Accelerate Learning Inc.

Supplemental English Mathematics, 4

STEMscopes Texas Math Pulse–Grade 4 English

MATERIAL TYPE	ISBN	FORMAT	ADAPTIVE/STATIC
Supplemental	**9798330804870**	**Digital**	**Static**

Rating Overview

TEKS SCORE	TEKS BREAKOUTS ATTEMPTED	ERROR CORRECTIONS (IMRA Reviewers)	SUITABILITY NONCOMPLIANCE	SUITABILITY EXCELLENCE	PUBLIC FEEDBACK (COUNT)
100%	163	7	Flags Not in Report	Not Applicable	0

Quality Rubric Section

RUBRIC SECTION	RAW SCORE	PERCENTAGE
1. Intentional Instructional Design	23 out of 23	100%
2. Progress Monitoring	20 out of 24	83%
3. Supports for All Learners	37 out of 39	95%
4. Depth and Coherence of Key Concepts	16 out of 16	100%
5. Balance of Conceptual and Procedural Understanding	38 out of 38	100%
6. Productive Struggle	19 out of 19	100%

Breakdown by Suitability Noncompliance and Excellence Categories

SUITABILITY NONCOMPLIANCE FLAGS BY CATEGORY	IMRA REVIEWERS	PUBLIC	Flags NOT Addressed by November Vote
1. Prohibition on Common Core	0	0	0
2. Alignment with Public Education's Constitutional Goal	0	0	0
3. Parental Rights and Responsibilities	0	0	0
4. Prohibition on Forced Political Activity	0	0	0
5. Protecting Children's Innocence	0	0	0
6. Promoting Sexual Risk Avoidance	0	0	0
7. Compliance with the Children's Internet Protection Act (CIPA)	0	0	0

SUITABILITY EXCELLENCE FLAGS BY CATEGORY	IMRA REVIEWERS
Category 2: Alignment with Public Education's Constitutional Goal	0
Category 6: Promoting Sexual Risk Avoidance	0

IMRA Quality Report

1. Intentional Instructional Design

Materials support educators in effective implementation through intentional course and lesson-level design.

1.1 Course-Level Design

GUIDANCE	SCORE SUMMARY	RAW SCORE
1.1a	All criteria for guidance met.	5/5
1.1b	All criteria for guidance met.	3/3
1.1c	All criteria for guidance met.	2/2
1.1d	All criteria for guidance met.	2/2
1.1e	All criteria for guidance met.	2/2
—	**TOTAL**	14/14

1.1a – Materials include an alignment guide outlining the TEKS, ELPS, and concepts covered, with a rationale for learning paths across grade levels (vertical alignment) and within the same grade level (horizontal alignment) as designed in the materials.

STEMscopes Math Pulse Grade 4 includes a "Course Rationale," which provides a comprehensive explanation of the instructional design across and within grade levels. The materials include detailed charts that map the Texas Essential Knowledge and Skills (TEKS) and topics, accompanied by a written rationale explaining the order in which topics are taught, broken down by each grade level.

Separate "Vertical Alignment Charts" for grades K–3 and grades 4–6 support easy reference to both prior and subsequent instruction. These charts include thorough descriptions and justifications for the progression of content across grade levels.

The materials also include an "Alignment Guide," which outlines how English Language Proficiency Standards (ELPS) are integrated into instruction. Within the "Scope and Sequence," the ELPS are identified under the "Included Standards" column for each topic at each grade level.

1.1b – Materials include an implementation guide with usage recommendations and strategies for effective educator use in various contexts, such as just-in-time supports, advanced learning, or as a course.

Each "Scope" in the *STEMscopes Math Pulse Grade 4* offers built-in tools to support differentiation and student growth, including intervention and acceleration options, spiral review, observation checklists, and skills quizzes. These features equip teachers with the resources needed to adapt instruction to meet a range of student needs.

The materials also include comprehensive recommendations to support implementation in various instructional contexts. Strategies are provided for effective teaching in multiple settings, including just-in-time supports, advanced learning opportunities, and full-course implementation models.

