade levels. For example, Unit 2, Section A states, "The work in this section prepares students to reason about equivalence and comparison of fractions in the subsequent lessons."
- The materials explain the rationale of concept development throughout the course. In the grade 4 scope and sequence, a detailed explanation of the rationale of the unit order is given for each unit. The rationale begins by stating the unit learning goals and then explains student learning, starting with where learning left off in grade 3. A sequential order is provided for how the unit is organized and how it connects throughout the course. For example, Unit 1 Section A of the unit narrative states, "In this unit, students extend their knowledge of multiplication, division, and the area of a rectangle to deepen their understanding of factors and to learn about multiples."

Materials include guidance, protocols, and/or templates for unit and lesson internalization.

- The materials strategically guide the course. For example, in the Design Principles located in the *Teacher Resource Guide* of the digital resources, the materials guide how the various lesson components connect lessons to the overall learning objective. The Design Principles explain the overarching design principle used throughout the resource. The Design Principles provide the purpose of each unit-lesson component, but the materials don't guide an activity alignment, directly or indirectly, to standards or templates.
- The materials include guidance for unit internalization. The *Course Guide* for grade 4 includes guidance and common instructional routines used in the units and lessons found in the sections Design Principles, A Typical IM Lesson, and How to Use These Materials.
- The materials provide narratives to guide units and lessons. The grade 4 digital materials have unit narratives at the start of Unit 2 through Unit 8 that provide specific learning goals and specify connections to previous learning. The unit narratives identify foundational skills that build. The Teacher Edition Narrative found in each unit provides guidance to develop a deeper understanding of the following unit. For example, in Unit 6, Lesson 2, the Lesson Narrative states, "In an earlier lesson, students analyzed and described features of patterns that followed a rule. In this lesson, students do the same with designs with shapes that repeat according to a rule. Students begin by examining the patterns visually. They look for structure and make use of it to extend the patterns. Later, they represent each shape in the pattern with numbers and reason about the repetition mathematically—by using operations and observing the properties of the numbers. The third activity is optional as it allows extra practice."
- The materials provide templates to support the internalization of learning. After each unit narrative, the materials include a Section-Level Planning Guide that provides a template for planning lesson components and includes assessment suggestions.
- Activities within each lesson provide details of the arrangement of the lessons. The Lesson Synthesis provides guidance for lesson internalization. In Unit 8, Lesson 2, Lesson Synthesis, the materials provide teachers with statements and questions for students to internalize learning. The materials state, "'Today we analyzed and identified triangles with different attributes. If we classify or group triangles based on side length, what types might we see?'" The materials provide examples of students' responses to support the teacher.
- Materials provide protocols for lesson understanding. The Instructional Routines section includes a list and description of warm-up routines that "provide structure for both the teacher and the students," designed to assist with lesson internalization. For example, the material states, "Throughout the curriculum, routines are introduced purposefully to build a collective understanding of their structure. The selected activities vary based on their alignment with the unit, lesson, or activity learning goals. While each routine serves a different specific purpose, they all aim to support students in accessing mathematics, requiring students to think and communicate mathematically. The Instructional Routines section of this *Course Guide* gives more details on the specific routines used in the curriculum."
- The materials follow a systematic flow, providing multiple supports and structures for teachers and students. The *Teacher Resource Guide's* "A Typical Kiddom Lesson" section

states that a typical lesson has four phases: a warm-up, one or more instructional activities, the lesson synthesis, and a cool-down.

Materials include resources and guidance to support administrators and instructional coaches with implementing the materials as designed.

- The materials include resources to support administrators and instructional coaches, such as video training. The materials state, "As part of Kiddom's NEW Admin Insights Reporting Package, we now offer Usage Reports! These reports allow district and school leaders to gain insight into Kiddom activation and usage across schools. This video link provides materials that include resources and guidance to support administrators and instructional coaches in implementing the materials as designed."
- The materials provide usage reports for administrator and instructional coach implementation. The top section includes a scoreboard that displays the distribution of scores for each grade level and subject. The scoreboard can be used to quickly access student areas of need. The bottom section displays all relevant information about all unit levels and interim assessments. The table tracks student submission and grading progress to know when it is time to review the performance of students across the school or district.

Intentional Instructional Design

1.2	Unit-Level Design	3/4
1.2a	Materials include comprehensive unit overviews that provide the background content knowledge and academic vocabulary necessary to effectively teach the concepts in the unit.	**1/2**
1.2b	Materials contain supports for families in both Spanish and English for each unit with suggestions on supporting the progress of their student.	**2/2**

The materials provide comprehensive unit overviews that provide the background content knowledge. Materials do not contain the academic vocabulary necessary to effectively teach unit concepts. Materials contain supports for families within units with suggestions on supporting the progress of their students in English and Spanish.

Evidence includes, but is not limited to:

Materials include comprehensive unit overviews that provide the background content knowledge and academic vocabulary necessary to effectively teach the concepts in the unit.

- The materials include unit overviews that provide content knowledge to teachers. For example, the grade 4 Unit Narrative opens each unit and explains new concepts students will encounter, student background from grade 3, and an overview of the learning progression within the unit. It includes models and sample problems students will interact with throughout the unit. The beginning of the Unit Narrative in Unit 2 provides a comprehensive overview stating "In this unit, students extend their prior understanding of equivalent fractions and comparison of fractions. In grade 3, students partitioned shapes into parts with equal area and expressed the area of each part as a unit fraction. They learned that any unit fraction 1b results from a whole partitioned into b equal parts. They used unit fractions to build non-unit fractions, including fractions greater than 1, and represented them on fraction strips and tape diagrams. The denominators of these fractions were limited to 2, 3, 4, 6, and 8. Students also worked with fractions on a number line, establishing the idea of fractions as numbers and equivalent fractions as the same point on the number line."
- Each lesson within the unit begins with the purpose and narrative of the lesson, which supports teachers' understanding of foundational skills and learning goals. In Unit 2, Lesson 1, the materials provide a lesson purpose stating "The purpose of this lesson is for students to make sense of unit fractions with denominators 2, 3, 4, 5, 6, 8, 10, and 12, using physical and visual representations." The lesson narrative states "In grade 3, students were introduced to fractions as numbers. They learned to name and represent fractions, recognize simple equivalent fractions, and compare fractions with like numerators and denominators (limited to 2, 3, 4, 6, and 8). They used fraction strips, area diagrams, tape diagrams, and number lines to support their reasoning with fractions. This lesson activates students' prior knowledge of unit fractions, including fractions with new denominators 5, 6, 10, and 12. Students revisit the meaning of numerator and denominator, name unit fractions, create representations for them, and recall some strategies and tools for reasoning about fractions."

- The materials provide access to a set of academic terms within the resources. At the beginning of the course and throughout the units, the materials contain Glossary Terms. This includes a slide deck providing "a complete grade-level list including word, definition, and picture for all vocabulary words introduced in the IM Math curriculum." However, academic vocabulary is not clearly provided in the unit overviews. Academic vocabulary directly connected with each lesson or activity is not evident. Academic vocabulary is only offered for the entire resource. The glossary terms provided are insufficient to teach each unit's concepts effectively.

Materials contain supports for families in both Spanish and English for each unit with suggestions on supporting the progress of their student.

- The materials contain resources to support families with information to assist their students in learning in English and in Spanish. Family Support Materials in each unit provide an overview of student learning objectives and suggestions for ways caregivers can support the unit learning at home. Additionally, caregivers can access their student's progress.
- The materials include Family Support Materials with unit concepts, visual models, and questions to ask students as they work. Teachers can provide this information to families for each unit. At the end of the unit, there is a "Try it at Home!" section, which includes a problem students and caregivers solve by the end of the unit. This allows for a family connection and understanding of student knowledge. For example, at the end of Unit 7, the section states "Near the end of the unit, ask your student to: Find an acute angle, obtuse angle, straight angle, right angle, and parallel and perpendicular lines around the house. Describe and measure some angles found around the house."
- The materials include a Teacher Resource Pack for each unit. This resource provides family support materials for each unit.

Intentional Instructional Design

1.3	Lesson-Level Design	34/34
1.3a	Materials include comprehensive, structured, detailed lesson plans that include daily objectives, questions, tasks, materials, and instructional assessments required to meet the content and language standards of the lesson.	30/30
1.3b	Materials include a lesson overview outlining the suggested timing for each lesson component.	1/1
1.3c	Materials include a lesson overview listing the teacher and student materials necessary to effectively deliver the lesson.	2/2
1.3d	Materials include guidance on the effective use of lesson materials for extended practice (e.g., homework, extension, enrichment).	1/1

Materials include comprehensive, structured, detailed lesson plans that include daily objectives, questions, tasks, materials, and instructional assessments required to meet the content and language standards of the lesson. Materials include a lesson overview outlining the suggested timing for each lesson component. Materials include a lesson overview listing the teacher and student materials necessary to effectively deliver the lesson. Materials include guidance on the effective use of lesson materials for extended practice.

Evidence includes, but is not limited to:

Materials include comprehensive, structured, detailed lesson plans that include daily objectives, questions, tasks, materials, and instructional assessments required to meet the content and language standards of the lesson.

- Materials include lesson plans that contain daily objectives, called Goals. The lesson plans are comprehensive and detailed, and they state the goals for the teacher and the student. For example, in Unit 5, Lesson 1, the materials state, "Comprehend (in spoken and written language) that the phrase "times as many" refers to a number of groups of an original quantity. Represent multiplicative comparison situations, using objects and drawings." The materials provide Student Facing Learning Goals that state, "Let's represent 'times as many' situations."
- Throughout each lesson, materials provide lesson plans that include questions. In Unit 6, Lesson 1, materials provide teachers with questions to ask within the Activity Synthesis. For example, "This image shows a pattern. The rule for this pattern is to add a row of 3 circles in each step. What else do you notice about the number of circles in each step? Why do you think this happens?" The lesson plans are not comprehensive in the inclusion of questions because the materials do not provide numerous practice opportunities.
- Teacher Reflection questions are provided for each lesson, and questions are included in the Activity Synthesis section for each activity. In Unit 6, Lesson 2, materials provide Teacher Reflection questions asking, "In an upcoming section, students will learn to multiply multi-digit numbers. What do you notice in their work from today's lesson that you might leverage in that future lesson?"

- The lesson plans contain student tasks built into the activities that are comprehensive, structured, and detailed. Each activity provides the purpose, materials, and Student Task Statements. In Unit 5, Lesson 1, Activity 1, the resource expects students to build on what they know about the language of "twice" and "twice as many" to represent comparison situations. In this activity, students are encouraged to represent the situation in a way that makes sense to them, though discrete representations (cubes or drawings) are the focus of the Activity Synthesis. The representations used in this activity serve as a foundation for the more abstract tape diagrams that will be used later in the section. The Student Task Statement states, "Andre has some cubes. Han has twice as many cubes as Andre. Use cubes, pictures, or other diagrams to show how many cubes Andre could have and how many cubes Han could have."
- The materials provide comprehensive, detailed, and structured lesson plans that include instructional assessments. In the *Course Guide*, each lesson describes the Checkpoint. Each Checkpoint includes observations of students' understanding of their work related to the section-level learning goal and ideas for the Next-Section Support. The supports address unfinished learning in upcoming lessons and include centers.
- At the end of each unit is the End-of-Unit Assessment to gauge students' understanding of the key concepts while also preparing students for new-generation standardized exams. Problem types include multiple choice, multiple response, short answer, restricted constructed response, and extended response. Problems vary in difficulty and depth of knowledge.

Materials include a lesson overview outlining the suggested timing for each lesson component.

- The materials provide lesson component timelines. The digital materials for each unit include a Lesson Timeline. For example, in Unit 3, Lesson 1, the curriculum states the warm-up is 10 minutes, Activity 1 is 20 minutes, Activity 2 is 15 minutes, the Synthesis Estimate is 10 minutes, and the cool-down is 5 minutes. The times may vary from lesson to lesson, but the total time remains within the 60-minute timeframe.
- The materials provide suggested timing for lesson components. The indicated time estimates in the materials are referred to as instructional time. The About the Materials section states "Each lesson plan is designed to fit within a class period at least 60 minutes long." There is extended lesson time if the optional activities or student practice are utilized.

Materials include a lesson overview listing the teacher and student materials necessary to effectively deliver the lesson.

- Materials include an overview listing of materials needed to deliver the lesson. Within the Teacher Edition, the beginning of each unit includes a Materials Needed chart organized by every lesson. Each lesson delineates the materials the teacher needs to gather and the materials the teacher needs to copy. For example, Unit 1, Lesson 2 materials state that "One copy for every two students" of centimeter grid paper is needed.
- The materials include a section for Required Materials in the lesson overview. This section is divided into two sections: Materials to Gather and Materials to Copy. These align with the Materials Needed chart in the unit overview.

Materials include guidance on the effective use of lesson materials for extended practice (e.g., homework, extension, enrichment).

- The materials do not contain practice that is solely designed to support learning outside of the school day. The How to Use These Materials section of the digital materials informs teachers of Exploration Problems that are intended to extend learning and may be used as homework. For example, Exploration Problems in the materials provide extended practice opportunities but may not be suitable to support independent learning outside the school day. This is made evident in the How to Use These Materials guidance, which states, "One type is a hands-on activity directly related to the material of the unit that students can do either in class if they have free time, or at home. The second type of exploration is more open-ended and challenging. These problems go deeper into grade-level mathematics. They are not routine or procedural, and they are not just "the same thing again but with harder numbers."
- The materials do not provide explicit resources for homework. The materials inform teachers of Exploration Problems that may be used as homework. Per the How to Use These Materials guidance in the online materials, these problems are not intended to be completed by all students during a given lesson. The materials guidance states, "Exploration questions are intended to be used on an opt-in basis by students if they finish a main class activity early or want to do more math on their own. It is not expected that an entire class engages in Exploration Problems, and it is not expected that any student works on all of them. Exploration Problems may also be good fodder for a Problem of the Week or similar structure." The student print materials include a variety of Exploration Problems in the practice problem section at the end of a unit. These Exploration Problems do not specify which lesson they align with or provide student directives to support independent practice outside of the school day.
- Materials provide resources for extended practice. Centers are included within each unit. Although guidance on the effective use of the center materials are not included within the lesson, guidance is included in the Centers section of the digital materials. One page of directions for each center is provided in the Centers section.
- Materials provide Optional Lessons. Optional Lessons for additional practice are included in some units, but they are not included in all units. The materials do not explicitly provide homework, extension, or enrichment.

Progress Monitoring

2.1	Instructional Assessments	21/24
2.1a	Materials include a variety of instructional assessments at the unit and lesson level (including diagnostic, formative, and summative) that vary in types of tasks and questions.	**12/12**
2.1b	Materials include the definition and intended purpose for the types of instructional assessments included.	**2/2**
2.1c	Materials include teacher guidance to ensure consistent and accurate administration of instructional assessments.	**2/2**
2.1d	Diagnostic, formative, and summative assessments are aligned to the TEKS and objectives of the course, unit, or lesson.	**3/6**
2.1e	Instructional assessments include standards-aligned items at varying levels of complexity.	**2/2**

The materials include a variety of instructional assessments at the unit and lesson level (including diagnostic, formative, and summative) that vary in types of tasks and questions. Materials include the definition and intended purpose for the types of instructional assessments included. Materials include teacher guidance to ensure consistent and accurate administration of instructional assessments. Materials include diagnostic, formative, and summative assessments that are aligned with the objectives of the course, unit, or lesson. Materials do not include diagnostic, formative, and summative assessments that are aligned to the Texas Essential Knowledge and Skills (TEKS). Instructional assessments found in the materials include standards-aligned items at varying levels of complexity.

Evidence includes, but is not limited to:

Materials include a variety of instructional assessments at the unit and lesson level (including diagnostic, formative, and summative) that vary in types of tasks and questions.

- Materials include a variety of instructional assessments at the unit and lesson levels that vary in types of tasks and questions. The Assessment Guide, found in the *Teacher Resource Guide*, describes a variety of assessments in both print and digital versions. Materials provide pre-assessment, warm-ups, cool-downs, summative, and end-of-course assessments.
- Materials include diagnostic assessments that vary in types of tasks and questions. The Assessment Guidance specifies that unit-level diagnostic questions in the form of pre-unit questions and tasks are included in Section A of each unit. These are designed to be completed at the start of each unit to assess prerequisite skills and concepts for the unit. It also provides students with fifteen questions to answer about given graphs, which are unit diagnostic questions. Both could serve as lesson diagnostic tasks and questions if the teacher uses them one at a time before each lesson. The diagnostic section of the Assessment Guidance included in the *Teacher Resource Guide* also specifies that many lesson activities feature an Advancing Student Thinking section containing questions and tasks designed to

give teachers diagnostic data at the lesson level. While many of the questions are based on earlier grade-level material, later units often include problems addressing important work of the grade.