A flexible "Pacing Guide" is provided to help educators adjust instruction to their classroom needs while preserving the coherence of the content. The "Implementation Guide" features a section titled "Various Instructional Calendar Options," which offers recommendations for calendars covering both 165 days and over 180 days. These calendars are based on a standard 180-day instructional year.

1.1c – Materials include a TEKS correlation guide with recommended skill entry points based on diagnostic assessment results.

STEMscopes Math Pulse Grade 4 includes a "Scaffolded Instructional Guide," which helps teachers plan next steps based on student performance on the scope's assessments or diagnostic data, such as MAP Growth results. The "Scaffolded Instructional Guide" is an integrated tool that directs teachers to targeted materials, organized by standard and student percentile ranges, ensuring that instruction is aligned with student needs.

The curriculum includes a "TEKS Correlation Guide," which maps the standards to instructional content and includes recommended skill entry points based on diagnostic assessment results. A "Differentiation Pathways Document" is included in the lesson planning resources, offering strategic support to meet students at their current performance level and guide them toward mastery.

1.1d – Materials include protocols with corresponding guidance for unit and lesson internalization.

The "Curriculum Design and Implementation Guide" includes explicit protocols with corresponding guidance for internalizing units and lessons, helping educators to gain a deep understanding of the instructional intent and sequencing.

Each lesson contains "Content Support" sections that serve as valuable resources during PLC meetings and support collaborative planning and discussion of instructional strategies, background knowledge, academic vocabulary, and potential student misconceptions.

The "Lesson Internalization Section" provides a structured process for preparing to teach each lesson. It includes the following: review of scope and individual lesson objectives, identification of essential vocabulary and success criteria, a list of required manipulatives and materials, and a take-home letter to support family engagement.

1.1e – Materials include resources and guidance for instructional leaders to support educators with implementing the materials as designed.

STEMscopes Math Pulse Grade 4 includes professional development offerings, such as training modules and implementation guidance, specifically designed for instructional leaders. These resources support leaders to deeply understand the curriculum, enabling them to effectively coach and guide teachers in using the materials with fidelity. "Administration and Instructional Support" provides concrete suggestions for how leaders can establish sustainable instructional systems centered on the curriculum.

The materials offer comprehensive reports and dashboards that present actionable data on student performance. Instructional leaders are equipped with specific strategies and tools to effectively interpret and leverage this data. These tools support planning, enhance instruction, and ensure teaching practices align with the program’s design and learning goals.

Each scope includes several resources, such as "Content Support," "Scaffolded Instruction Guides," and "Intervention Materials." Although these are teacher-facing materials, these tools are also valuable for instructional leaders working to support data-driven decision-making, responsive instruction, and continuous teacher development.

1.2 Lesson-Level Design

GUIDANCE	SCORE SUMMARY	RAW SCORE
1.2a	All criteria for guidance met.	7/7
1.2b	This guidance is not applicable to the program.	N/A
1.2c	All criteria for guidance met.	2/2
—	**TOTAL**	9/9

1.2a – If designed to be static, materials include detailed lesson plans with learning objectives, teacher and student materials, lesson components with suggested timeframes, and assessment resources aligned with the TEKS and ELPS.

STEMscopes Math Pulse Grade 4 includes detailed lesson plans for each "Scope Tile" with clearly stated learning objectives, as well as alignment with the TEKS and ELPS. The lessons follow a 5E instructional model—Engage, Explore, Explain, Elaborate, and Evaluate—with detailed timing and lesson activities accessible through dropdown menus and embedded links within the lesson plan.

Each lesson includes a thorough list of resources for both teachers and students. These resources may include manipulatives, calculators, and printable materials. For instance, in the grade 4 scope on "Comparing Fractions," each group is expected to use a set of fraction circles. The lesson also provides access to an embedded calculator and printable worksheets to support learning.