- Materials include formative assessments that vary in types of tasks and questions. The Assessment Guidance specifies that each lesson concludes with a Cool-Down section to assess student understanding of the lesson's learning goals. The *Teacher Resource Guide* Assessment section states, "Each lesson in grades 2–5 includes a Cool-Down (analogous to an exit slip or exit ticket) to assess whether students understood the work of that day's lesson." The Cool-Downs, including digital and PDF options, include one to three questions or tasks, categorizing the Cool-Down as lesson formative questions and tasks. For example, for Unit 1, Lesson 4, the Cool-Down asks students to select a multiplication and describe the strategy used to find it.
- The lesson-level materials also provide one or more practice problems and two or more "explorations," which can provide the teacher with additional formative assessment data. Materials also provide formative assessment opportunities at the unit level in their "Section Checkpoints." Each unit is broken into sections containing a set of lessons. Section Checkpoints contain three to four problems designed to assess student learning goals within a given unit section. The *Teacher Resource Guide* Assessment section states, "Each section contains two or more explorations, designed to engage students in thinking creatively about the mathematics of the unit at school or home." For example, Unit 1, Activity 4, Lesson 1 asks students to sort multiplication expressions. This could be considered a unit formative task, as students are asked to demonstrate data organization. One or more practice problems in each lesson are provided.
- Materials include summative assessments that vary in types of questions. The Assessment Guidance specifies that each unit provides a summative End-of-Unit Assessment designed to assess student learning of key concepts throughout the unit. The materials also contain an End-of-Course Assessment to assess students' mastery of grade-level standards after the final unit. The *Teacher Resource Guide* Assessment section states, "Problem types include multiple choice, multiple response, short answer, restricted constructed response, and extended response." The summative assessments are consistently formatted as tests that do not vary in types of tasks, such as projects or performance-based assessments.

Materials include the definition and intended purpose for the types of instructional assessments included.

- The materials include the definition and intended purpose for the instructional assessment types. The *Teacher Resource Guide* in the Digital Review materials includes descriptions of how the materials correlate with each type of assessment. The intended purpose of each type of assessment is provided within the *Teacher Resource Guide* Assessment.
- Materials include Cool-Downs. These formative assessments are comparable to exit tickets. The materials assess whether students understood the work of that day's lesson. The Cool-Down is given to students at the end of the lesson. This activity serves as a brief check-in to

determine whether students understand the main concepts of the lesson. Materials guide the use of this as a formative assessment to plan further instruction.

- Materials include End-of-Unit Assessments and refer to these as summative assessments. Each unit (starting in Kindergarten, Unit 2) includes a written End-of-Unit Assessment that students complete individually to assess their progress toward the unit learning goals and the grade-level standards for the course. Items are aligned to the relevant grade-level standards. These assessments gauge students' understanding of the key concepts of the unit while also preparing students for new-generation standardized exams. Problem types include multiple choice, multiple response, short answer, restricted constructed response, and extended response.
- Materials include Section Checkpoints, which are referred to as diagnostic tests. These are designed to be completed at the start of each unit to assess prerequisite skills and concepts for the unit. The pre-unit problems identify unfinished learning that must be carefully addressed during the unit.
- Each grade includes an End-of-Course Assessment to use after the final unit as a way to assess students' mastery of the grade-level standards. The assessment also may be used before the final unit. The resource indicates that teachers can use the results of this assessment to choose sections from the final unit on which to focus, especially if there is limited time to complete the course.
- Materials include Advancing Student Thinking questions that assess students' understanding of mathematics in an activity. The questions work together to provide a just-in-time intervention to help students attend to the mathematics of the activity. The first question is the "assessing" question, designed to assess whether students are on track with the mathematical focus of the activity. If students' responses show that they may not be on track, then subsequent questions direct students' attention to the concept or skill most important for the activity.

Materials include teacher guidance to ensure consistent and accurate administration of instructional assessments.

- The materials include teacher guidance for assessment purposes. The Assessment Guide provides a breakdown of each assessment type. Strategies with intended purposes are also provided as guidance.
- Materials provide guidance on assessment mastery. Materials do provide teachers with sample responses that demonstrate what evidence is needed to show skill mastery. The *Teacher Resource Guide* Assessments section states, "All summative assessment problems include a complete solution and standard alignment."
- The Assessment Guide found in Course Materials provides guidance for teachers on how and why to use the variety of opportunities in each course to ensure accurate administration of instructional assessments.
- The materials provide teacher guidance for tools students can use to complete assessments. For example, the End-of-Unit Assessments instruct teachers on specific questions: "Students can select from the following tools: Draw, Write, Upload Photo, Record Audio or Video."

- Materials guide the number of instructional days allotted to assessment. The scope and sequence contains guidance on the suggested number of instructional days to Extend, Review, Assess, and Reteach. According to the *Teacher Resource Guide*, the commentary suggests formative evaluation following each unit task.

Diagnostic, formative, and summative assessments are aligned to the TEKS and objectives of the course, unit, or lesson.

- Materials include diagnostics, formative, and summative assessments that are aligned with all objectives and standards of the course, unit, or lesson. The pre-unit questions that the Assessment Guidance of the *Teacher Resource Guide* specifies as the intended diagnostic assessment resource indicate alignment with the TEKS. The publisher has provided a *TEKS Alignment Document* that stated it would be included in their Texas Version.
- The materials provide diagnostic alignment to standards. The pre-unit questions align with the TEKS for grade 4. For example, the Unit 1 "Pre-unit Practice" problems task the student with questions related to graphing data that aligns with the learning goal and the TEKS.
- The materials provide formative alignment to objectives and the TEKS for each lesson. For example, one of the Unit 3 Section Learning Goals states, "Represent and solve problems involving multiplication of a fraction by a whole number." Within Unit 3, Lesson 6, Activity 1, students are asked to find the total amount of butter needed for two batches of banana bread if each batch requires 2/3 cup of butter. This formative assessment question requires students to demonstrate the given learning objective. The material's various formative assessment resources, such as warm-ups, activities, practice problems, exploration problems, and Cool-Downs.
- The materials provide summative alignment to lesson objectives and standards. The *Teacher Resource Guide* Assessment section states, "All summative assessment problems include a complete solution and standard alignment." Although assessments align with unit objectives mentioned at the beginning of each lesson and at the bottom of the Section Checkpoint. The TEKS connected with each unit are listed on the Texas Scope and Sequence, in alignment with the summative assessments. For example, the Unit 3 Lesson Level Planning Guide states one of the Section Learning Goals is to "Represent and solve problems involving multiplication of a fraction by a whole number." Question 10 in Section A, Practice Problems, directly aligns with this objective, as it states, "Each bead weighs 58 grams. How much do 7 beads weigh?"

Instructional assessments include standards-aligned items at varying levels of complexity.

- Materials include assessments at varying levels of complexity. Assessments vary in complexity based on the variety of question types included in assessments, such as materials that include multiple choice, drag and drop, short answer, multiple select, and drawing. The Unit 2, Section C Practice Problems provided in the grade 4 digital materials reflect a variety of question types with varying levels of complexity. The first three problems included in this practice require students to identify which fraction has the greater value in a multiple-choice format. Students are tasked with comparing fractions by entering the appropriate comparison symbol. These questions are followed by word problems requiring students to apply comparing fractions to real-world scenarios in both a multiple-choice formatted question and an open-response question requiring students to explain their thinking.

- Materials include varying levels of complexity across each assessment type. Across each unit and the various lessons, students are exposed to multiple items that vary in complexity to build mastery of the standard. The Assessment section of the *Teacher Resource Guide* states, "Problem types include multiple choice, multiple response, short answer, restricted constructed response, and extended response. Problems vary in difficulty and depth of knowledge." The End-of-Course Assessment and Resources consist of three types of items: items that assess the major work of the grade, some fluency items that target the key fluencies for each grade ("varying in levels of difficulty"), and one or more in-depth problem, according to the Assessment section of the *Teacher Resource Guide*.

Progress Monitoring

2.2	Data Analysis and Progress Monitoring	4/4
2.2a	Instructional assessments and scoring information provide guidance for interpreting and responding to student performance.	**2/2**
2.2b	Materials provide guidance for the use of included tasks and activities to respond to student trends in performance on assessments.	**1/1**
2.2c	Materials include tools for students to track their own progress and growth.	**1/1**

The instructional assessments and scoring information provide guidance for interpreting and responding to student performance. Materials provide guidance for using included tasks and activities to respond to student trends in performance on assessments. Materials include tools for students to track their own progress and growth.

Evidence includes, but is not limited to:

Instructional assessments and scoring information provide guidance for interpreting and responding to student performance.

- Materials provide guidance in the Next-Unit Support to help teachers identify misunderstandings and make observations in the End-of-Unit Assessments. Materials include an answer key with detailed explanations that may be used to guide student responses. For example, "If students show they understand a fraction can be decomposed into many different sums of unit and non-unit fractions, but do not yet show they consider expressions that also include whole numbers. Next-Unit Supports: During the next unit, use cards from the Unit 3 optional lesson, in which students practice using number lines to decompose fractions into sums of other fractions, and to record the decompositions as equations. Although the fractions on the cards contain no whole numbers or mixed numbers, look for students who use whole numbers and mixed numbers in their equations. Ask selected students to share their explanations, and then invite other students to try out the strategies."
- Materials provide commentary to guide teachers. The *Teacher Resource Guide* Assessment section states, "Each instructional task is accompanied by commentary about expected student responses and opportunities to advance student thinking so that teachers can adjust their instruction depending on what students are doing in response to the task. Often, suggested questions are provided to help teachers better understand students' thinking." Grade 4, Unit 1 End-of-Unit Assessment Guidance notes an error in student work demonstrating confusion over the meaning of a factor and multiple or prime and composite. The guidance then directs the teacher to respond by inviting students to engage in activities throughout the next unit that reinforce the students' understanding of this academic vocabulary, such as playing Mystery Number, Stages 3 and 4, which requires students to apply the idea of factors and multiples and reflect on how they used the given vocabulary to create clues and guess their partner's number.

- Materials provide guidance for evaluating responses. Digital assessments offer "Note For Evaluating Responses" for guidance in interpreting and responding to student performance. For example, "Students identify rectangles of a given area. The pictures show all the individual square units, so counting is a possible strategy, as is using multiplication. Students who select answer B may be counted by adding up the 4 side lengths of 5 while students who select C may be counting incorrectly."
- The assessment materials at the lesson level, such as warm-ups, lesson activities, and cool-downs, provide both an answer key and notes for evaluating responses to aid in the accurate administration of assessments. For example, Unit 4, Assessment, Problem 1 requires students to select all fractions equivalent to 5/4. Materials provide the correct responses; the materials also give a note for evaluating responses that states, "Students identify expressions that are equivalent to 5/4. Students who fail to select A do not understand how to decompose a fraction into unit fractions. Failure to select B or D means more work is needed with adding non-unit fractions or whole numbers and fractions. Students may select C if they do not pay close attention to the numerators or add them incorrectly. Students who select E are likely confused about the meaning of the numerator and denominator in a fraction."

Materials provide guidance for the use of included tasks and activities to respond to student trends in performance on assessments.

- In the Assessment Guidance Section provided in the course overview, materials provide guidance for how to respond to trends that demonstrate a lack of prerequisite skills after completing the diagnostic pre-unit assessments. The example provided states, "What if a large number of students can't complete the same pre-unit assessment problem? Address prerequisite skills while continuing to work through the on-grade tasks and concepts of each unit instead of abandoning the current work in favor of material that addresses only prerequisite skills. Look for opportunities within the upcoming unit to address the target skill or concept in context or with a center."
- The End-of-Unit Assessment Guidance includes example observations of students' "unfinished learning" and strategies for supporting students' continued learning of concepts not yet mastered in the Next-Unit Support. The guidance states that it is organized around evidence for understanding and mastery of the grade-level content standards and advises that rather than provide item-by-item analysis, the observations encourage analyzing multiple items to look for evidence of what students understand about the standards. The Assessment Guidance states that the materials provide Next-Unit Support, which offers ideas for addressing unfinished learning alongside upcoming grade-level work or before the concept is needed for upcoming grade-level work. For example, in the Unit 1 End-of-Unit Assessment Guidance chart, if teachers see student trends of confusing the meaning of "factor" and "multiple" or "prime" and "composite," the guidance states "In the next unit as students play Mystery Number, Stages 3 and 4, ask them to reflect on how they used the given vocabulary (which includes prime, composite, factor, and multiple) to create clues and to guess their partner's number." Other examples of these supports include suggestions for questions to ask during activities, representations to use, centers to encourage, and ways to incorporate the End-of-Unit Assessment as an additional learning opportunity

- The materials include checkpoint items designed to provide teacher guidance for interpreting student performance, such as observations of students' understanding that may be seen in their work as it relates to the section-level learning goal. The materials provide ideas for the Next-Section Support, intended to offer ways to address unfinished learning in upcoming lessons. For example, the Grade 4, Unit 1, Section A Checkpoint guidance includes a section titled "Responding to Student Thinking" that highlights common misconceptions and errors teachers may encounter in students' work about relating the side lengths and area of a rectangle to factors and multiples such as not making the connection between side lengths and factor pairs. This portion of the materials also includes suggestions for the teacher to implement in response to these errors.
- As stated in the Assessment section of the *Teacher Resource Guide*, "Multiple choice and multiple response problems often include a reason for each potential error a student might make." In the *Teacher Resource Guide*, next to each question on the End-of-Unit Assessment, the material lists the standard assessed, the solution to the problem, and a narrative for teacher reflection. The narrative includes teacher guidance skills assessed and possible reasons why students may have selected each incorrect answer choice. Below the End-of-Unit Assessment Guidance chart, materials provide activities to respond to trends in performance assessments.

Materials include tools for students to track their own progress and growth.

- Materials provide guidance using online tools. The materials provide a comprehensive data dashboard for students, enabling them to monitor and track their academic performance in detail. Students can access a personalized dashboard that tracks their progress in each class based on specific standards and assignments. The tool offers individualized reports showing students' strengths and areas needing improvement. Hovering over a standard provides more information, and clicking the standard reveals the number of assignments. The tool allows students to navigate to relevant assignments, view any associated attachments, check their grades, and read teacher comments or feedback. The tool enhances transparency and empowers students to take an active role in their learning by providing accessible, detailed, and actionable information about their academic performance.
- The online support article describes how students will receive notifications regarding assignments, grade notifications, and teacher comments. In the article "Student Help: How Do I Check My Grades and Feedback?" the materials state that students will receive an e-mail notification and an in-app notification when the teacher assigns a grade to a completed assignment. The materials state that students can review graded assignments and teacher feedback in their online accounts. Feedback may include general comments on the overall assignment performance or connections to specific questions. Materials provide question-specific feedback to enable students to navigate to those questions to better understand teacher feedback.

Supports for All Learners

3.1	Differentiation and Scaffolds	8/8
3.1a	Materials include teacher guidance for differentiated instruction, activities, and/or paired (scaffolded) lessons for students who have not yet reached proficiency on grade-level content and skills.	3/3
3.1b	Materials include pre-teaching or embedded supports for unfamiliar vocabulary and references in text (e.g., figurative language, idioms, academic language). (T/S)	2/2
3.1c	Materials include teacher guidance for differentiated instruction, enrichment, and extension activities for students who have demonstrated proficiency in grade-level content and skills.	3/3

The materials include teacher guidance for differentiated instruction, activities, and paired (scaffolded) lessons for students who have not yet reached proficiency on grade-level content and skills. Materials include pre-teaching and embedded supports for unfamiliar vocabulary and references in text. Materials include teacher guidance for differentiated instruction, enrichment and extension activities for students who have demonstrated proficiency in grade-level content and skills.

Evidence includes, but is not limited to:

Materials include teacher guidance for differentiated instruction, activities, and/or paired (scaffolded) lessons for students who have not yet reached proficiency on grade-level content and skills.

- Materials include teacher guidance for differentiated instruction for students who have not yet reached proficiency on grade-level content and skills. For example, in Units 1 and 2, Section A Checkpoints, Responding to Student Thinking, the materials describe specific misconceptions or errors the teacher may observe in students' work and prescribe the next steps to take to support students' progress with the objective. To guide teachers, the materials state, "Students show side lengths and draw a rectangle with the given area but may not yet understand factor pairs as side lengths. Students find one possible example or use a guess and check without considering factor pairs. While students play Can You Build It, Stage 2 in the next section, look for how they associate side lengths of rectangles (factors 1–5) for a given area. Ask how they know that they have found all the possible rectangles."
- The materials offer teachers additional guidance for differentiating instruction in the Supporting Diverse Learners, Representation section of the *Teacher Resource Guide*. It states, "Teachers can reduce barriers and leverage students' individual strengths by inviting students to engage with the same content in different ways." Support for teachers provides suggestions that offer alternative ways information is presented or displayed. For example, to encourage access to perception, the materials suggest, "Present content using multiple modalities: Act it out, think aloud, use gestures, use a picture, show a video, demonstrate with objects or manipulatives." The material gives further guidance, stating, "Lessons support a flexible approach to instruction and provide teachers with options for additional support to address

the needs of a diverse group of students, positioning all learners as competent, valued contributors."

- The materials provide center activities that can be utilized to support students who have not yet reached proficiency in grade-level content and skills. The *Course Guide* provides teacher guidance to differentiate between two categories of center types, Supporting and Addressing, and their intended purpose. The "Center Overview'' section of the *Course Guide* states, "Centers are intended to give students time to practice skills and concepts that are developed across the year. There are two types of centers. Addressing centers address the work of a lesson or a section of a unit. Supporting centers review prior unit or prior grade-level understandings and fluencies."
- Material offers optional activities throughout the course. In the A Typical IM Lesson section of the *Teacher Resource Guide*, one of the purposes of these activities is to provide an opportunity for additional practice on a concept or skill that many students need. For example, Unit 1, Lesson 4, is listed on the Pacing Guide as an "optional lesson." The Lesson Narrative states, "The purpose of this optional lesson is for students to practice multiplication within 100 and review strategies for finding products they don't know." This activity gives additional practice to students who have not yet reached proficiency on grade-level content.
- Materials include paired (scaffolded) lessons for students who have not yet reached proficiency on grade-level content and skills. In Supporting Diverse Learners, the Universal Design for Learning and Access for Students with Disabilities section of the *Teacher Resource Guide* includes suggestions that support students' motivation to engage with content, develop effort and persistence, and internalize self-regulation. For example, in the "Develop Effort and Persistence of the Universal Design for Learning and Access for Students with Disabilities" chart, the teacher's guidance is to "Differentiate the degree of difficulty or complexity by starting with accessible values." This scaffold would assist students who have not yet reached proficiency in grade-level content and skills.

Materials include pre-teaching or embedded supports for unfamiliar vocabulary and references in text (e.g., figurative language, idioms, academic language). **(T/S)**

- The materials include embedded supports for unfamiliar vocabulary in text. The materials offer students a variety of ways to learn and internalize the vocabulary associated with the new lesson, such as hands-on experiences, manipulatives, and visuals. Structured opportunities are provided for partner and group discussions using academic language, sometimes with sentence stems or prompts. The Glossary at the end of each unit's *Teacher Resource Guide* has a list of the terms with definitions. A Glossary Terms slide deck containing definitions and pictures for all vocabulary words is provided in the digital materials, along with guidance for teachers on how to use it in their lessons. For example, in Unit 3, Lesson 4, the materials state, "In a previous lesson, students revisited addition within 1,000 using strategies based on place value and properties of operations. An algorithm is different from a strategy because it is a set of steps that works every time as long as the steps are carried out correctly. The algorithms introduced in this lesson draw on the grade 2 work within 1,000 in that they show the addition of ones to ones, tens to tens, and hundreds to hundreds. Students should have access to base-ten blocks if they choose to use them. The student edition poses the question "What is an Algorithm?" at the beginning of Unit 3, Lesson 4, Activity 1, and through the activity, students learn what an algorithm is.

- Throughout the materials, lessons provide students with opportunities to interact with academic vocabulary and symbols through hands-on experiences, manipulatives, or visuals. There are structured opportunities for students to talk through activity questions with partners and groups using academic language and vocabulary with the support of sentence stems. For example, in Unit 1, Lesson 1, Activity 2, the Activity Synthesis section directs teachers to discuss the academic vocabulary term "multiples of numbers" with the students, followed by student groups discussing the concept. The activity states, "A multiple of a number is the result of multiplying a number by a whole number. Look back at your work and discuss with your partner: Which numbers are multiples of 3? Which numbers are not multiples of 3?" Teachers are told to provide 2 minutes for the partner discussion.
- Access for Students with Disabilities includes embedded supports for unfamiliar references and academic language. For example, in Unit 4, Lesson 2, Activity 1, the *Teacher Resource Guide* contains guidance stating, "Display a 10-by-10 grid, as well as a square of the exact same size, but with only the columns shown (therefore representing just tenths). Shade 20 hundredths on the 10-by-10 grid and write 0.20 (twenty hundredths) above it. Shade 2 tenths on the other square and write 0.2 (2 tenths) above it. Invite students to discuss how these diagrams demonstrate equivalence of the two numbers."
- The Key Structures in This Course section in the *Teacher Resource Guide* states, "Additional teaching moves can be used to support the development of math learning communities throughout the school year." The chart specifies students' use of general and discipline-specific academic language. The materials suggest three teacher moves for this student action. One of these examples states, "Before beginning small group work, give students sentence frames and probing questions that feature important terms." This serves as an embedded support for unfamiliar vocabulary and references in text.

Materials include teacher guidance for differentiated instruction, enrichment, and extension activities for students who have demonstrated proficiency in grade-level content and skills.

- The materials offer differentiated instruction for students who have not demonstrated proficiency in grade-level content through Cool-Down tasks, Next-Day Supports, and Prior Unit Supports. These provide the next steps for teachers to support students struggling with a concept. Cool-Down tasks at the end of lessons allow teachers to assess understanding and adjust instruction. The *Teacher Resource Guide* includes sections on responding to student thinking and next-day supports, offering specific strategies for further instruction. The response to student thinking provides guidance on how teachers might make adjustments based on specific student responses to a cool-down. Next-day supports, such as providing students access to specific manipulatives or having students discuss their reasoning with a partner, are recommended for cool-down responses that should be addressed while continuing to the next lesson. Although this teacher guidance could allow teachers to differentiate instruction for students who are proficient by providing extended support.

- Materials include teacher guidance for extension activities for students who have demonstrated proficiency in grade-level content and skills. Centers included with each unit are designed to give students time to practice skills and concepts developed throughout the year. They can be used if a lesson is completed with the remaining class time. The How to Use These Materials section in the *Teacher Resource Guide* states, "Centers are intended to give students time to practice skills and concepts that are developed across the year." They are used "to practice or solidify the mathematical ideas of a unit." There are two types of centers: Addressing (focusing on current lesson content) and Supporting (reviewing prior knowledge). Addressing centers address the work of a lesson or section of a unit, thus creating extension activities for students demonstrating proficiency. An example of an extension activity center for Unit 1 is "Center: Find the Number (4)," where "Students take turns choosing a number on the gameboard and finding factors or multiples of the given number." This activity extends student learning of the Unit 1 objective to relate the side lengths and area of a rectangle to factors and multiples.
- For students who are proficient and need more of a challenge, the materials offer enrichment activities through Exploration Problems. These problems are designed to be more open-ended and challenging, providing deeper engagement with grade-level mathematics. The materials provide two or more exploration problems per unit. The guidance provided explains that one type of exploration problem features hands-on opportunities, while the other is designed to be more open-ended and challenging. In Unit 8, Lesson 6, the *Teacher Resource Guide* states, "In the last two lessons, students use what they have learned about symmetry to solve problems related to perimeter and unknown angle measurements in two-dimensional figures. This work deepens students' understanding of the concepts from this unit and offers opportunities to practice reasoning about angle measurement, but it is not required by grade 4 standards. These lessons are therefore optional."

Supports for All Learners

3.2	Instructional Methods	13/13
3.2a	Materials include prompts and guidance to support the teacher in modeling, explaining, and communicating the concept(s) to be learned explicitly (directly).	**6/6**
3.2b	Materials include teacher guidance and recommendations for effective lesson delivery and facilitation using a variety of instructional approaches.	**4/4**
3.2c	Materials support multiple types of practice (e.g., guided, independent, collaborative) and include guidance for teachers and recommended structures (e.g., whole group, small group, individual) to support effective implementation.	**3/3**

The materials include prompts and guidance to support the teacher in modeling, explaining, and communicating the concept to be learned explicitly. Materials include teacher guidance and recommendations for effective lesson delivery and facilitation using a variety of instructional approaches. Materials support multiple types of practice and include guidance for teachers and recommended structures to support effective implementation.

Evidence includes, but is not limited to:

Materials include prompts and guidance to support the teacher in modeling, explaining, and communicating the concept(s) to be learned explicitly (directly).

- The materials provide detailed prompts and guidance for teachers to model concepts and support student learning. The "Principles of IM Curriculum Design" emphasize the importance of understanding progressions in the materials to connect prior knowledge with upcoming content. Each lesson follows a consistent structure: an invitation to mathematics, a deep study of concepts, and a consolidation of understanding. The *Course Guide* outlines the three phases of each instructional activity (launch, activity work time, and activity synthesis), with specific directions to help students understand the context and problem during each phase. For instance, in Unit 7, Lesson 5, teachers are guided on what to say or respond to when students are doing the activity so that students can come to the same understanding even if they did not at first. The materials provide an example of a conversion that states, "How are the two drawings on each card the same? (They each have 2 rays. The rays start at the same point. One ray is pointing in the same direction in both drawings.) How are they different? (The rays are pointing in different directions on some cards. The rays are farther apart in some cards)." As students share responses, update the display by adding (or replacing) language, diagrams, or annotations. Remind students to borrow language from the display as needed. "Did anyone use the term angle? Did anyone measure something or use measurements? The figures that you drew are angles. An angle is a figure that is made up of two rays that share the same endpoint. The point where the two rays meet is called the vertex of the angle." This structured approach helps teachers anticipate, monitor, and select student work for whole-group discussions. Each unit culminates in a lesson that explicitly addresses modeling skills while integrating the mathematical work of the unit.

- The materials include both prompts and guidance to support the teacher in modeling the concepts to be learned directly and explicitly. The materials include examples of sample student responses to prompts. For example, in Unit 1, Lesson 1, Activity 1, the Launch section prompts and guides the teacher with seven sequential steps to lead the whole class in building all the rectangles possible with ten tiles. The prompts include dialogue, directional guidance, suggested timing, and student grouping. The teacher then provides students with the Activity to "Now build five different rectangles, each 2 tiles wide. Record the area of each rectangle in the table." Below the activity, the Student Response section shows what a completed student table might look like. The Design Principles section of the *Teacher Resource Guide* also states, "In all lessons, teachers are supported in the practices of anticipating, monitoring, and selecting student work to share during whole-group discussions." This guidance supports the teacher in modeling student work for the whole class. The Design Principles section also states, "In addition to the precursor skills and modeling stages that appear across lessons, each unit culminates with a lesson that explicitly addresses these modeling skills and stages while pulling together the mathematical work of the unit."
- The materials include both prompts and guidance to support the teacher in explaining the concepts. The Design Principles section of the *Teacher Resource Guide* states, "The materials foster conversation so that students voice their thinking around mathematical ideas, and the teacher is supported to make use of those ideas to meet the mathematical goals of the lessons." It suggests teachers can "look to warm-ups and activity launches for built-in preparation, and to teacher-facing narratives for further guidance." Two sections within each lesson plan support teachers in learning more about what each student knows and provide guidance on how to respond to students' understandings and ideas. For example, in Unit 1, Lesson 2, Activity 1, the Response to Student Thinking section guides teachers, "If students list only some of the factor pairs for a given number, consider asking: 'How do you decide the side lengths of the rectangles?' and, 'How can you be sure that you have drawn all of the possible rectangles?'" Teachers are encouraged to "explain" the math to students through questioning more than through direct statements and explanations.
- Materials include prompts and guidance to support the teacher in communicating concepts. Activity narratives and descriptions provide guidance and directions. The activity's Launch includes support for direct communication of ideas. For example, the Activity Narrative in Unit 9, Lesson 2 provides guidance to support the teacher in communicating: "In this activity, students practice solving word problems that involve adding and subtracting mixed numbers. Students interpret fractions in the context of comparing heights and use what they know about decomposing whole numbers and equivalent fractions to make sense of and solve each problem. Look for the different ways students use what they know about the structure of whole numbers and fractions to reason about how to solve each problem and share their thinking with others." The Activity Narrative also provides support by having teachers ask students to compare their strategy with their partner's strategy. Then, teachers monitor students who use the relationship between addition and subtraction to represent the situations.
- The materials provide prompts and guidance to support the teacher in communicating the concepts to be learned in a given lesson in various ways. For example, at the start of each

lesson, the materials provide the teacher with Goals, a Student-Facing Learning Objective statement, a Lesson Purpose statement, and a Narrative section that provides the teacher with a detailed description of the lesson's goals and how it fits into the broader learning of the given concept.

Materials include teacher guidance and recommendations for effective lesson delivery and facilitation using a variety of instructional approaches.

- Materials include teacher guidance and recommendations using a variety of instructional approaches for effective lesson facilitation. Instructional resources describe the four phases: Warm-Up, Instructional Activities, Lesson Synthesis, and Cool-Down. The Warm-Up is defined as an instructional routine that engages students in the lesson. The *Course Guide* provides descriptions for various Warm-Up Routines, such as Act It Out, Choral Count, Estimation Exploration, How Many Do You See, Notice and Wonder, Number Talk, Questions About Us, True or False, What Do You Know About _____, and Which Three Go Together. The following guidance and recommendations are provided for the Warm-Up Number Talk: "The sequence of problems in a Number Talk encourages students to look for structure and use repeated reasoning to evaluate expressions and develop computational fluency. As students share their strategies, they make connections and build on one another's ideas, developing conceptual understanding."
- Materials include teacher guidance and recommendations using a variety of instructional approaches for effective lesson delivery. Each lesson includes a Lesson Narrative and an Activity Narrative. The Lesson Narrative includes information about the mathematical content of the lesson and its place in the learning sequence, with the meaning of any new terms introduced in the lesson and how the mathematical practices come into play. The Activity Narrative explains the mathematical purpose of the activity and its place in the learning sequence, what students are doing during the activity, and what teachers should look for while students are working on an activity to orchestrate an effective Activity Synthesis. The Activity Narrative also explains that teachers should connect to the mathematical practices when appropriate.
- The materials include teacher guidance and recommendations for effective lesson delivery using a variety of instructional approaches such as discussions, journal prompts, and mathematical language routines to engage students in higher-level thinking to demonstrate their understanding of mathematics. The Design Principles section of the *Teacher Resource Guide* states, "Instructional routines provide opportunities for all students to engage and contribute to mathematical conversations. Instructional routines are invitational, promote discourse, and are predictable in nature." The materials highlight a small set of carefully chosen routines to "reduce the cognitive load for teachers." In addition, professional learning materials provide guidance to teachers for effective lesson delivery through videos of these routines being used in the classroom. For example, In Unit 1, Lesson 1, Activity 1, the Instructional Routine lists "MLR7 Compare and Connect," which invites students to reflect on and linguistically respond to given comparisons. This is one of several instructional approaches described in the *Teacher Resource Guide* to provide teacher guidance and recommendations for effective lesson delivery.

- The Design Principles section of the *Teacher Resource Guide* states, "In lessons in which there are opportunities for students to make connections between representations, strategies, concepts, and procedures, the lesson and activity narratives provide support for teachers to also use the practices of sequencing and connecting, and the lesson is tagged so teachers can easily identify these opportunities." For example, the Unit 1, Lesson 1 Narrative guides teachers through the lesson facilitation to support sequencing and connecting by stating, "In grade 3, students learned that a factor is a number being multiplied by another number. For instance, when we multiply 3 and 5 to find the total in 3 groups of 5, or to find the area of a rectangle that is 3 units by 5 units, the 3 and 5 are factors. In this lesson, students learn that a factor pair of a number *n* is a pair of whole numbers that multiply to result in *n*. For example, 3 and 5 are a factor pair of 15.".

Materials support multiple types of practice (e.g., guided, independent, collaborative) and include guidance for teachers and recommended structures (e.g., whole group, small group, individual) to support effective implementation.

- The instructional materials include recommended structures for the effective implementation of lessons. For example, Unit 9, Lesson 7, Launch provides information to suggest activity implementation with groups of two. The Activity Narrative suggests independent work and suggestions are also provided to pause for discussions.
- Instructional materials include types of practice and provide step-by-step instructions for guided practice. For example, Unit 9, Lesson 9, Launch suggests groups of two. Students look at the strategies of three students and how they added 362 + 354. Teachers will give students one minute to think about their answers. The materials then proceed to the main activity. Students work with their partner to explain how each method works. The materials suggest 7–10 minutes for partner work.
- The materials provide frequent opportunities for student collaboration and specific teacher guidance to facilitate cooperation. Lesson components provide teacher guidance, such as suggestions for student group size, and indicate which lesson and activity components are designed to be completed collaboratively. For example, in Unit 5, Lesson 1, the materials specify that students should work in groups of two for the Launch and Activity portion of the lesson. Teachers are also provided with question prompts to guide groups through the tasks.
- The lesson Narratives provide guidance for teachers to support effective implementation. For example, the Narrative of Unit 1, Lesson 2, Activity 1 suggests, "To find all possible rectangles with a given area, students may use tiles."
- Materials include recommended structures such as small group and individual work to support effective implementation. The "How to Use These Materials" section of the *Teacher Resource Guide* states, "The launch for an activity frequently includes suggestions for students to work individually, with a partner, or in small groups." An example is in Unit 1, Lesson 1, Activity 2, where the Launch guides teachers to place students in groups of two for the activity. The Design Principles section of the *Teacher Resource Guide* also states, "The curriculum materials include classroom structures that support students in taking risks,

engaging in mathematical discourse, productively struggling through problems, and participating in ways that make their ideas visible."

Supports for All Learners

3.3	Supports for Emergent Bilingual Students	10/11
3.3a	Materials include teacher guidance on providing linguistic accommodations for various levels of language proficiency [as defined by the English Language Proficiency Standards (ELPS)], which are designed to engage students in using increasingly more academic language.	1/2
3.3b	Materials include implementation guidance to support teachers in effectively using the materials in state-approved bilingual/ESL programs.	1/1
3.3c	Materials include embedded guidance for teachers to support emergent bilingual students in developing academic vocabulary, increasing comprehension, building background knowledge, and making cross-linguistic connections through oral and written discourse.	8/8
3.3d	If designed for dual language immersion (DLI) programs, materials include resources that outline opportunities to address metalinguistic transfer from English to the partner language.	Not scored

Materials include teacher guidance on providing linguistic accommodations for one level of language proficiency [as defined by the English Language Proficiency Standards (ELPS)], designed to engage students in increasingly more academic language. The materials do not include teacher guidance on providing linguistic accommodations for various levels of language proficiency [as defined by the English Language Proficiency Standards (ELPS)]. Materials include implementation guidance to support teachers in effectively using the materials in state-approved bilingual/ESL programs. Materials include embedded guidance for teachers to support emergent bilingual students in developing academic vocabulary, increasing comprehension, building background knowledge, and making cross-linguistic connections through oral and written discourse.

Evidence includes, but is not limited to:

Materials include teacher guidance on providing linguistic accommodations for various levels of language proficiency [as defined by the English Language Proficiency Standards (ELPS)], which are designed to engage students in using increasingly more academic language.