Assessment resources are aligned with the TEKS and ELPS and are embedded within each topic. At the end of each lesson, "Assessment Options" provide various evaluation tools, such as "Structured Conversations," "Exit Tickets," "Show What You Know" tasks, "Skills Quizzes," "Formal Evaluations," and "Small Group Intervention Checkups."

1.2b – If designed to be adaptive, materials include detailed lesson overviews with learning objectives, lesson components with suggested timeframes, and assessment resources aligned with the TEKS and ELPS.

This guidance is not applicable because the program is not designed to be adaptive.

1.2c – Materials contain support for families in Spanish and English for each unit, with suggestions on supporting the progress of their student(s).

Each scope in the *STEMscopes Math Pulse Grade 4* includes a "Take-Home Letter," which explains what students are learning, along with examples, rationales, and vocabulary, including visual examples. Families are encouraged to discuss with their students what they are learning in class and identify examples of the math they are learning in everyday life.

Each "Take-Home Letter" includes specific activities for family and students to do together. For example, the grade 4 scope on "Area and Perimeter" includes a "Tic-Tac-Toe: Try This at Home Choice Board," featuring engaging indoor and outdoor activities that connect classroom learning to real-world contexts. These letters are structured to explain prior knowledge, current learning goals, and future connections.

The "Take-Home Letter" is available in English and Spanish. The Spanish versions of the letters include the same instructional support, complete with visual representations of strategies, explanations of academic vocabulary, and home-based reinforcement activities. This dual-language approach helps to ensure families are equipped to support their child’s understanding and mastery of mathematical concepts outside the classroom environment.

2. Progress Monitoring

Materials support educators in effective implementation through frequent, strategic opportunities to monitor and respond to student progress.

2.1 Instructional Assessments

GUIDANCE	SCORE SUMMARY	RAW SCORE
2.1a	All criteria for guidance met.	2/2
2.1b	All criteria for guidance met.	2/2
2.1c	The materials did not include text-to-speech that educators can enable or disable to support individual students. The materials did not include content and language support that educators can enable or disable to support individual students.	2/4
2.1d	All criteria for guidance met.	4/4
2.1e	All criteria for guidance met.	4/4
—	**TOTAL**	14/16

2.1a – Materials include the definition and intended purpose for the types of instructional assessments.

STEMscopes Math Pulse Grade 4 includes a list of diagnostic assessments, each accompanied by a brief definition and purpose in the "Implementation Guide." The diagnostic assessments are: "Accessing Prior Knowledge," "Observation Checklist," "Benchmark Assessments," and "Growth Measurement Assessments." For example, the "Accessing Prior Knowledge Diagnostic" aims to assess students' existing knowledge before introducing the content within the scope.

The materials include a list of formative assessments, each accompanied by a brief definition and purpose in the "Implementation Guide." The "Formative Assessments" featured are: "Exit Ticket," "Decide and Defend," "Observation Checklist," "Skills Quiz," and "Small-Group Intervention." For example, the "Observation Checklist" serves as a tool for both teachers and students to reflect on the student's progress and set goals.

The materials provided include a list of summative assessments, each accompanied by a brief definition and purpose in the "Implementation Guide." The summative assessments featured are: "Skills Quiz," "Standards-Based Assessment," "Technology-Enhanced Questions," "Benchmark Assessments," and "Growth Measurement Assessment." For example, the "Skills Quiz" assesses a student's proficiency in solving mathematical problems both efficiently and accurately.

2.1b – Materials include guidance to ensure consistent and accurate administration of instructional assessments.

STEMscopes Math Pulse Grade 4 provides clear guidance for teachers on how to accurately administer the assessments embedded in each lesson, as well as different options for assessments and a recommended time allotment for completing each assessment.

Each assessment in the individual scopes "Tiles" is accompanied by a guiding document that provides an overview of the assessment, outlines timeframes for each task, and offers step-by-step instructions for administering each component.

The materials include guidance for teachers to accurately administer formative assessments. For example, the "Addition and Subtraction Algorithms" scope, "Day 1 Assessment Options," is called "Structured Conversations," and is allotted 15 minutes for completion. "Procedure and Facilitation" notes include questions, prompts, and routines, featuring 10 different methods for students to engage in discourse with various-sized groups, facilitating structured conversations such as "Around the Room," "Back and Forth," "Conga Line," and "Four Corners."

2.1c – Digital assessments include printable versions and accommodations, including text-to-speech, content and language supports, and calculators, that educators can enable or disable to support individual students.

STEMscopes Math Pulse Grade 4 includes digital assessments that provide accommodations, including the option for educators to enable or disable calculator tools to support individual student needs. These tools include four-function, graphing, and scientific calculators.

The materials include digital assessments, such as "Skills Quizzes" and "Benchmark Assessments," which are fully formatted for seamless printing to ensure immediate accessibility for offline use.

The materials do not include text-to-speech that educators can enable or disable to support individual students.

2.1d – Materials include diagnostic assessments with TEKS-aligned tasks or questions, including interactive item types with varying complexity levels.

TEKS-aligned tasks and questions are designed with varying levels of complexity. For example, the grade 4 "Pre-Assessment" includes a series of fraction questions. In one task focused on identifying equivalents, students must choose the correct answer that represents the given equivalent fraction (Depth of Knowledge [DOK] 1). Another question involves multiple selections, requiring students to select two answer choices that correctly represent the equivalent fraction (DOK 2). A third question presents a story problem in which students must compare fractions using greater than (>) and less than (<) symbols (DOK 3).

The materials include diagnostic assessments that incorporate a variety of interactive item types such as multiple-choice, inline-choice, drag-and-drop, text-entry, and multi-select questions, all aligned with the TEKS.

The materials include diagnostic assessments featuring a range of interactive item types, with two or more unique question formats to engage students in diverse ways. Benchmark assessments are provided at three key points—pre, mid, and post—with tasks that increase in difficulty to monitor and support student growth over time. Available question formats include multiple-choice, multi-select, and text-entry options.

2.1e – Materials include a variety of formative assessments with TEKS-aligned tasks or questions, including interactive item types with varying complexity levels.

STEMscopes Math Pulse Grade 4 includes formative assessment tasks and questions that vary in complexity, ranging from "Basic Recall" (DOK 1) to "Extensive Thinking" (DOK 4). For grade 4, the "Measurement Unit Skills Quiz" includes questions such as identifying measuring units (DOK 1), converting measurements within the same system (DOK 2), and solving measurement-related problems (DOK 3). Additionally, in the "Accelerated Activity," students are encouraged to justify their reasoning and explain the importance of math and measurement for scientists studying landlines (DOK 4).

The materials include a variety of TEKS-aligned formative assessments, such as exit tickets, observation checklists, skills quizzes, and embedded tasks within the lesson.

The "Skills Quiz" is aligned with the TEKS and includes interactive item types, such as multiple-choice, equation editor, graphing, and number lines, but does not include hot spot, drag-and-drop, in-line choice, and text-entry. For example, the "Represent and Compare Decimals" scope tile "Skills Quiz" allows students to draw representations of fractional and decimal values on a grid, enter text answers, model to complete a grid, and plot and label numbers on a number line.

Grade 4 formative assessments include "Show What You Know" tasks, which feature at least two interactive item types, such as fill-in-the-blank, explaining reasoning, and drawing models. The formative assessments also offer a variety of unique interactive question formats, including multiple-choice, graphing, inline-choice, drag-and-drop, text-entry, number lines, drawing, short answer, and multi-select questions, all aligned with the TEKS. For example, in the "Compare and Order Numbers" scope tile "Skills Quiz," students engage with various item types, including drag-and-drop exercises to order numbers, short-answer responses to explain their reasoning, and text-entry to submit answers.

2.2 Data Analysis and Progress Monitoring

GUIDANCE	SCORE SUMMARY	RAW SCORE
2.2a	Materials do not include a rationale for each correct and incorrect response.	1/3
2.2b	All criteria for guidance met.	1/1
2.2c	All criteria for guidance met.	2/2
2.2d	All criteria for guidance met.	2/2
2.2e	This guidance is not applicable to the program.	N/A
—	**TOTAL**	6/8

2.2a – Instructional assessments include scoring information and guidance for interpreting student performance, including rationale for each correct and incorrect response.