- The materials include teacher guidance on providing linguistic accommodations for one level of language proficiency. The Mathematical Language Development and Access for English Learners states "Support sense-making, scaffold tasks, and amplify language so students can make their meaning. Optimize output to strengthen opportunities for students to describe their mathematical thinking to others orally, visually, and in writing. Cultivate conversation to strengthen opportunities for constructive mathematical conversations and maximize meta-awareness to strengthen the meta-connections and distinctions between mathematical ideas, reasoning, and language." Mathematical Language Routines (MLRs) are instructional routines that provide structured but adaptable formats for amplifying, assessing, and developing students' language. Each unit includes MLRs in select activities to provide students with explicit opportunities to develop mathematical and academic language proficiency. These embedded MLRs are described in the teacher notes for the lessons where they appear. The instructional materials include Access for English Learners with lesson activities; however, various accommodations are not included to differentiate between language proficiency levels.

- The materials include supports for students, such as sentence stems, visible displays, and word collections. The Supporting Diverse Learners section of the Teacher Guide states, "Each lesson also includes optional, suggested Mathematical Language Routines that can be used to support access and language development for English learners, based on the language demands students will encounter." This is described in the Activity Narrative under the heading Support for English Learners. For example, in Unit 6, Lesson 4, Activity 1, MLR8 Discussion Supports provides teacher guidance for students: "Use multimodal examples to show the patterns of both columns. Use verbal descriptions along with gestures, drawings, or concrete objects to show the connection between the multiples of 9 and 10." Synthesis: "Select two students to share their diagrams, solutions, and reasoning for the last problem. ‘How did you decompose the factors and the diagram?’" This accommodation only provides one level of support and does not provide accommodations for students at various proficiency levels.
- The materials include sentence frames to support student language production by providing a structure to communicate about a topic. The recommended generic sentence frames and question starters are listed by language function in a chart in the Supporting Diverse Learners section of the Teacher Guide. It states, "Some of the lessons in these materials include suggestions of additional sentence frames that could support the specific content and language functions of that lesson." For example, Unit 5, Lesson 2, Activity 2 gives the teacher guidance for discussion support, stating "Students should take turns finding a match and explaining their reasoning to their partner. Display the following sentence frames for all to see: 'I noticed _____, so I matched…' Encourage students to challenge each other when they disagree."
- The Course Guide explains that MLRs are "instructional routines that provide structured but adaptable formats for amplifying, assessing, and developing students' language." While the Course Guide provides general guidance about the various MLRs, it does not provide specific guidance for leveling support based on student needs. For example, the Course Guide states that teachers can "Adapt these flexible routines to support students at all stages of language development in improving their use of English and disciplinary language." Still, it does not explicitly provide the teacher guidance on how to make these adaptations. It also states, "Use the MLRs, as needed, and phase them out as students develop understanding and fluency with the English language," but does not guide how to evaluate if a student is ready to have decreased language support.
- Kiddom’s Approach to English Language Proficiency in Texas Math document aligns the MLRs to the ELPS, but does not provide linguistic accommodations for the various levels of language proficiency as defined by the ELPS. The document states that "Teachers should use their professional judgment about which routines to use and when, based on their knowledge of the individual needs of students in their classroom."

Materials include implementation guidance to support teachers in effectively using the materials in state-approved bilingual/ESL programs.

- The materials provide guidance and implementation support for teachers of emergent bilingual students, such as one-pagers, lesson guidance for "Access for English Learners," and four design principles that promote mathematical language use and development. For example, the Supporting Diverse Learners section of the Teacher Guide gives an information page for "Mathematical Language Development and Access for English Learners." This page guides teachers in creating a language-rich classroom environment. This page also includes information on MLRs and states "They are particularly well-suited to meet the needs of linguistically and culturally diverse students who are learning mathematics while simultaneously acquiring English."
- The materials provide Kiddom's Approach to English Language Proficiency in Texas Math that aligns the Mathematical Language Routines that are referenced throughout the materials to the ELPS. The Course Guide supports the teacher over the design principles that the language supports are based on in the materials. At the lesson level, lesson plans include Access for English Language Learners, which provides specific guidance for suggested language supports to implement for a given activity. For example, in Unit 5, Lesson 1 of the Teacher Edition, the materials provide information on MLR8, Discussion Supports. The materials state "During group presentations, invite students who are not speaking to follow along and point to the corresponding parts of the display."

Materials include embedded guidance for teachers to support emergent bilingual students in developing academic vocabulary, increasing comprehension, building background knowledge, and making cross-linguistic connections through oral and written discourse.

- The materials implement a set of core mathematical language routines throughout the resource to support access and language development for emergent bilingual students. The MLRs used in the materials vary depending on the demands of the lesson or activity and target different aspects of supporting language development. For example, the MLR Collect and Display provides academic vocabulary support as well as building background knowledge support in both oral and written discourse. The Collect and Display excerpts from the Course Guide state "The intent of this routine is to stabilize the varied and fleeting language in use during mathematical work, in order for students' own output to become a reference in developing mathematical language. Organize, revoice, or explicitly connect to other terms in a display that all students can refer to, build on, or make connections with during future discussion or writing. Throughout a unit (and beyond), reference the displayed language as a model, update and revise the display as students' language changes, and make bridges between prior student language and new disciplinary language (Zwiers et al., 2017)."
- According to the Supporting Diverse Learners section of the Teacher Guide, "To support students who are learning English in their development of language, this curriculum includes instruction devoted to fostering language development alongside mathematics learning, fostering language-rich environments where there is space for all students to participate." An example of teacher guidance for this oral discourse that fosters academic vocabulary is in

Unit 6, Lesson 5, Activity 1. The Access for English Language Learners section states "MLR2 Collect and Display. Circulate, listen for, and collect the language students use as they create a display of their strategies. On a visible display, record words and phrases such as decompose, partition, associative property, distributive property, and array. Invite students to borrow language from the display as needed and update it throughout the lesson." An example of teacher guidance that fosters written discourse to develop academic vocabulary is in Unit 1, Lesson 4, Activity 1. It guides teachers in the Support for English Language Learners section, MLR8 Discussion Supports. "Students who are working toward verbal output may benefit from access to mini-whiteboards, sticky notes, or spare paper to write down and show their responses to their partner."

- According to the Supporting Diverse Learners section of the Teacher Guide, to support students in increasing comprehension and building background knowledge, the resource states "To advance the mathematics and language learning of all students, the materials purposefully engage students in sense-making and using language to negotiate meaning with their peers." An example of this oral discourse is in Unit 8, Lesson 2, Activity 3. The materials state that for MLR8, Discussion Supports, teachers should "Give students 2–3 minutes to make sure that everyone in their group can explain their statements. Invite groups to rehearse what they will say when they share with the whole class." In addition, materials include embedded guidance for teachers to support emergent bilingual students in increasing comprehension through written discourse. As stated in the Key Structures of This Course in the Teacher Guide, "Journal writing can provide an additional opportunity to support each student in their learning of mathematics." Journal prompts are included for "Reflecting on Content and Practices" and "Reflecting on Learning and Feelings about Math." The written discourse through journal writing will develop academic vocabulary and increase comprehension. An example of written discourse fostering academic vocabulary and increasing comprehension is in Unit 8, Lesson 9, Activity 2. The Support for English Language Learners states for MLR8 Discussion Supports, "Students who are working toward verbal output may benefit from access to mini-whiteboards, sticky notes, or spare paper to write down and show their responses to their partner."
- The Course Guide specifies five practices for building background knowledge and making connections as Other Instructional Routines. These practices are implemented during the Activity Synthesis, stating " ...students collectively reveal multiple approaches to a problem and make connections between these approaches (MP3)." For example, MLR5, Co-craft Questions, "Allows students to get inside a context before feeling pressure to produce answers and creates opportunities for students to produce the language of mathematical questions," and MLR2, Collect and Display, "Captures a variety of students' oral words and phrases into a stable, collective reference. Output can be organized, revoiced, or explicitly connected to other languages in a display that all students can refer to, build on, or make connections with during future discussion or writing.
- Compare and Contrast develops academic vocabulary through oral discourse as students "identify, compare, and contrast different mathematical approaches and representations. Students are prompted to reflect on and linguistically respond to these comparisons; for example, exploring why or when one might do or say something a certain way, or by identifying

and explaining correspondences between different mathematical representations or methods."

If designed for dual language immersion (DLI) programs, materials include resources that outline opportunities to address metalinguistic transfer from English to the partner language.

- The materials do not specify that they are designed for dual language immersion programs. Materials do not include resources that outline opportunities that address transfer from English to the partner language. However, the materials do include the Supporting Diverse Learners section of the Teacher Guide. This section states "Both metacognitive and metalinguistic awareness are powerful tools to help students self-regulate their academic learning and language acquisition." Overall, the materials lack resources and strategies to integrate metalinguistic skills into lesson activities.

Depth and Coherence of Key Concepts

4.1	Depth of Key Concepts	3/3
4.1a	Practice opportunities over the course of a lesson and/or unit (including instructional assessments) require students to demonstrate depth of understanding aligned to the TEKS.	**1/1**
4.1b	Questions and tasks progressively increase in rigor and complexity, leading to grade-level proficiency in the mathematics standards.	**2/2**

The materials provide practice opportunities over the course of a lesson and/or unit (including instructional assessments) that require students to demonstrate depth of understanding aligned to the TEKS. Questions and tasks progressively increase in rigor and complexity, leading to grade-level proficiency in the mathematics standards.

Evidence includes, but is not limited to:

Practice opportunities over the course of a lesson and/or unit (including instructional assessments) require students to demonstrate depth of understanding aligned to the TEKS.

- Material includes practice opportunities throughout each lesson and unit, including instructional assessment, that require students to demonstrate depth of understanding. The materials include a TEKS guide that aligns the lessons to the TEKS. The Lesson Activity Routines embed structures within the lessons' tasks that allow students to engage in the content and collaborate to support the development of student thinking and precision with language. For example, in Unit 6, Lesson 5, Activity 1, the Narrative states the task, "In this activity, students build on grade 3 work with arrays to consider how to find the total number in an array without counting by 1. Students are not asked to find the answer but instead share their strategies for doing so." This narrative allows teachers to observe how students understand multiplying larger numbers. Students may decompose the larger array of stickers into two smaller arrays using the distributive property to determine the product. They may also use doubling and tripling to find the product.
- Materials highlight a deep study of concepts and procedures and provide the connection to the TEKS in a TEKS guide. The Design Principles section of the *Teacher Resource Guide* states, "Each unit, lesson, and activity has the same overarching design structure: the learning begins with an invitation to mathematics, is followed by a deep study of concepts and procedures, and concludes with an opportunity to consolidate understanding of mathematical ideas." For example, Unit 2, Lesson 4, Activity 2 directs students to notice the relationship between two fractions whose denominator is a multiple or a factor of each other and then use this relationship to locate fractions on a number line. This activity allows them to demonstrate depth of understanding of the Lesson 4 objective, " ... to use visual representations to reason about the fractions that have the same size and to locate them on the number line."
- The materials include a variety of assessments that require students to demonstrate learning at a depth of understanding aligned with the objectives. In grade 4, end-of-unit assessments

are provided and include multiple question types that vary in difficulty and depth of knowledge, according to the Assessment section of the *Teacher Resource Guide*.

- The Coherent Progression section of The Principles of IM Curriculum Design in the *Course Guide* explains the materials designed with concept progression in mind. It states, "The basic architecture of the materials supports all learners through a coherent progression of the mathematics, based both on the standards and research-based learning trajectories. Activities and lessons are parts of a mathematical story that spans units and grade levels. This coherence allows students to view mathematics as a connected set of ideas that makes sense."

Questions and tasks progressively increase in rigor and complexity, leading to grade-level proficiency in the mathematics standards.

- Questions and tasks in the materials progressively increase in rigor and complexity. Each activity builds on prior learning, enhancing complexity. The Grade 4, Unit 7, Section A Planning Guide states the goal for students is to "Draw and identify points, lines, rays, segments, and parallel and intersecting lines in geometric figures. Recognize that angles are formed wherever two rays share the same starting point, and identify angles in two-dimensional figures." When we get to Section B of the Planning Guide, the goals are "Recognize that angles can be measured in degrees and found using addition and subtraction. Use a protractor to measure and draw angles, and recognize that perpendicular lines create four right angles." The *Teacher Resource Guide* emphasizes developing conceptual understanding, procedural fluency, and application skills to support comprehensive student learning.
- The materials include a strategic learning progression to build a new understanding of previous foundations within and across grade levels. For example, in Unit 5, Section A, the Planning Guide Narrative explains how the concept relates to concepts learned in the prior grade and how those concepts are built upon and extended to reach grade-level proficiency. The narrative states, "In this section, students learn to compare two quantities in terms of multiplication and to solve multiplicative comparison problems." In earlier grades, students made comparisons in terms of addition or subtraction. To describe the number of cubes in the image, they may say, "Han has three more cubes than Andre," or "Andre has three fewer cubes than Han." They compare this here by saying, "Han has two times (or twice) as many cubes as Andre." Students begin with comparisons that involve small factors and familiar situations, such as comparing blocks, using familiar multiplicative comparison language, such as *twice* or *twice as many*. The materials progress from using concrete representations (actual cubes) to discrete diagrams (showing cubes or sections representing single objects). As students encounter larger factors and more abstract situations, the materials include support for students to interpret and use diagrams where each section represents any quantity.
- Materials include a variety of assessment questions that progressively increase in rigor and complexity, leading to grade-level proficiency in the mathematics standards. As stated in the Design Principles section of the *Teacher Resource Guide*, "It is our intent to create a problem-based curriculum that fosters the development of mathematics learning communities in classrooms, gives students access to the mathematics through a coherent progression, and provides teachers the opportunity to deepen their knowledge of mathematics, student

thinking, and their teaching practice." For example, as stated in the Assessment section of the *Teacher Resource Guide*, the End-of-Course Assessment and Resources consist of three portions, which demonstrate progression in rigor and complexity: items that assess key work of the grade, fluency items that target the key fluencies of the grade, and one or more in-depth problem that leads students to apply the key ideas they have learned over the year.

- Tasks in materials increase in rigor and complexity as the learning progression evolves from concrete understanding, representation, and abstract thinking. Grade 4 tasks prompt students to apply their conceptual understanding and procedural fluency to new problems and situations. For example, in the Unit 6 Section Level Planning Guide, Section A Narrative states, "The section begins with patterns that are more concrete — such as shapes with features that change quantitatively and thus elicit addition or multiplication. It then moves toward patterns with repeating objects or numbers, which require students to reason more abstractly." Later, students explore patterns in the features of rectangles — side length, perimeter, and area that change by a rule. Along the way, students apply their knowledge of factors and multiples.

Depth and Coherence of Key Concepts

4.2	Coherence of Key Concepts	12/12
4.2a	Materials demonstrate coherence across courses/grade bands through a logically sequenced and connected scope and sequence.	**2/2**
4.2b	Materials demonstrate coherence across units by explicitly connecting patterns, big ideas, and relationships between mathematical concepts.	**3/3**
4.2c	Materials demonstrate coherence across units by connecting the content and language learned in previous courses/grade levels and what will be learned in future courses/grade levels to the content to be learned in the current course/grade level.	**3/3**
4.2d	Materials demonstrate coherence at the lesson level by connecting students' prior knowledge of concepts and procedures from the current and prior grade level(s) to new mathematical knowledge and skills.	**4/4**

The materials demonstrate coherence across grade bands through a logically sequenced and connected scope and sequence. Materials demonstrate coherence across units by explicitly connecting patterns, big ideas, and relationships between mathematical concepts. Materials demonstrate coherence across units by connecting the content and language learned in previous grade levels and what will be learned in future grade levels to the content to be learned in the current grade level. Materials demonstrate coherence at the lesson level by connecting students' prior knowledge of concepts and procedures from the current and prior grade levels to new mathematical knowledge and skills.

Evidence includes, but is not limited to:

Materials demonstrate coherence across courses/grade bands through a logically sequenced and connected scope and sequence.

- Materials include a unit description, which explains the sequence of the unit and how the previous grade level connects to the current unit. For example, Unit 1: Factors and Multiples states, "In this unit, students extend their knowledge of multiplication, division, and the area of a rectangle to deepen their understanding of factors and to learn about multiples." In grade 3, students learned that they can multiply the two side lengths of a rectangle to find its area and divide the area by one side length to find the other side length. To represent these ideas, students used area diagrams, wrote expressions and equations, and learned the terms *factors* and *products*. In this unit, students return to the area concept to make sense of factors and multiples of numbers. Students find as many pairs of whole-number side lengths as possible when given a rectangle with a specific area. They make sense of those side lengths as factor pairs of the whole-number area and the area as a multiple of each side length. Students also learn that a number can be classified as prime or composite based on the number of factor pairs it has. Throughout the unit, students encounter various contexts related to school, gatherings, and celebrations. Students are intended to invite conversations about students' lives and experiences. The materials encourage teachers to view these as opportunities to learn about students as individuals, to foster a positive learning community, and to shape each lesson based on insights about students."