STEMscopes Math Pulse Grade 4 includes a "Scaffolded Instruction Guide" for each scope lesson that offers guidance on interpreting student performance using data and outlines instructional next steps. It organizes support into four percentile ranges per standard: "Previous Grade Level Remediation" with small-group interventions, "Grade Level with Supports" using small-group materials, "Grade Level" with visual supports, and "Extending Grade Level" with acceleration activities.

The materials provide answer keys for assessments, but many lack detailed explanations or rationales for correct or incorrect responses. For example, a grade 4 math question about finding the area of a rectangle simply highlights the correct answer (2,449 cm^2) without showing the calculation or explaining the reasoning.

2.2b – Materials provide guidance for the use of included tasks and activities to respond to student trends in performance on assessments.

STEMscopes Math Pulse Grade 4 offers instructional guidance for tasks and activities that are aligned to students' skill levels using assessment data. The "Scaffolded Instruction Guide" helps teachers plan next steps based on performance, directing them to appropriate resources according to student needs and organizing support by the standards within each scope. For example, in a grade 4 "Place Value" assessment, students scoring 25 percent or below are directed to "Small Group Intervention," while those scoring 80 percent or higher receive enrichment through advanced activities, such as "Math Story" problems.

The materials and suggested activities are organized by student percentile ranges, with clickable links directing educators to targeted resources. In the grade 4 "Multiplication Models and Strategies" scope, which addresses TEKS 4.4BCDGH, each standard includes recommended activities based on performance levels. Students scoring 0–25 percent are directed to "Previous Grade Level Remediation," which includes

links to grade 3 resources such as multiplication activities, interactive practice, fluency builders, and a skills quiz. Scores between 25 and 50 percent fall under "Grade Level with Supports," which offers links to grade 4 small group intervention activities. The 50–80 percent range is categorized as "Grade Level," with links to tools like "Picture Vocabulary," "Interactive Vocabulary," and "Fluency Builder." For scores between 80 and 100 percent, the scope includes an "Extending Grade Level" activity called "Math Today."

2.2c – Materials include tools for teachers to track student progress and growth, and tools for students to track their own progress and growth.

STEMscopes Math Pulse Grade 4 features a visual growth tracker designed to enhance student engagement throughout their learning journey. Each scope includes an editable "Observation Checklist" progress chart, allowing students and teachers to track learning. This tool helps both student and teacher identify areas of improvement and set new learning goals. For example, in the grade 4 scope on "Profit, Budget, and Banking," a key concept is calculating profit in a given situation. Students can provide responses with examples of how this skill can be achieved and select from options such as "I've got it," "almost there," or "not yet."

The materials include user-friendly data trackers that help students record and visualize their progress on benchmark assessments. Each assessment features a Heat Map where students mark correct answers in green and incorrect ones in red, aligned to specific standards. Following this, students complete four reflection questions to deepen self-awareness, such as identifying which skill they felt most confident with and why.

The materials include "Student Goal Setting" print files that help students set goals for each scope based on specific objectives and track their progress toward achieving them. This feature also offers procedures and facilitation guidance for teachers to support the goal-setting process.

The materials incorporate the "Quantile Framework," which outlines over 550 math skills and assigns each a difficulty measure to facilitate comparison of concepts. This framework enables teachers to monitor student growth, identify gaps in understanding, and provide targeted support or enrichment. Students with an on-target quantile measure are ready for grade-level skills, those below need to focus on prerequisite skills, and those above can work on more advanced, upcoming concepts.

2.2d – If designed to be static, materials provide prompts and guidance to support educators in conducting frequent checks for understanding at key points throughout each lesson or activity.