- The Scope and Sequence included in the *Course Guide* of the materials provides unit narratives that outline how the concepts progress throughout the unit and detail how the concepts build upon previous learning. The Scope and Sequence overview includes the Learning Goals Section that explains how the unit's learning goals and the concepts align with previous and current grade-level concepts. For example, the Unit 5 Learning Goal focuses on students making sense of multiplication to compare quantities. Students use this understanding to solve problems about measurement. In earlier grades, students related two quantities and made additive comparisons, where the key question was, "How many more?" Here, they make a multiplicative comparison, in which the underlying question is, "How many times as many?" For example, if "Mai has 3 cubes and Tyler has 18 cubes, we can say that Tyler has 6 times as many cubes as Mai does." Initially, students reason using concrete manipulatives and discrete images. Later, they reason more abstractly, using tape diagrams and equations.
- The Coherent Progression section of the *Course Guide* explains that the material notes are designed to align student learning within and across grade levels. It states, "The basic architecture of the materials supports all learners through a coherent progression of the mathematics, based both on the standards and research-based learning trajectories. Activities and lessons are parts of a mathematical story that spans units and grade levels. This coherence allows students to view mathematics as a connected set of ideas that makes sense."
- The Dependency Chart Section of the *Course Guide* outlines how previously learned concepts are connected across grade levels and in the current grade level. It explains, "An arrow indicates that a particular unit is designed for students who already know the material in a previous unit. Reversing the order of the units would have a negative effect on mathematical or pedagogical coherence."

Materials demonstrate coherence across units by explicitly connecting patterns, big ideas, and relationships between mathematical concepts.

- The grade 4 Scope and Sequence Narrative in the Digital Review describes the learning goal of the unit or the big idea. It describes the connections within patterns and relationships of concepts. For example, "The big ideas in grade 4 include: developing understanding and fluency with multi-digit multiplication and developing an understanding of dividing to find quotients involving multi-digit dividends; developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.
- The materials include visual models for concept development, connecting patterns to big ideas, and abstract relationships within mathematical concepts. For example, in grade 4, Unit 5, when learning about multiplicative comparison and measurement, "Initially, students

reason using concrete manipulatives and discrete images. Later, they reason more abstractly, using tape diagrams and equations."

- The materials connect big ideas across units. The materials include a Unit Narrative overview that explains the big ideas, tools, and representations used throughout the unit. The Unit Narrative explicitly connects to previous units or grade levels where students learned prior knowledge needed for the upcoming unit. For example, to connect the grade 4, Unit 1 big idea objective of extending knowledge of multiplication, division, and the area of a rectangle to deepen understanding of factors and to learn about multiples, the Unit Narrative states, "In grade 3, students learned that they can multiply the two side lengths of a rectangle to find its area, and divide the area by one side length to find the other side length." Materials also include a "CCSS Progressions Document" within the *Teacher Resource Guide*, which "describes the progression of a topic across grade levels, notes key connections among standards, and discusses challenging mathematical concepts. This table provides a mapping of the particular progressions documents that align with each unit in the K–5 materials for further reading."
- The grade 4 Scope and Sequence Narrative outlines the learning goals and connections within mathematical concepts. Grade 4 math is divided into nine units: Factors and Multiples, Fraction Equivalence and Comparison, Extending Operations to Fractions, From Hundredths to Hundred-thousandths, Multiplicative Comparison and Measurement, Multiplying and Dividing Multi-Digit Numbers, Angles and Angle Measurement, Properties of Two-dimensional Shapes, and Putting it All Together. The materials connect current learning to past and future concepts. For example, in grade 4, Unit 3 builds on previously learned concepts such as properties of whole numbers, fraction models, tape diagrams, and number lines to develop an understanding of composing, decomposing, and operating on fractions. The materials ensure coherence by explicitly linking how concepts in one unit relate to those learned later. For example, in Unit 5, students start with concrete manipulatives and discrete images and progress to more abstract reasoning using tape diagrams and equations.
- The materials provide coherence across units by explicitly connecting how the understanding of a concept in a unit relates to other concepts to be learned later in the course or another course. For example, in grade 4, Unit 5, the Unit Narrative states, "Initially, students reason using concrete manipulatives and discrete images. Later, they reason more abstractly, using tape diagrams and equations."

Materials demonstrate coherence across units by connecting the content and language learned in previous courses/grade levels and what will be learned in future courses/grade levels to the content to be learned in the current course/grade level.

- The grade 4 Scope and Sequence in the Digital Review describes the previous grade content and makes connections to future content learned. For example, it states, "In this unit, students extend their knowledge of multiplication, division, and the area of a rectangle to deepen their understanding of factors and to learn about multiples. In grade 3, students learned that they can multiply the two side lengths of a rectangle to find its area and divide the area by one side length to find the other side length. To represent these ideas, they used area diagrams, wrote expressions and equations, and learned the terms *factors* and *products*." The materials describe how the unit connects to future concepts. For example, "Later, students explore patterns in the features of rectangles — side length, perimeter, and area change by a rule. Along the way, students apply their knowledge of factors and multiples."

- The grade 4 *Course Guide* provides descriptions of each unit. The materials include connections to content learned in the previous grade level. It also makes connections with what will be learned in the future and connects language from the previous grade level to the current unit. For example, "In earlier grades, students learned about two-dimensional shapes and their attributes, which they described informally early on but with increasing precision over time. Here, students formalize their intuitive knowledge about geometric features and draw them. They identify and define some building blocks of geometry (points, lines, rays, and line segments) and develop concepts and language to more precisely describe and reason about other geometric figures. Students analyze cases where lines intersect and where they don't (for example, parallel lines). They learn that an angle is a figure composed of two rays that share the same starting point. Later, students compare the sizes of angles and consider ways to quantify the comparison. They learn that angles can be measured in terms of the amount of turn one ray makes relative to another ray that shares the same vertex."
- The materials are vertically aligned and connect mathematical content to what was learned previously and content to future learning within the course. For example, the grade 4, Unit 3 Narrative explains that throughout the unit, students will develop an understanding of how fractions can be composed and decomposed and learn about operations on fractions. It describes how previously learned content aligns with the current learning goals and how the content connects throughout the unit, stating, "In grade 3, students partitioned a whole into equal parts and identified one of the parts as a unit fraction. They learned that non-unit fractions and whole numbers are composed of unit fractions. They used visual fraction models, including tape diagrams and number lines, to represent and compare fractions. In a previous unit, students extended that work and reasoned about fraction equivalence." The materials describe strategies learned in grade 3 and how they will be utilized and extended in grade 4 by stating, "Here, students multiply fractions by whole numbers, add and subtract fractions with the same denominator, and add tenths and hundredths. They rely on familiar concepts and representations to do so. For instance, students represented multiplication on a tape diagram, with equal-sized groups and a whole number in each group. Here, they use a tape diagram that shows a fraction in each group."

Materials demonstrate coherence at the lesson level by connecting students' prior knowledge of concepts and procedures from the current and prior grade level(s) to new mathematical knowledge and skills.

- The *Teacher Resource Guide* includes a Scope and Sequence, which details each unit and connects prior and future learning. For example, Unit 6 builds on grade 3 multiplication skills, extending to multiplying up to four digits by single-digit numbers and two-digit numbers. It introduces geometric and numerical patterns, reinforcing multiplication concepts like factors and multiples. Students transition from using base-ten diagrams to algorithms for recording partial products and learn division up to four-digit dividends by single-digit divisors. Now, students use those understandings to multiply up to four digits by single-digit numbers and to multiply a pair of two-digit numbers. At the end of the unit, students apply their expanded knowledge of operations to solve multi-step problems about measurement in various contexts.

- Materials demonstrate coherence at the lesson level by connecting students' prior knowledge of concepts and procedures to new mathematical knowledge. As stated in the Instructional Routines section of the *Course Guide*, "They (instructional routines) provide opportunities for students to bring their personal experiences as well as their mathematical knowledge to problems and discussions." The instructional routine begins with a warm-up and moves to lesson activity routines. The Instructional Routines section states, "Each lesson begins with a Warm-Up Routine intentionally designed to elicit student discussions around the mathematical goal of the lesson. The Lesson Activity Routines embed structures within the tasks of the lessons that allow students to engage in the content and collaborate in ways that support the development of student thinking and precision with language."
- The materials include Centers that connect concepts and procedures from prior grades to the current grade. For example, the Creating Line Plots Center, recommended for grades 2–5, provides opportunities for students to create and analyze line plots based on measurement data they collect. The center design includes four stages. In all stages of the center, students measure up to eight objects to the nearest centimeter or inch and work with a partner to create a line plot to represent their measurement data. As the stages progress, students make more advanced measurements and are given additional tasks to complete, such as "ask their partner two questions that can be answered based on the data in their line plot that use addition, subtraction, or multiplication."
- The Student Journal Prompts section included in the Key Structures for this Course section of the *Course Guide* explains that the materials include journal writing prompts to allow students to clarify their thinking and develop a deeper understanding of the content. The journal prompts provide two categories. The first category facilitates the student making connections to prior learning. It states, " Prompts for the first category focus on students' learning or specific learning objectives in each lesson. Students reflect on the mathematical content because the act of writing generally entails careful analysis, encouraging the explicit connection between what is known and new knowledge, which becomes incorporated into a consciously constructed network of meaning (Vygotsky, 1987). For example, when students write about ways in which the math they learned in class that day is connected to something they knew from an earlier unit or grade, they explicitly connect their prior and new understandings."

Depth and Coherence of Key Concepts

4.3	Spaced and Interleaved Practice	8/8
4.3a	Materials provide spaced retrieval opportunities with previously learned skills and concepts across lessons and units.	4/4
4.3b	Materials provide interleaved practice opportunities with previously learned skills and concepts across lessons and units.	4/4

The materials provide spaced retrieval opportunities with previously learned skills and concepts across lessons and units. Materials provide interleaved practice opportunities with previously learned skills and concepts across lessons and units.

Evidence includes, but is not limited to:

Materials provide spaced retrieval opportunities with previously learned skills and concepts across lessons and units.

- Materials provide opportunities for frequent retrieval practice of skills and concepts across lessons through the lesson warm-ups. The A Typical IM Lesson section states that one of the purposes for the warm-ups provided in every lesson is "to get them thinking about where the previous lesson left off." It also states, "The warm-ups provide opportunities for students to bring their personal experiences as well as their mathematical knowledge to problems and discussions." For example, in Unit 3, Lesson 1, the Warm-Up provides an opportunity to recall previously learned multiplication skills and fraction concepts. The Narrative states, "The purpose of this How Many Do You See is to elicit ideas about equal groups of fractional amounts and to prepare students to reason about the multiplication of a whole number and a fraction."
- Materials provide opportunities for spaced retrieval practice for previously learned skills and concepts across lessons and units through the use of centers. As stated in the "How To Use These Materials" section of the *Teacher Resource Guide*, "Centers are intended to give students time to practice skills and concepts that are developed across the year. There are two types of centers. Addressing centers address the work of a lesson or section of a unit. Supporting centers review prior unit or prior grade-level understandings and fluencies." For example, the Unit 4, Section Level Planning Guide suggests using the "Decimal Notation and Order, Stages 1–3" as the center for "ongoing practice."
- The materials integrate spaced retrieval opportunities to reinforce previously learned concepts across lessons and units. For instance, Unit 2 focuses on area and multiplication, revisited in Unit 4, where students deepen their understanding of multiplication and division using the area model approach. In Unit 9, students revisit grade-level goals across its sections. Section A emphasizes comparing fractions and operations with fractions and whole numbers. Section B strengthens multi-digit addition, subtraction, multiplication, and division fluency. Section C involves problem-solving with multiplication and division concepts, culminating in activities that integrate these skills through familiar warm-up routines.

Modeling examples across units activates prior knowledge, using tools like fraction strips and tape diagrams to explore fraction concepts and mental multiplication strategies. Lesson warm-ups provide frequent retrieval practice, helping students reconnect with previous lessons and apply their mathematical knowledge to problem-solving discussions. These methods ensure consistent skill reinforcement and deep conceptual understanding throughout the year.

- Materials also provide spaced retrieval opportunities for previously learned concepts across lessons and units. For example, Unit 9 states, "In this unit, students revisit major work and fluency goals of the grade, applying their learning from the year. In Section A, students reinforce what they learn about comparing fractions, adding and subtracting fractions, and multiplying fractions and whole numbers. In Section B, they strengthen their ability to add and subtract multi-digit numbers fluently using the standard algorithm. They also multiply and divide numbers by reasoning about place value and practice doing so strategically. In Section C, students practice making sense of situations and solving problems that involve reasoning with multiplication and division, including multiplicative comparison and interpreting remainders. In the final section, students review the major work of the grade as they create activities in the format of the warm-up routines they have encountered throughout the year (Estimation Exploration, Number Talk, and Which One Doesn't Belong?). The sections in this unit are standalone sections and do not require to be completed in order. Lessons can also be completed selectively and without competing with prior lessons within a section. The goal is to offer ample opportunities for students to integrate the knowledge they have gained and to practice skills related to the expected fluencies of the grade."

Materials provide interleaved practice opportunities with previously learned skills and concepts across lessons and units.

- The materials provide varied practice opportunities across lessons, encouraging students to use multiple strategies rather than relying on one approach for all problems. In Unit 5, students tackle multiplicative comparison and measurement, applying multiplication, division, and unit conversion strategies to solve complex problems. Practice tasks in this unit prompt students to demonstrate their work and explain their reasoning, promoting deep understanding. Additionally, using "Number Talk" warm-ups throughout the units enhances computational fluency and conceptual understanding by encouraging students to analyze problems systematically and build on each other's ideas. Lesson activities further reinforce this approach, prompting students in Unit 5, Lesson 1, Activity 1 to represent problems in ways that suit their understanding, laying the groundwork with concrete representations like cubes or drawings before progressing to more abstract concepts like tape diagrams.
- The materials include practice opportunities for skills and concepts across units. For example, students use knowledge of multiplication skills and concepts addressed in Unit 1, "Factors and Multiples," to connect multiplicative relationships to various units of measurement in Unit 5, "Multiplicative Comparison and Measurement." The Unit 5 Narrative states, "Initially, students reason using concrete manipulatives and discrete images. Later, they reason more abstractly, using tape diagrams and equations." Next, students use the idea and language of multiplicative relationships to learn about various units of length, mass,

capacity, and time and to convert from larger units to smaller units within the same measurement system. For example, they describe 1 kilometer as 1,000 times as long as a meter. Students then use their new knowledge to solve measurement problems.

- Purposeful Representations are utilized throughout the materials and provide embedded interleaved practice opportunities for previously learned skills and concepts across lessons, units, and grade levels. According to the *Course Guide* provided in the materials, Purposeful Representations are a key structure utilized in the course. The materials explain how mathematical representations in the materials serve two main purposes: to help students develop an understanding of mathematical concepts and procedures and to help them solve problems. Across lessons and units, students are systematically introduced to representations and encouraged to use those that make sense to them. As their learning progresses, students make connections between different representations and the concepts and procedures they show. Over time, they see and understand more efficient methods of representing and solving problems, which supports the development of procedural fluency.

Balance of Conceptual and Procedural Understanding

5.1	Development of Conceptual Understanding	18/18
5.1a	Questions and tasks require students to interpret, analyze, and evaluate a variety of models and representations for mathematical concepts and situations.	**12/12**
5.1b	Questions and tasks require students to create a variety of models to represent mathematical situations.	**2/2**
5.1c	Questions and tasks provide opportunities for students to apply conceptual understanding to new problem situations and contexts.	**4/4**

The materials include questions and tasks that require students to interpret, analyze, and evaluate a variety of models and representations for mathematical concepts and situations. Materials include questions and tasks that require students to create a variety of models to represent mathematical situations. Materials include questions and tasks that provide opportunities for students to apply conceptual understanding to new problem situations and contexts.

Evidence includes, but is not limited to:

Questions and tasks require students to interpret, analyze, and evaluate a variety of models and representations for mathematical concepts and situations.

- Questions and tasks provided throughout each unit require students to interpret, analyze, and evaluate various models and representations for mathematical concepts and situations. The Key Structures in This Course section of the *Teacher Resource Guide* includes a list of concrete representations and suggested uses of each. According to this section, "Across lessons and units, students are systematically introduced to representations and encouraged to use representations that make sense to them. As their learning progresses, students are given opportunities to make connections between different representations and the concepts and procedures they represent." For example, in Unit 5, Section A, students learn to compare two quantities in terms of multiplication and solve multiplicative comparison problems, beginning with comparisons that involve small factors and familiar situations (such as comparing blocks). The subsequent lessons employ a progression of models that range from concrete to abstract. The Unit 5, Section A planning guide states, "They progress from using concrete representations (actual cubes) to discrete diagrams (showing cubes or showing sections that each represent single objects). As they encounter larger factors and more abstract situations, students interpret and use diagrams where each section represents any quantity."
- Materials include purposeful models and representations with questions that require students to interpret, analyze, and evaluate them. The first lessons that cover a concept start with models to build conceptual understanding. The Design Principles section of the *Teacher Resource Guide* states, "Representations that are more concrete are introduced before those that are more abstract." For example, Unit 2, which focuses on fraction equivalence and comparisons, follows a progression of representations. The Unit 2 Narrative states that

students "Use fraction strips, tape diagrams, and number lines to make sense of the size of fractions, generate equivalent fractions, and compare and order fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100." It continues to explain that as the unit progresses, students use equivalent fractions and benchmarks such as 1/2 and 1 to reason about the relative location of fractions on a number line and to compare and order fractions.
- Materials include Lesson Activities with tasks that require students to interpret, analyze, and evaluate a variety of models and representations. For example, in the Unit 4 lessons, students learn to express both small and large numbers in base ten, extend their understanding to include numbers from hundredths to hundred-thousands, and feature a variety of models and representations. The Unit 4 Narrative explains that students will analyze and represent fractions on square grids of 100, where the entire grid represents one whole. The students reason about the size of tenths and hundredths written as decimals, locate decimals on a number line, and compare and order the numbers. Students then explore large numbers. They use base-ten blocks and diagrams to build, read, write, and represent numbers beyond 1,000. Students make connections that ten-thousands are related to thousands in the same way that thousands are related to hundreds, hundreds are to tens, and tens are to ones.

Questions and tasks require students to create a variety of models to represent mathematical situations.

- The materials provide opportunities for students to create a variety of models to represent mathematical situations. As stated in the How to Use These Materials section of the *Teacher Resource Guide*, the materials " describe the types of thinking and behaviors students engage in as they are doing mathematics." Several "I Can" statements are listed to describe the types of actions students engage in with particular mathematical processes, and many involve creating a variety of models to represent mathematical situations. For example, "I can model a situation using a representation such as a drawing, equation, line plot, picture graph, bar graph, or a building made of blocks. I can think about the real-world implications of my model. I can make connections between multiple mathematical representations."
  Examples of this can be found throughout Lesson 2 in the Unit 5 materials. The lesson narrative states, "In this lesson, students analyze and interpret images of discrete objects (connecting cubes) and discrete tape diagrams in which each unit is visible. These diagrams are precursors for more abstract tape diagrams that are used in future lessons."
- Questions and tasks included throughout the units require students to create various models to represent mathematical situations. As the Design Principles section of the *Teacher Resource Guide* states, "Across lessons and units, students are systematically introduced to representations and encouraged to use representations that make sense to them. As their learning progresses, students are given opportunities to make connections between different representations and the concepts and procedures they represent." For example, in grade 4, Unit 5, Lesson 1 Narrative, it states, "In this lesson, students interpret the language of 'times as many' in multiplicative comparison situations and connect this language to representations." The Unit 5, Lesson 1 Activity 1 Narrative states, "In this activity, students are encouraged to represent the situation in a way that makes sense to them, though discrete representations (cubes or drawings) are the focus of the activity synthesis. The

representations used in this activity serve as a foundation for the more abstract tape diagrams that will be used later in the section."

Questions and tasks provide opportunities for students to apply conceptual understanding to new problem situations and contexts.

- The materials include questions and tasks that provide opportunities for students to apply conceptual understanding to new situations. As stated in the Design Principles section of the *Teacher Resource Guide*, "Opportunities to connect new representations and language to prior learning support students in building conceptual understanding. Access to new mathematics and problems prompts students to apply their conceptual understanding and procedural fluency to novel situations. Warm-ups, practice problems, centers, and other built-in routines help students develop procedural fluency, which develops over time." For example, in Unit 3, the purpose of Lesson 20 is for students to "apply their understanding of multiplication of a whole number by a fraction to create sticky-note letter designs." The narrative for the lesson states, "In this lesson, students apply their knowledge of fractions by whole number multiplication to create sticky note designs. They create a design given a set of constraints. Students describe their designs to others before gaining access to the supplies to make their designs. When students make decisions and choices, analyze real-world situations with mathematical ideas, translate a mathematical answer back into the context of a (real-world) situation, and adhere to constraints, they model with mathematics." This task asks students to apply conceptual knowledge of multiplying fractions by whole numbers to a new situation.
- Questions and tasks provide opportunities for students to apply conceptual understanding to new contexts. The Design Principles section of the *Teacher Resource Guide* states, "There are three aspects of rigor essential to mathematics: conceptual understanding, procedural fluency, and the ability to apply these concepts and skills to mathematical problems with and without real-world contexts. These aspects are developed together and are therefore interconnected in the materials in ways that support student understanding." For example, in Unit 3, Lesson 1 features tasks that require students to interpret and relate descriptions, drawings, and expressions that represent situations involving equal groups of fractions using a variety of food items. Activity 1 Narrative states, "The purpose of this activity is for students to interpret situations involving equal groups of a fractional amount and to connect such situations to the multiplication of a whole number by a fraction. Students write expressions to represent the number of groups and the size of each group. They reason about the quantity in each situation in any way that makes sense to them. Although images of the food items are given, students may choose to create other diagrams, such as equal-group diagrams used in grade 3, when they learned to multiply whole numbers." This activity helps guide the teacher to see the representations students choose to use. This task requires students to apply conceptual understanding of equal groups of unit fractions by using a diagram to represent a new context.
- Materials include questions throughout each unit that provide opportunities for students to apply conceptual understanding to new situations and contexts. For example, Unit 3, Section C Practice Problems includes questions involving measurements in the context of baking.

Question 4 states, "A chocolate cake recipe calls for 2 cups of flour. You gather your measuring cups and notice you have these sizes: 1/2 cup, 1/3 cup, 1/4 cup, and 1/6 cup. What are the different ways you could use all 4 measuring cups to measure 2 cups of flour?" and "What are other ways you could use just some of the 4 measuring cups to measure exactly 2 cups of flour?" This set of practice problems includes other situations and contexts like "A dime is worth 1/10 of a dollar and a penny is worth 1/100 of a dollar. If I have 89/100 of a dollar, how many different combinations of dimes and pennies could I have?" and "Andre is building a tower out of different foam blocks. These blocks come in three different thicknesses: 12-foot, 14-foot, and 18-foot. Andre stacks two 12-foot blocks, two 14-foot blocks, and two 18-foot blocks to create a tower. What will the height of the tower be in feet?"

Balance of Conceptual and Procedural Understanding

5.2	Development of Fluency	12/12
5.2a	Materials provide tasks that are designed to build student automaticity and fluency necessary to complete grade-level tasks.	**2/2**
5.2b	Materials provide opportunities for students to practice the application of efficient, flexible, and accurate mathematical procedures within the lesson and/or throughout a unit.	**3/3**
5.2c	Materials provide opportunities for students to evaluate procedures, processes, and solutions for efficiency, flexibility, and accuracy within the lesson and throughout a unit.	**6/6**
5.2d	Materials contain embedded supports for teachers to guide students toward increasingly efficient approaches.	**1/1**

The materials provide tasks designed to build student automaticity and fluency necessary to complete grade-level tasks. Materials provide opportunities for students to practice the application of efficient, flexible, and accurate mathematical procedures within the lesson and throughout a unit. Materials provide opportunities for students to evaluate procedures, processes, and solutions for efficiency, flexibility, and accuracy within the lesson and throughout a unit. Materials contain embedded supports for teachers to guide students toward increasingly efficient approaches.

Evidence includes, but is not limited to:

Materials provide tasks that are designed to build student automaticity and fluency necessary to complete grade-level tasks.

- Materials provide tasks that are designed to build student automaticity and fluency in the Design Principles of the *Teacher Resource Guide*. "There are three aspects of rigor essential to mathematics: conceptual understanding, procedural fluency, and applying these concepts and skills to mathematical problems with and without real-world contexts. These aspects are developed together and are therefore interconnected in the materials in ways that support student understanding."
- Materials provide tasks that are designed to build student automaticity and fluency. According to the Design Principles of the *Teacher Resource Guide*, "Warm-ups, practice problems, centers, and other built-in routines help students develop procedural fluency, which develops over time." The center's activities target specific skills or concepts that build fluency. The section also states, "In addition to lessons and assessments, units have aligned center activities to support the unit content and ongoing procedural fluency. Access to new mathematics and problems prompt products to apply their conceptual understanding and procedural fluency to novel situations." An example of a built-in routine in the materials is the "Number Talks" featured throughout Unit 6. The Unit 6 Narrative states, "The Number Talk routines in this unit offer opportunities for students to look for structure in multiplication and division expressions; their observations of structure, in turn, support their ability to operate on or otherwise work with more significant multi-digit numbers. For instance, In Lessons 3 and

18, students compose familiar multiples of a number to help them recognize other ones that are less familiar or more significant.

- Materials provide concrete and pictorial support for students to create mental images of numbers and facts to develop automaticity. For example, in Unit 5, Lesson 2, the Warm-Up states, "The purpose of this 'How Many Do You See' is for students to use grouping strategies to describe the images they see. In the synthesis, students describe how two images can describe a multiplicative comparison and connect the images to a multiplication equation."

Materials provide opportunities for students to practice the application of efficient, flexible, and accurate mathematical procedures within the lesson and/or throughout a unit.

- The materials include tasks that offer multiple entry points. Students can choose different strategies to solve while building conceptual understanding and practicing and applying procedural skills for fluency. The Design Principles section of the *Teacher Resource Guide* states, "Each unit, lesson, and activity has the same overarching design structure: the learning begins with an invitation to the mathematics, is followed by a deep study of concepts and procedures, and concludes with an opportunity to consolidate understanding of mathematical ideas. The invitation to the mathematics is particularly important because it offers students access to the mathematics. It builds on prior knowledge and encourages students to use their own language to make sense of ideas before formal language is introduced, both of which are consistent with the principles of Universal Design for Learning." For example, in Unit 6, Lesson 21, Activity 1 states, "In this activity, students encounter a multiplication problem that can be reasoned in several ways. After finding a solution, they analyze several other strategies. As they make sense of alternative solution paths and representations, students practice reasoning abstractly and quantitatively."
- The materials include warm-ups and activity tasks that ask students to apply mathematical procedures or strategies offered by peers within the lessons and throughout the units. For example, in Unit 4, Lesson 21, Activity 1, the narrative states, "In this activity, students perform multi-digit addition and subtraction to solve problems in context and assess the reasonableness of answers. The situation can be approached in many different ways, such as arranging the numbers in some way before adding or subtracting. Add the largest numbers first. Add two numbers at a time. Add numbers with the same number of digits. Subtract each expense, one by one, from the amount collected."
- Materials provide opportunities for students to practice the application of mathematical procedures that are efficient and accurate in the warm-ups, activities, and lesson practice problems. As stated in the *Course Guide* of the grade 4 materials, the warm-up component of each lesson "is an instructional routine that invites all students to engage in the mathematics of the lesson. The warm-up routines offer opportunities for students to bring their personal experiences as well as their mathematical knowledge to problems and discussions. These routines place value on the voices of students as they communicate their developing ideas, ask questions, justify their responses, and critique the reasoning of others. A warm-up serves one or both of two purposes: Help students get ready for the day’s lesson. Allow students to strengthen their number sense or procedural fluency.

Materials provide opportunities for students to evaluate procedures, processes, and solutions for efficiency, flexibility, and accuracy within the lesson and throughout a unit.

- The materials include strategic questions for teachers to use during instruction. Questions prompt students to consider alternative strategies and think critically about the most efficient approach, find an alternate solution, and apply a procedure to all situations. For example, in Unit 6, Lesson 11, Activity 1, the narrative states, "This activity introduces students to the standard algorithm for multiplication. Students make sense of it by comparing and contrasting it to an algorithm that uses partial products for multiplying three- and four-digit numbers by one-digit numbers where no regrouping is necessary. When they interpret the given student work showing the standard algorithm, students construct a viable argument for what Kiran did in his calculation (MP3). They also have an opportunity to make use of the structure they notice to compute the value of other products." The Activity 2 Narrative continues with an algorithm comparison, which states, "The purpose of this activity is for students to compare the standard algorithm for multiplication and an algorithm that uses partial products. The focus of the synthesis is on the convention used for composing a new unit and how it connects to their work with the standard algorithm for addition."
- The materials include activities that allow students to analyze procedures, processes, and solutions for completed problems. For example, in Unit 6, Lesson 24, the Lesson Purpose states, "The purpose of this lesson is for students to solve multi-step word problems by analyzing data, estimating, reasoning, and performing multiple operations. It also helps students to build fluency in using the standard algorithm to add and subtract multi-digit numbers up to 1 million. In each activity, students assess the reasonableness of their responses."
- The materials intentionally include tasks that ask students to solve problems using multiple appropriate strategies, particularly in the lesson warm-ups. As stated in the A Typical IM Lesson section of the *Teacher Resource Guide*, "A warm-up that is meant to strengthen number sense or procedural fluency asks students to do mental arithmetic or reason numerically or algebraically. It gives them a chance to make deeper connections and become more flexible in their thinking." For example, Unit 6 warm-ups featuring Number Talk Routines "offer opportunities for students to look for structure in multiplication and division expressions. Their observations of structure, in turn, support their ability to operate on or otherwise work with larger multi-digit numbers. For instance, in Lessons 3 and 18, students compose familiar multiples of a number to help them recognize other multiples that are less familiar or are much larger. In Lessons 5 and 10, students use doubling and halving to find products of one- and two-digit numbers."

Materials contain embedded supports for teachers to guide students toward increasingly efficient approaches.

- The materials provide embedded support for teachers to guide students toward increasingly efficient practices. As stated in the About These Materials section of the *Teacher Resource Guide*, "Warm-ups, practice problems, centers, and other built-in routines help students develop procedural fluency, which develops over time." The center's activities target specific skills or concepts that build fluency. The section also states, "In addition to lessons and assessments, units have aligned center activities to support the unit content and ongoing procedural fluency. Access to new mathematics and problems prompts students to apply their conceptual understanding and procedural fluency to novel situations." An example of a built-in routine in the materials is the "Number Talks" featured throughout Unit 6. The Unit 6 Narrative states, "The Number Talk routines in this unit offer opportunities for students to look for structure in multiplication and division expressions. Their observations of structure, in turn, support their ability to operate on or otherwise work with larger multi-digit numbers. For instance, in Lessons 3 and 18, students compose familiar multiples of a number to help them recognize other multiples that are less familiar or are much larger.

- In Lessons 5 and 10, students use doubling and halving to find products of one- and two-digit numbers. In Lesson 8, students decompose a factor in multiplication expressions and use the distributive property to multiply pairs of two-digit numbers. In Lesson 14, students use what they know about familiar multiples of 7 to notice that a larger number is not a multiple of 7 (and will therefore have a remainder if divided by 7)."
- Materials provide concrete and pictorial support for students to create mental images of numbers and facts to develop automaticity. For example, in Unit 5, Lesson 2, the Warm-Up states, "The purpose of this 'How Many Do You See' is for students to use grouping strategies to describe the images they see. In the synthesis, students describe how two images can be used to describe a multiplicative comparison and connect the images to a multiplication equation."

Balance of Conceptual and Procedural Understanding

5.3	Balance of Conceptual Understanding and Procedural Fluency	14/16
5.3a	Materials explicitly state how the conceptual and procedural emphasis of the TEKS are addressed.	**0/2**
5.3b	Questions and tasks include the use of concrete models and manipulatives, pictorial representation (figures/drawings), and abstract representations.	**6/6**
5.3c	Materials include supports for students in connecting, creating, defining, and explaining concrete and representational models to abstract (symbolic/numeric/algorithmic) concepts.	**8/8**

The materials do not explicitly state how the conceptual and procedural emphasis of the TEKS are addressed. Questions and tasks include using concrete models and manipulatives, pictorial representation, and abstract representations. Materials include support for students in connecting, creating, defining, and explaining concrete and representational models to abstract concepts.

Evidence includes, but is not limited to:

Materials explicitly state how the conceptual and procedural emphasis of the TEKS are addressed.

- The materials provide a TEKS guide, but the lessons do not explicitly state how the conceptual and procedural emphasis of the TEKS are addressed. The materials intentionally target the conceptual and procedural standards addressed. The lessons and units include explicit learning objectives highlighting key conceptual and procedural skills and concepts to be covered. According to the *Teacher Resource Guide*, "Each unit is organized around two or three learning goals that describe the mathematical focus. Unit goals are aligned to the standards. Each section in a unit includes section learning goals that describe the focus of each section. The section learning goals are aligned to the unit learning goals."
- The materials do not explicitly state how the conceptual and procedural emphasis of the TEKS are addressed. According to the *Teacher Resource Guide*, "Three aspects of rigor are essential to mathematics: conceptual understanding, procedural fluency, and applying these concepts and skills to mathematical problems with and without real-world contexts. These aspects, developed together, are interconnected in the materials to support students' understanding." Additionally, in Unit 7, Lesson 1, the Narrative states, "This lesson serves two goals. The first is to elicit the language students have for talking about geometric figures, motivating a need to develop more precision in using geometric terminology (MP6). The second is to enable students to see that a line segment is a part of a line, so it has a starting and end point." This activity connects the mathematical concepts to the procedures, but it does not explicitly state how the conceptual and procedural emphasis of the TEKS are addressed.

Questions and tasks include the use of concrete models and manipulatives, pictorial representation (figures/drawings), and abstract representations.

- The lessons and units include hands-on questions and tasks with concrete models and manipulatives representing mathematical concepts. The Design Principles section of the *Teacher Resource Guide* states, "Representations that are more fine-tuning introduced before those that are more abstract." For example, in Unit 5, Lesson 1, the learning goal is to "Represent multiplicative comparison situations using objects and drawings." The Activity 1 Narrative explains, "The purpose of this activity is for students to build on what they know about the language of *twice* and *twice as many* to represent comparison situations. In this activity, students are encouraged to represent the situation in a way that makes sense to them, though discrete representations (cubes or drawings) are the focus of the activity synthesis. The representations used in this activity serve as a foundation for the more abstract tape diagrams that will be used later in the section."
- The lesson material questions and tasks incorporate detailed pictorial representations that represent the mathematical concepts. The Design Principles of the *Teacher Resource Guide* states that each lesson warm-up is "followed by instructional activities in which students are introduced to new concepts, procedures, contexts, or representations, or make connections between them." For example, in Unit 2, Lesson 8, the Narrative states, "In this lesson, students use number lines to reason about and generate equivalent fractions. In particular, they experiment with partitioning a fractional part on the number line into smaller equal-size parts. Through repeated reasoning, students begin to notice regularity in the numerator and denominator of the equivalent fractions — namely, that the numbers are multiples of those in the original fraction. The experience of sub-partitioning number lines prepares students to formalize their observation and reason numerically about equivalent fractions in upcoming lessons."
- The lesson and unit materials include abstract representations in questions and tasks, such as symbolic notations, numeric expressions, and algorithms to illustrate concepts. The Design Principles state, "In later grades, these familiar representations are extended so that as students encounter larger numbers, they can use place-value diagrams and more symbolic methods, such as equations, to represent their understanding." For example, in Unit 2, the Lesson 14 Narrative states, "In the previous lesson, students wrote equivalent fractions to help them compare pairs of fractions with different denominators. Here, they include this newly developed strategy in their toolkit for comparing fractions."