STEMscopes Math Pulse Grade 4 includes prompts in the "Procedure and Facilitation Points" sections that guide educators to pause and ask targeted questions during lessons. In the Explore 1 activity, this section offers a detailed plan that supports teachers in checking for understanding through DOK questioning. For example, a grade 4 prompt asks, "What do we know about the side of a square?" to promote student thinking and discussion.

The materials include printed lesson plans with prompts for teachers to pause and check for understanding at key points, such as after explaining a concept or before moving to a new activity. For example, the "Monitor and Talk" section guides teachers to ask questions like, "What formula did you use to find the perimeter? How would you find the area inside the fence?" to assess student understanding and encourage discussion.

The materials include "Instructional Supports" and "Language Supports" sections that offer educators guidance for checking understanding throughout lessons. In the "Add and Subtract Fractions and Mixed Numbers" scope under "Explore," these sections provide targeted suggestions at key points in instruction. The "Instructional Supports" also recommend strategies for assisting students who need help modeling scenarios, drawing representations, or creating equations with fractional sums. "Language Supports" guide teachers in using visuals and asking questions to reinforce understanding and support student learning.

2.2e – If designed to be adaptive, materials provide frequent checks for understanding at key points throughout each lesson or activity.

This guidance is not applicable because the program is not designed to be adaptive.

3. Supports for All Learners

Materials support educators in reaching all learners through design focused on engagement, representation, and action/expression for learner variability.

3.1 Differentiation and Scaffolds

GUIDANCE	SCORE SUMMARY	RAW SCORE
3.1a	All criteria for guidance met.	1/1
3.1b	All criteria for guidance met.	4/4
3.1c	All criteria for guidance met.	2/2
3.1d	The digital materials do not provide accommodations for text-to-speech that educators can enable or disable to support individual students. The digital materials do not provide accommodations for content and language support that educators can enable or disable to support individual students.	1/3
3.1e	All criteria for guidance met.	2/2
—	**TOTAL**	10/12

3.1a – Materials include explicit educator guidance for lessons or activities scaffolded for students who have not yet reached proficiency in prerequisite or grade-level concepts and skills.

STEMscopes Math Pulse Grade 4 provides explicit educator guidance for lessons and activities that are scaffolded for students who have not yet reached proficiency in prerequisite or grade-level concepts and skills. Each scope includes a "Scaffolded Instruction Guide," which uses data from the scope's assessments or MAP Growth assessments to direct teachers to appropriate materials based on individual student needs. Scores ranging from 0 to 25 percent indicate a need for remediation of previous grade-level content, while scores between 25 and 50 percent suggest students are approaching grade-level expectations and may benefit from additional support. The guide includes a chart with suggested activities for each performance level, complete with live links to the corresponding resources.

The materials include an "Intervention Section" that offers educators targeted guidance on lessons and activities designed for students who have not yet mastered prerequisite or grade-level concepts and skills. This section provides a comprehensive set of resources, including a list of required materials, preparation steps, detailed procedures, facilitation tips, and printable files to support effective implementation of small group intervention activities. For example, in the grade 4 "Multiplication Model and Strategies" scope, the teacher guidance provides a list of multiplication strategies and algorithm activities aimed at students who need remediation from previous grade levels. Meanwhile, students who are able to work at grade level with supports will engage in multiplication models and strategies activities, distinct from those working at or above grade level.

3.1b – Materials include explicit educator guidance for language supports, including pre-teaching and embedded supports for developing academic vocabulary and unfamiliar references in text.

The *STEMscopes Math Pulse Grade 4* materials include explicit educator guidance for language supports, including embedded supports for developing academic vocabulary. Each scope contains "Picture Vocabulary" with teacher instructions on preparation, procedure, and facilitation points, as well as trips and tricks, along with the ability to assign the vocabulary in English and Spanish. For example, in the grade 4 "Compare Fractions" scope, students download relevant vocabulary, such as *benchmark fractions*, *compare*, and *denominator*. These vocabulary terms can be downloaded as flashcards or assigned online as flashcards or a slideshow.