Materials include supports for students in connecting, creating, defining, and explaining concrete and representational models to abstract (symbolic/numeric/algorithmic) concepts.

- The materials include opportunities for students to consolidate their understanding of mathematical concepts and procedures through modeling, creating, and discussing, specifically through the Activity Synthesis, which is included at the end of each lesson. The Design Principles section of the *Teacher Resource Guide* states, "The activity ends with a synthesis to ensure students have an opportunity to consolidate their learning by making connections between their work and the mathematical goals." For example, in Unit 7, Lesson

13, the Narrative states, "In this lesson, students use tactile tools to find angle measurements and observe more clearly that angles are additive. They compose and decompose angles by arranging paper cutouts, folding paper or tracing, and drawing diagrams. Students arrange smaller angles whose sizes are unknown into larger angles with familiar sizes and features (90∘, 180∘, and 360∘)."

- The materials include opportunities for students to define and explain the connection of models to abstract concepts through modeling, discussion, and practice. For example, the Key Structures in the Course section of the *Teacher Resource Guide* states, "Encourage students to use language to construct meaning from representations with prompts." In Unit 7, the Section B Planning Guide explains how the use of concrete models and tactile tools are employed to progress to the abstract concepts of angle measurements to meet the section learning goals: Recognize that angles can be measured in degrees and can be found using addition and subtraction Use a protractor to measure and draw angles, and recognize that perpendicular lines meet or cross at a right angle. The guidance states "Throughout the section, students build their understanding of angles of different sizes using tactile tools such as paper cutouts and patty paper, and by folding, cutting, marking, and assembling pieces of paper."
- The lesson materials provide students with multiple practice opportunities consisting of tasks and questions connecting concrete and representational models to abstract concepts in a progressive order throughout units to work towards mastery. As stated in the Design Principles section of the *Teacher Resource Guide*, "As their learning progresses, students are given opportunities to make connections between different representations and the concepts and procedures they represent. Over time, they will see and understand more efficient methods of representing and solving problems, which supports the development of procedural fluency." An example of how a progression from concrete and representational models is used to work towards mastery of abstract concepts is found in the Unit 5 Planning Guide. It states, "In this unit, students make sense of multiplication as a way to compare quantities. They use this understanding to solve problems about measurement. Initially, students reason using concrete manipulatives and discrete images. Later, they reason more abstractly, using tape diagrams and equations. Comparative language such as "_____ times as many (or much) as ____" is emphasized, offering students opportunities to attend to precision as they communicate mathematically (MP6). Next, students use the idea and language of multiplicative relationships to learn about various units of length, mass, capacity, and time and to convert from larger units to smaller units within the same system of measurement. For example, they describe 1 kilometer as 1,000 times as long as a meter. Students then use their new knowledge to solve measurement problems."

Balance of Conceptual and Procedural Understanding

5.4	Development of Academic Mathematical Language	14/14
5.4a	Materials provide opportunities for students to develop their academic mathematical language using visuals, manipulatives, and other language development strategies.	3/3
5.4b	Materials include embedded guidance for the teacher addressing scaffolding and supporting student development and use of academic mathematical vocabulary in context.	2/2
5.4c	Materials include embedded guidance for the teacher to support the application of appropriate mathematical language to include vocabulary, syntax, and discourse to include guidance to support mathematical conversations that provide opportunities for students to hear, refine, and use math language with peers and develop their math language toolkit over time as well as guide teachers to support student responses using exemplar responses to questions and tasks.	9/9

The materials provide opportunities for students to develop their academic mathematical language using visuals, manipulatives, and other language development strategies. Materials include embedded guidance for the teacher addressing scaffolding and supporting student development and using academic mathematical vocabulary in context. Materials include embedded guidance for the teacher to support the application of appropriate mathematical language to include vocabulary, syntax, and discourse to include guidance to support mathematical conversations that provide opportunities for students to hear, refine, and use math language with peers and develop their math language toolkit over time as well as guide teachers to support student responses using exemplar responses to questions and tasks.

Evidence includes, but is not limited to:

Materials provide opportunities for students to develop their academic mathematical language using visuals, manipulatives, and other language development strategies.

- Materials provide opportunities for students to develop their academic mathematical language. The A Typical IM Lesson of the *Teacher Resource Guide* states, "The purpose of each activity is described in its narrative." Units include learning goals in the Lesson Narratives for students to develop academic mathematical language centered around visuals, such as diagrams. For example, grade 4, Unit 7, Section A Narrative demonstrates how this set of lessons progresses the student toward developing academic language: "This section introduces students to some building blocks of geometric figures and the language to describe them. Students start by describing images that contain lines for others to draw and drawing images relying only on others' descriptions. The experience motivates a need for more precise vocabulary to describe geometric parts. They learn to distinguish points as locations in space, rays as lines that are bounded by one point, and line segments as lines that are bounded by two points."
- According to the section A Typical IM Lesson, a unit activity can serve multiple purposes to develop academic mathematical language, such as introducing a new concept and the

associated language, introducing a new representation, formalizing a definition of a term for an idea informally encountered before, and practicing using mathematical language. The grade 4, Unit 7, Section B Planning Guide explains how the use of concrete models and tactile tools are employed to progress to the abstract concepts of angle measurements to meet the section learning goals, recognizing that angles can be measured in degrees and can be found using addition and subtraction: "Use a protractor to measure and draw angles and recognize that perpendicular lines meet or cross at a right angle." The guidance states "Throughout the section, students build their understanding of angles of different sizes using tactile tools such as paper cutouts and patty paper, and by folding, cutting, marking, and assembling pieces of paper."

- The Unit 7, Section C Planning Guide explains how the lessons continue to progress toward students attaining academic language. It states, "In this section, students continue to draw and analyze angles and reason about their measurements. They first classify angles by their size and identify acute, obtuse, and straight angles. Then, they further develop the idea that angle is additive by composing and decomposing angles, using tactile tools and drawings, and writing expressions or equations to support their reasoning. Students solve problems about angles in different contexts, both concrete and abstract. They use their understanding of right angle and straight angle to reason about unknown angle measurements."
- Materials provide a lesson synthesis at the end of a lesson to help students consolidate learning, including connections around mathematical language, using a variety of language development strategies. As stated in the A Typical IM Lesson section, "Teachers can use this time in any number of ways, including posing questions verbally and calling on volunteers to respond, asking students to respond to prompts in a written journal, asking students to add on to a graphic organizer or concept map, or adding a new component to a persistent display like a word wall."

Materials include embedded guidance for the teacher addressing scaffolding and supporting student development and use of academic mathematical vocabulary in context.

- Materials provide embedded guidance for teachers addressing scaffolding, supporting student development, and using academic mathematical vocabulary in context. According to the *Teacher Resource Guide*, "Mathematical Language Routines (MLRs) are instructional routines that provide structured but adaptable formats for amplifying, assessing, and developing students' language. The MLRs included in the materials were selected because they simultaneously support students' learning of mathematical practices, content, and language." As stated in the Supporting Diverse Learners section of the *Teacher Resource Guide*, "To support students who are learning English in their development of language, this curriculum includes instruction devoted to fostering language development alongside mathematics learning, and fostering language-rich environments where there is space for all students to participate." It describes four design principles guiding teachers to promote mathematical language use and development, including Principle 1. Principle 1 focuses on scaffolding tasks and amplifying language so students can make their own meaning. The materials state that "Teachers can make language more accessible by amplifying rather than simplifying speech or text. Simplifying includes avoiding the use of challenging words or phrases. Amplifying means anticipating where students might need support in understanding concepts or mathematical terms and providing multiple ways to access them." For example, in Unit 3, Lesson 14, Activity 2 Support for English Language Learners states, "Circulate, listen for, and collect the language students use as they make sense of *close to* and *about*. On a visible display, record words and phrases such as: 'almost 100, but not exactly,' 'only 1 away from 100,' and 'less than 5 away.' Invite students to borrow language from the display as needed, and update it throughout the lesson."

- The materials include scaffolds teachers can use for students as they develop and use academic vocabulary. As stated in the Supporting Diverse Learners section of the *Teacher Resource Guide*, "Sentence frames can support student language production by providing a structure to communicate about a topic. Helpful sentence frames are open-ended, to amplify language production, not constrain it. The table shows examples of generic sentence frames that can support common disciplinary language functions across a variety of content topics." Several sentence frames and starters are listed in a chart for teacher guidance. For example, the materials use sentence frames and discussion starters to scaffold the use of vocabulary when speaking and writing about mathematics within the lesson.
- The Supporting Diverse Learners section of the *Teacher Resource Guide* offers embedded guidance for teachers. Principle 2 focuses on strengthening opportunities for students to describe their mathematical thinking to others orally, visually, and in writing. The materials state that "All students benefit from repeated, strategically optimized, and supported opportunities to articulate mathematical ideas into linguistic expression to communicate their ideas to others. Opportunities for students to produce output should be strategically optimized for both (a) important concepts of the unit or course and (b) important disciplinary language functions (for example, explaining reasoning, critiquing the reasoning of others, making generalizations, and comparing approaches and representations)." For example, grade 4, Unit 5, Lesson 8, Activity 2 Support for English Language Learners states, "MLR1 Stronger and Clearer Each Time. Synthesis: Before the whole-class discussion, give students time to meet with 2–3 partners to share and get feedback on their response to how much sandwich each person gets. Invite listeners to ask questions, press for details, and suggest mathematical language. Give students 2–3 minutes to revise their written explanation based on the feedback they receive."

Materials include embedded guidance for the teacher to support the application of appropriate mathematical language to include vocabulary, syntax, and discourse to include guidance to support mathematical conversations that provide opportunities for students to hear, refine, and use math language with peers and develop their math language toolkit over time as well as guide teachers to support student responses using exemplar responses to questions and tasks.

- The materials include embedded teacher guidance to prepare for and facilitate robust student discourse grounded in quality tasks and concepts that use appropriate academic vocabulary, specifically through the Mathematical Language Routines provided in select activities in each unit. This guidance for discourse includes vocabulary and syntax to support conversations through the use of sentence starters and sentence frames. The Supporting Diverse Learners section of the *Teacher Resource Guide* states, "Mathematical Language Routines (MLRs) are instructional routines that provide structured but adaptable formats for amplifying, assessing, and developing students' language. The MLRs included in this curriculum were selected because they simultaneously support students' learning of mathematical practices, content, and language." For example, in Unit 2, Lesson 3, Activity 2 Support for English Language Learners provides discussion support for MLR8, stating, "Students should take turns finding a match and explaining their reasoning to their partner. Display the following sentence frames for all to see: 'I noticed _____, so I matched . . . .' Encourage students to challenge each other when they disagree."

- The materials include guidance for teachers to support conversations that provide opportunities for students to hear, use, and refine math language with peers. The *Teacher Resource Guide* states, "The materials foster conversation so that students voice their thinking around mathematical ideas and support the teacher in using those ideas to meet the mathematical goals of the lessons. Additionally, the first unit in each grade level features lesson structures that build a math community, establish norms, and invite students into mathematics with accessible content. Each lesson offers the teacher and students opportunities to learn more about one another, develop mathematical language, and become increasingly familiar with the curriculum routines."
- Materials include support for teachers to facilitate mathematical conversations that allow students to hear, refine, and use language with peers to develop their mathematical language toolkit over time. The Supporting Diverse Learners section of the *Teacher Resource Guide* states, "Students are expected to say or write mathematical explanations, state assumptions, make conjectures, construct mathematical arguments, and listen to and respond to the ideas of others. To advance the mathematics and language learning of all students, the materials purposefully engage students in sense-making and using language to negotiate meaning with their peers." For example, grade 4, Unit 7, Lesson 10, Activity 1 Support for English Language Learners states, "MLR1 Stronger and Clearer Each Time. Synthesis: Before the whole-class discussion, give students time to meet with 2–3 partners to share and get feedback on their response to "Who do you agree with? Explain or show your reasoning." Invite listeners to ask questions, to press for details, and to suggest mathematical language. Give students 2–3 minutes to revise their written explanation based on the feedback they receive."
- The materials provide a set of discussion questions, tasks, and exemplar responses in each lesson throughout all units that can be used to facilitate discourse without limiting student responses, guiding students to exemplar responses to questions and tasks using their developed mathematical language. The Student-Facing Task Assessment questions provided at the end of each activity include a "Note for Evaluating Student Response" to each question, which gives the teacher an exemplar response. For example, the Unit 1, Lesson 5, Activity 2 Note for Evaluating Student Response provides teacher guidance with the exemplar answer, "Sample responses: No, because 50 is not a multiple of 8. If she gets 7 packages of buns that is 7×8 or 56 buns so if she needs 50 buns, she will have enough" for the question, "Can Lin get exactly 50 hot dog buns? How many packages of hot dog buns should Lin get? Explain how you know."

Balance of Conceptual and Procedural Understanding

5.5	Process Standards Connections	6/6
5.5a	Process standards are integrated appropriately into the materials.	1/1
5.5b	Materials include a description of how process standards are incorporated and connected throughout the course.	2/2
5.5c	Materials include a description for each unit of how process standards are incorporated and connected throughout the unit.	2/2
5.5d	Materials include an overview of the process standards incorporated into each lesson.	1/1

The materials include process standards that are integrated appropriately into the materials. Materials include a description of how process standards are incorporated and connected throughout the course. Materials include a description for each unit of how process standards are incorporated and connected throughout the unit. Materials include an overview of the process standards incorporated into each lesson.

Evidence includes, but is not limited to:

Process standards are integrated appropriately into the materials.

- The materials include a How to Use These Materials section that contains The Math Process Standards Chart. The chart outlines the TEKS process standards that are integrated in the materials.
- The materials include evidence of the process standards within the Activity Narrative description of each lesson. The mathematics process standards aligned to the lesson are in parentheses at the end of the description.

Materials include a description of how process standards are incorporated and connected throughout the course.

- The How to Use These Materials section describes how process standards are incorporated and connected throughout the course. It states, "The Math Process Standards describe the types of thinking and behaviors students engage in as they are doing mathematics." For example, "Students have an opportunity to explore the tools before they are asked to use them to represent mathematical situations in later lessons."
- The online materials include evidence of a description of how process standards, or mathematical practices, are connected throughout the course. In the How to Use These Materials section of the Teacher Guide, there is a Math Process Standards Chart section that states, "Teachers will notice that some instructional routines are generally associated with certain mathematical practices." Following, there is a description of how instructional

routines throughout the course align with mathematical practices. The chart also demonstrates how process standards connect throughout the course.

Materials include a description for each unit of how process standards are incorporated and connected throughout the unit.

- The materials include a description for each unit of how process standards are incorporated and connected throughout the unit. In the How to Use These Materials section, there is a Math Process Standards Chart. This chart correlates the process standards present in each unit of the materials and each lesson.
- The materials include a Process Standards Integration Document for the TEKS and illustrate how the process standards build and connect throughout the units by connecting the student expectation with a narrative description of how the process standard(s) are represented in the units.

Materials include an overview of the process standards incorporated into each lesson.

- The materials include a description for each unit of how process standards are incorporated in the lessons. In the How to Use These Materials section, there is a Math Process Standards Chart. This chart provides a useful overview of how the process standards are incorporated into each lesson.
- Mathematical Process Standards are found in the warm-up activity of every lesson throughout the units. In the A Typical IM Lesson section, the materials state that the warm-ups "place value on students' voices as they communicate their developing ideas, ask questions, justify their responses, and critique the reasoning of others."

Productive Struggle

6.1	Student Self-Efficacy	15/15
6.1a	Materials provide opportunities for students to think mathematically, persevere through solving problems, and to make sense of mathematics.	**3/3**
6.1b	Materials support students in understanding, explaining, and justifying that there can be multiple ways to solve problems and complete tasks.	**6/6**
6.1c	Materials are designed to require students to make sense of mathematics through doing, writing about, and discussing math with peers and teachers.	**6/6**

The materials provide opportunities for students to think mathematically, persevere through solving problems, and make sense of mathematics. Materials support students in understanding, explaining, and justifying that there can be multiple ways to solve problems and complete tasks. Materials are designed to require students to make sense of mathematics through doing, writing about, and discussing math with peers and teachers.

Evidence includes, but is not limited to:

Materials provide opportunities for students to think mathematically, persevere through solving problems, and to make sense of mathematics.

- Materials provide opportunities for students to think mathematically. According to the Design Principles included in the *Course Guide* of materials, "Teachers also guide students in understanding the problem they are being asked to solve, ask questions to advance students' thinking in productive ways, provide structure for students to share their work, orchestrate discussions so students have the opportunity to understand and take a position on the ideas of others, and synthesize the learning with the whole class at the end of activities and lessons." For example, in Unit 6, Lesson 3, "Students investigate patterns in a geometric context and explore how the side lengths, area, perimeter, and other features of a rectangle change when the rectangle changes by a rule. In doing so, students practice looking for and using structure." The Number Talk Warm-Up states, "This Number Talk encourages students to rely on what they know about place value, multiples of 3 and 4, and properties of operations to find the value of products mentally. The reasoning elicited here will be helpful as students use multiplication to find the area and perimeter of rectangles and look for patterns in these measurements."
- Materials provide students opportunities to think mathematically through the teacher questions provided in the Advancing Student Thinking section of the lessons. According to the Design Principles section of the *Teacher Resource Guide*, "Effective teaching requires being able to support students as they work on challenging tasks without taking over the process of thinking for them (Stein et al., 2000)." As the teacher gains insight into student learning, "The Advancing Student Thinking section provides teachers questions that advance student understanding of mathematical concepts, strategies, or connections between representations." For example, in Unit 3, Lesson 1, Activity 1, Advancing Student Thinking, the

materials state, "If students are unsure how to name the quantity in the image, consider asking: 'How would you describe the amount of the slice of pie on one plate? How would you describe two of the same slices? Three of the same slices?'" This requires students to think mathematically about equal groups of a fractional amount.

- Materials provide opportunities for students to persevere through solving problems. According to the Design Principles in the *Course Guide*, "The curriculum materials include classroom structures that support students in taking risks, engaging in mathematical discourse, productively struggling through problems, and participating in ways that make their ideas visible. It is through these classroom structures that teachers will have daily opportunities to learn about and leverage their students' understandings and experiences and how to position each student as a capable learner of mathematics." For example, in Unit 6, Lesson 3, "Students investigate patterns in a geometric context and explore how the side lengths, area, perimeter, and other features of a rectangle change when the rectangle changes by a rule. In doing so, students practice looking for and using structure. Students also practice reasoning quantitatively and abstractly as they interpret the values in number sequences that represent geometric features of rectangles, and vice versa." The Lesson 3, Activity 3 Narrative states, "Students continue to analyze and describe patterns related to rectangles. In this activity, the rectangles show no grid. To reason about possible patterns in the features of the rectangles, students rely on what they know about the relationship between side lengths of a rectangle and its perimeter and area."
- Materials allow students to persevere through problem-solving and engage in productive struggle. As the Design Principles section of the *Teacher Resource Guide* states, "The curriculum materials include classroom structures that support students in taking risks, engaging in mathematical discourse, productively struggling through problems, and participating in ways that make their ideas visible." For example, in Unit 2, Lesson 14, Activity 1, students use multiple comparison strategies to find mystery fractions. The activity provides fraction sets with clues, and students must use techniques to find one fraction that meets all three clues in each set.
- Materials provide opportunities for students to make sense of mathematics. According to the Design Principles in the *Course Guide* of the materials, "Students learn mathematics by doing mathematics, rather than by watching someone else do mathematics or being told what needs to be done. Doing mathematics can be defined as learning mathematical concepts and procedures while engaging in mathematical practices—making sense of problems, reasoning abstractly and quantitatively, making arguments and critiquing the reasoning of others, modeling with mathematics, making appropriate use of tools, attending to precision in their use of language, looking for and making use of structure, and expressing regularity in repeated reasoning. By engaging in the mathematical practices with their peers, students can see themselves as mathematical thinkers with worthwhile ideas and perspectives." For example, in Unit 6, Lesson 3, the Warm-Up explains, "This Number Talk encourages students to rely on what they know about place value, multiples of 3 and 4, and properties of operations to mentally find the value of products. The reasoning elicited here will be helpful as students use multiplication to find the area and perimeter of rectangles and look for patterns in these measurements."

- The materials include opportunities for students to make sense of math using various strategies and contexts. The materials include problems with real-world context. As the Design Principles section of the *Teacher Resource Guide* states, "Doing mathematics can be defined as learning mathematical concepts and procedures while engaging in the mathematical practices—making sense of problems ..." For example, in Unit 2, Lesson 14, Activity 2 asks, "A student in America walks 4/5 kilometer (km) to school. These number lines show how 1 kilometer compares to 1 li. The student in China walks 7/5 li to school. Which student walks a longer distance to school? Use the number lines to show your reasoning."

Materials support students in understanding, explaining, and justifying that there can be multiple ways to solve problems and complete tasks.

- Materials support students in understanding that there can be multiple ways to solve problems and complete tasks. For example, in Unit 6, Lesson 12, the narrative states, "This lesson gives students the opportunity to apply the multiplication strategies they have learned to solve various contextual problems involving measurement. The problems vary in format and complexity; some involve a single computation, and others require multiple steps to solve. The work here prompts students to make sense of problems and persevere in solving them and to reason quantitatively and abstractly."
- Materials support students in understanding there can be multiple ways to solve problems and complete tasks. Materials include lessons and units that introduce students to representations and encourage them to make sense of them. The Design Principles section of the *Teacher Resource Guide* states, " ...students are given opportunities to make connections between different representations and the concepts and procedures they represent. Over time, they will see and understand more efficient methods of representing and solving problems, which supports the development of procedural fluency." For example, Unit 4, Lesson 20, Activity 1 Narrative states, "Besides making use of the structure of the standard algorithm, students will need to rely on what they know about the relationship between addition and subtraction to find the missing numbers." In this task, students are required to understand that there can be multiple ways to add and subtract and use these strategies to solve the given task and problems.
- Materials support students in explaining that there can be multiple ways to solve problems and complete tasks. For example, in Unit 6, Lesson 21, the narrative states, "In this lesson, students analyze and use various strategies and representations to reason about multi-step problems. They use their knowledge of multiplication and division, including the ideas of factors and multiples, to represent situations. Students also interpret products, quotients, and remainders in context."
- In the *Teacher Resource Guide*, materials include curriculum design principles and explanations of how they support teachers and students in the development of learning mathematics, including explaining multiple ways to solve problems and complete tasks. The Instructional Routines design principle has the specific purpose of supporting students in explaining and communicating mathematics. As stated in the Design Principles section of the *Teacher Resource Guide*, "While each routine serves a different specific purpose, they all have

the general purpose of supporting students in accessing mathematics, and they all require students to think and communicate mathematically." For example, Unit 1, Lesson 7 Warm-Up uses the instructional routine "True or False." this routine aims to "elicit students' prior understanding of equivalence and strategies for comparing fractions." This routine supports students in the task of explaining multiple strategies to compare fractions, and it is followed by several questions asking students to problem-solve using these strategies.

- Materials support students in justifying that there can be multiple ways to solve problems and complete tasks. According to the Instructional Routines section of the *Course Guide*, "Instructional Routines are interaction designs that invite all students to engage in the mathematics of each lesson. They provide opportunities for students to bring their personal experiences and mathematical knowledge to problems and discussions. They place value on students' voices as they communicate their developing ideas, ask questions, justify their responses, and critique the reasoning of others." Students are given opportunities to justify their mathematical strategies and findings in problems and tasks featured throughout the lessons included in the materials. For example, in Unit 6, Lesson 20, Activity 1, students must solve word problems that involve interpreting remainders based on a given scenario. The Lesson Synthesis states, "Invite students to share their responses and reasoning. For problem 1, highlight that 94 and 95 boxes are plausible if they could be defended and the assumptions are made clear. (For example, students might say that the bakers could have two leftover muffins rather than trying to sell them in boxes, so 94 boxes are enough.)"
- The materials include opportunities that require students to justify that there are multiple ways to solve problems and complete tasks. The Design Principles section of the *Teacher Resource Guide* defines doing math as " ...making arguments and critiquing the reasoning of others ..." For example, Unit 4, Lesson 20, Activity 1 Narrative explains that students will add and subtract multi-digit numbers using the standard algorithm as well as other strategies. The Activity Synthesis guides teachers to ask students, "How can you tell if your answers are correct? How can you check them?"

Materials are designed to require students to make sense of mathematics through doing, writing about, and discussing math with peers and teachers.

- Materials are designed to require students to make sense of mathematics through doing math with peers and teachers. The Design Principles section of the *Course Guide* outlines the collaborative structure of the materials and emphasizes the concept of "learning mathematics by doing mathematics." The Design Principles state, "By engaging in the mathematical practices with their peers, students have the opportunity to see themselves as mathematical thinkers with worthwhile ideas and perspectives" and, "The teacher has many roles in this framework: listener, facilitator, questioner, synthesizer, and more. In all these roles, teachers must listen to and make use of student thinking, be mindful about who participates, and continuously be aware of how students are positioned in terms of status inside and outside the classroom. Teachers also guide students in understanding the problem they are being asked to solve, ask questions to advance students' thinking in productive ways, provide structure for students to share their work, and orchestrate discussions so students have the opportunity to understand and take a position on the ideas of others, and synthesize the learning with the whole class at the end of activities and lessons." For example, in Unit 6, Lesson 6, Activity 2, students use place value reasoning to find the product of two-digit and one-digit factors. The materials provide teacher support to facilitate meaningful partner work and provide guiding questions. It states, "Take a few quiet minutes to work on the activity. Afterward, share your thinking with your partner." As students work on the last problem, monitor for those who recognize that base-ten drawings are cumbersome and a less efficient way to find the product. Draw diagrams that show the two-digit side length partitioned by tens and ones. Write expressions that show place-value reasoning using the distributive property."

- Materials are designed to require students to make sense of math by doing it with peers and teachers. As the Design Principles section of the *Teacher Resource Guide* states, "Students learn math by doing math ...By engaging in the mathematical practices with their peers, students can see themselves as mathematical thinkers with worthwhile ideas and perspectives." For example, Unit 5, Lesson 1, Activity 1 Narrative states, "In this activity, students are encouraged to represent the situation in a way that makes sense to them, though discrete representations (cubes or drawings) are the focus of the Activity Synthesis." The narrative then asks students to explain their work to a partner and work together to create another number of cubes to solve the problem.
- Materials are designed to require students to make sense of mathematics through writing about math with peers and teachers. The Key Structures in this Course section of the *Course Guide* explains that the materials embed writing opportunities through open-ended written response questions and journaling. "Writing can be a useful catalyst in learning mathematics because it not only supplies students with an opportunity to describe their feelings, thinking, and ideas clearly, but it also serves as a means of communicating with other people (Baxter et al., 2002; Liedtke & Sales, 2001; NCTM, 2000). NCTM (1989) suggests that writing about mathematics can help students clarify their ideas and develop a deeper understanding of the mathematics at hand. It explains that writing about math can help students progress in their learning, and "To encourage the use of journal-writing in math class, we have provided a list of journal prompts that can be used at any point in time during a unit and across the year. These prompts are divided into two overarching categories: Reflections on Content and Reflection on Beliefs and Feelings." In addition to the use of journaling, the materials have embedded written response questions that require students to write about their mathematical ideas and justify or explain their thinking. For example, in Unit 6, Lesson 7, Activity 2, students are asked, "Jada used a diagram to multiply 3×6,489 and made a few errors. (followed by Jada's diagram) Explain the errors Jada made."
- Materials are designed to require students to make sense of mathematics through discussing math with peers and teachers. As stated in the Instructional Routines section of the *Course Guide*, the materials are designed to embed mathematical discussions and collaboration in each lesson. It states, "Each lesson begins with a Warm-Up Routine intentionally designed to elicit student discussions around the mathematical goal of the lesson. The Lesson Activity Routines embed structures within the tasks of the lessons that allow students to engage in the content and collaborate in ways that support the development of student thinking and precision with language." For example, in Unit 6, Lesson 6, Notice and Wonder Warm-Up, students are tasked with discussing connections between area diagrams with a grid and those without. The materials provide opportunities for students to discuss the concept with peers

and the teacher, as seen in this excerpt: "'What do you notice?' 'What do you wonder?' Activity Narrative: 'Discuss your thinking with your partner. Share and record responses.'"

- Materials are designed to require students to make sense of math through discussion with peers and teachers. The Key Sections in This Course section of the *Teacher Resource Guide* states, "Opportunities for communication, in particular classroom discourse, are foundational to the problem-based structure of the IM K–5 Math curriculum. Opportunities for each area (speaking, writing, reading, and listening) are intentionally embedded directly into the curriculum materials through the student task structures and supported by the accompanying teacher directions." For example, in Unit 8, Lesson 4, Activity 1 Launch, the teacher instructs the class to discuss what they notice in displayed images of parallelograms. The Activity Narrative guides the teacher to say, "Share your response to 'a line of symmetry is' with your partner. Take turns being the speaker and the listener. If you are the speaker, share your ideas and writing so far. If you are the listener, ask questions and give feedback to help your partner improve their work."

Productive Struggle

6.2	Facilitating Productive Struggle	10/10
6.2a	Materials support teachers in guiding students to share and reflect on their problem-solving approaches, including explanations, arguments, and justifications.	**6/6**
6.2b	Materials offer prompts and guidance to assist teachers in providing explanatory feedback based on student responses and anticipated misconceptions.	**4/4**

The materials support teachers in guiding students to share and reflect on their problem-solving approaches, including explanations, arguments, and justifications. Materials offer prompts and guidance to assist teachers in providing explanatory feedback based on student responses and anticipated misconceptions.

Evidence includes, but is not limited to:

Materials support teachers in guiding students to share and reflect on their problem-solving approaches, including explanations, arguments, and justifications.

- Materials support teachers in guiding students to share and reflect on their problem-solving approaches, including explanations. As stated in the Key Structures in this Course section of the *Teacher Resource Guide*, "Opportunities for each of these areas (speaking, writing, reading, listening) are intentionally embedded directly into the curriculum materials through the student task structures and supported by the accompanying teacher directions." For example, Unit 6, Lesson 7, Activity 2 Narrative states, "When students analyze Jada's work, find her errors and explain their reasoning, they critique the reasoning of others." Question 1 Part A asks students to "Explain the errors Jada made."
- The materials guide students to share their problem-solving approaches using explanations. For example, activities suggest students use explanations to share in discussions. For example, Unit 3, Lesson 5 Activity 2 suggests the teacher "Select students to share their matches and explanations." Students are also able to reflect on their problem-solving approaches. For example, Access for English Language Learners in Unit 3, Lesson 15 Activity 2 suggests, "Give students 2–3 minutes to revise their written explanation based on the feedback they receive."
- Materials support teachers in guiding students to share and reflect on their problem-solving approaches, including arguments. The Design Principles section of the *Teacher Resource Guide* states, "Doing mathematics can be defined as learning mathematical concepts and procedures while engaging in the mathematical practices—making sense of problems, reasoning abstractly and quantitatively, making arguments and critiquing the reasoning of others ..." For example, in Unit 6, Lesson 23 Activity 1, the narrative states, "This activity prompts students to interpret and represent situations about distances and use multiple operations to solve problems ...When students decide whether or not they agree with Priya's work and explain their reasoning, they critique the reasoning of others." Question 3 states, "Mai thinks her cousin travels 2 miles weekly between classes. Do you agree?"

- The materials provide opportunities for students to reflect on their problem-solving approaches with explanations and arguments. For example, Unit 3 Lesson 3 Activity 2 suggests, "Students have seen multiple strategies that always will work, including calculating the product, thinking about the product on the number line, and using the distributive property to explain how the size of a product compares to the sizes of its factors. Students must use language precisely in their explanation."
- Materials support teachers in guiding students to share and reflect on their problem-solving approaches, including justifications. The How to Use These Materials section of the *Teacher Resource Guide* states one of the "I can" statements students can make while engaging in a Mathematical Practice is "I can explain or show my reasoning in a way that makes sense to others." For example, Unit 6, Lesson 8 Activity 1 Synthesis states "Select two students to share their diagrams, solutions, and reasoning for the last problem."
- The materials provide opportunities for students to share and reflect on their problem-solving approaches with justifications. Unit 3, Lesson 3 Activity 2 states, "The author of each fraction then verifies that the representations by others indeed show the written fraction. As students discuss and justify their decisions, they create viable arguments and critique one another's reasoning."

Materials offer prompts and guidance to assist teachers in providing explanatory feedback based on student responses and anticipated misconceptions.

- Materials offer prompts to assist teachers in providing explanatory feedback based on student responses and anticipated misconceptions. As stated in the Assessment section of the *Teacher Resource Guide*, "Each instructional task is accompanied by commentary about expected student responses and opportunities to advance student thinking so that teachers can adjust their instruction depending on what students are doing in response to the task. Often, there are suggested questions to help teachers better understand students' thinking." For example, Unit 4, Lesson 1, Activity 1 Narrative guides the teacher to "Check for understanding by asking students how they would write 7 hundredths, 70 hundredths, and 7 tenths in decimal notation." The Activity asks the teacher, "What notation can we write to show each fraction? How do we say the fraction in words?"
- Materials offer guidance to assist teachers in providing explanatory feedback based on student responses and anticipated misconceptions. As stated in the A Typical IM Lesson section of the *Teacher Resource Guide*, "Next-day supports, such as providing students access to specific manipulatives or having students discuss their reasoning with a partner, are recommended for cool-down responses that should be addressed while continuing to the next lesson. Teachers are directed to appropriate prior grade-level support for cool-down responses needing more attention." For example, Unit 4, Lesson 20 Activity 2 guides teachers to "Monitor for students who describe the errors using place value language and an understanding of how and when to decompose a unit." The Cool-Down guides the teacher to look for students who make errors in subtraction regrouping to use the Next Day Supports: "Launch Activity 1 by highlighting important notation from previous lessons."

- Materials offer teacher guidance in providing explanatory feedback based on student responses and anticipated misconceptions in each lesson cool-down. As stated in the Assessment section of the *Teacher Resource Guide*, "When appropriate, guidance for unfinished learning, evidenced by the cool-down, is provided in two categories: next-day support and prior-unit support. This guidance is meant to provide teachers ways to continue grade-level content while giving students the additional support they may need." For example, Unit 7, Lesson 1, Cool-Down guides teachers to look for student responses that only describe the given geometric image in terms of real-world objects. The Next Day Support states, "Launch warm-up or Activity 1 by highlighting key vocabulary from previous lessons." The Prior Unit Support states, "The work of this lesson builds on the geometry concepts developed in a prior unit."