The materials include explicit educator guidance for language development, with embedded supports for unfamiliar terms and references within the text. Each scope features a "Language Supports" section tailored to each "Explore" activity, providing targeted guidance to help educators support students during instruction. For example, in the "Angles" scope, the "Explore" tab includes four separate activities, each with its own "Language Support" section. Suggested strategies include connecting the term *vertex* to the Spanish word *vértice*, discussing similarities with other mathematical terms such as *ángulo* for *angle*, and incorporating visuals to enhance understanding. These supports are specific to the language and concepts presented in each individual activity.

The materials for each "STEMscopes Standard Lesson" provide explicit educator guidance for language supports, such as pre-teaching strategies to develop academic vocabulary. For example, in the grade 4 STEMscopes scopes on "Addition and Subtraction Algorithms," the "Language Support" section within the "Explore" subsection of "Round to Any Place Value" includes guidance for pre-teaching vocabulary related to relative distance. Educators are encouraged to create an anchor chart with descriptive terms such as almost, closer, nearer, and farther—words that support students in mastering the concept of rounding numbers to any place value.

The materials include instructional supports that recommend reviewing or pre-teaching unfamiliar references to build background knowledge. For example, the scope on "Area and Perimeter" suggests reviewing proper ruler use before beginning the lesson and recommends creating anchor charts with visual examples of area and perimeter concepts. Additionally, the materials provide sentence frames to support student discussions during problem-solving activities, along with embedded guidance for educators on how to effectively model the use of these frames.

3.1c – Materials include explicit educator guidance for enrichment and extension activities for students who have demonstrated proficiency in grade-level and above grade-level content and skills.

STEMscopes Math Pulse Grade 4 includes explicit educator guidance for extension activities catered to students who have demonstrated proficiency in grade-level and above-grade-level content and skills, as outlined in the "Math Today" activities. The "Math Today" activities explore connections between math and other content areas through interactions with real-world media provided by the Associated Press. "Math Today" activities include detailed procedures and facilitation points for educators, along with discussions using "I notice" and "I wonder" statements about how math is used in the presented situation.

The materials include a "Scaffolded Instruction Guide" for each Scope. This guide offers teachers a step-by-step plan to support students who have demonstrated proficiency in grade-level content and skills. For example, in the grade 4 "Multiplication Model and Strategies" scope, the teacher guidance provides a list of activities aimed at students who have demonstrated proficiency at grade level, including "Interactive Practice" and "Fluency Builders." Meanwhile, students who have demonstrated proficiency above grade level will engage in an enrichment activity that applies math to music.

Materials include explicit educator guidance for enrichment activities designed for students who demonstrate proficiency in grade-level skills. These enrichment opportunities are embedded throughout the "STEMscopes Standard Lesson Scopes" and include hands-on activities and group projects that allow students to explore concepts in greater depth. For example, in the grade 4 "STEMscopes Standard Lesson Scope" on "Angles," the "Elaborate" subsection features an interactive practice activity titled "Beaver Dam," in which students help a family of beavers build their dam wall by determining the angles of the wooden logs, offering an engaging, real-world application of angle measurement.

The materials include "Take-Home Letters" that include extension activities for students to do at home with family members.

3.1d – Digital materials include accommodations, including text-to-speech, content and language supports, and calculators that educators can enable or disable to support individual students.

The *STEMscopes Math Pulse Grade 4* materials provide calculators that educators can enable or disable to support individual students. Within each scope, educators can enable or disable a four-function calculator, a scientific calculator, or a graphing calculator for any activity that can be assigned digitally to students. For example, the "Triangle Properties" scope provides three "Show What You Know" student activities that can be assigned online with the option for calculator use.

The digital materials provide accommodations, such as text-to-speech and content and language supports, but educators cannot enable or disable them to support individual students. For example, the "Skills Quiz" within the "Evaluate" component of each scope offers a speaker button that allows the questions to be read aloud to the student and a dictionary button for student use. However, the teacher cannot disable those buttons.

By default, all students have access to enlarged text, text-to-speech, text highlighting, commenting tools, and dictionary mode. The only feature that the teacher can enable and disable is the calculator.

3.1e – Materials include educator guidance on offering options and supports for students to demonstrate understanding of mathematical concepts in various ways, such as perform, express, and represent.

STEMscopes Math Pulse Grade 4 includes educator guidance on supporting students in demonstrating their understanding of mathematical concepts in multiple ways, such as performing, expressing, and representing their learning. Each scope and its corresponding "Explore" activities offer suggestions for varied methods of student expression. Educators use tools such as physical manipulatives, digital manipulatives, supplemental aids, and collaborative group work to support diverse learners. For example, in the "Compare Fractions" scope, teacher guidance recommends having students work in groups of three or four to solve problems using fraction circles, references supplemental aids found in the "Intervention" section, and encourages the use of online fraction manipulatives to deepen conceptual understanding.

The materials provide guidance to educators on offering students multiple options to demonstrate their understanding of mathematical concepts. In the "Evaluate" subsection of each "STEMscopes Standard Lesson Scope," both a "Student Handout" and a "Teacher Observation Checklist" are included to guide educators in presenting a variety of assessment options. For example, in the scope on "Measurement," the "Student Handout" has students demonstrate their understanding through modeling, drawing, application, discussion, and written explanation. The teacher handout complements this by offering strategies for evaluating student knowledge through physical and pictorial modeling, problem solving, discussion, and written responses.

3.2 Instructional Methods

GUIDANCE	SCORE SUMMARY	RAW SCORE
3.2a	All criteria for guidance met.	5/5
3.2b	All criteria for guidance met.	2/2
3.2c	All criteria for guidance met.	3/3
3.2d	All criteria for guidance met.	2/2
3.2e	All criteria for guidance met.	2/2
—	**TOTAL**	14/14

3.2a – Materials include explicit (direct) prompts and guidance for educators to build knowledge by activating prior knowledge, anchoring big ideas, and highlighting and connecting key patterns, features, and relationships through multiple means of representation.

STEMscopes Math Pulse Grade 4 includes explicit prompts and guidance for educators to support knowledge building. For example, in the "Content Support" section of the "Place Value" scope, educators guide students through investigating the product of 10 and any number, then justifying why the result ends with a 0 in the ones place value. For instance, 8 × 10 = 80 because 80 represents 8 tens and no ones; similarly, 65 × 10 = 650 because the 6 in 650 represents 6 hundreds (which is 10 times as much as 6 tens), and the 5 represents 5 tens (which is 10 times as much as 5 ones). While students may quickly recognize the pattern of adding a zero when multiplying by 10, they must also understand and justify why this pattern occurs. This direct instructional prompt helps anchor big ideas by deepening conceptual understanding, connecting key features by linking standard algorithmic results to place-value concepts.

The materials include explicit prompts and guidance for educators to build student knowledge by highlighting and connecting key patterns, features, and relationships through multiple types of representation. For example, in the "Angles" scope under the "Suggested Scope Calendar" and "Content Support," a summary is provided to educators before instruction begins. This summary explains how the lesson activates prior knowledge and connects to broader mathematical concepts and skills. To anchor big ideas and support conceptual understanding, the "Explore," "Explain," and "Elaborate" tabs incorporate visual models, real-life scenarios, animations, and interactive practice that emphasize and connect critical mathematical features and relationships.

Materials provide clear prompts and guidance to help anchor key concepts. For example, after introducing the topic of place value of whole numbers, educators are encouraged to engage the class with questions, such as, "How could we represent the values of the digits in the number of cars on a given day? What would the number of cars in the city on Saturday look like in expanded notation?"

3.2b – If designed to be static, materials include educator guidance for effective lesson delivery and facilitation using various instructional approaches.

STEMscopes Math Pulse Grade 4 includes educator guidance for effective lesson delivery and facilitation using multiple instructional approaches, including direct instruction, guided practice, inquiry-based learning, collaborative learning, and exploratory learning. For example, in the "Number Patterns" scope, the "Engage," "Explore," "Explain," and "Elaborate" sections each contain multiple activities accompanied by detailed educator guidance to support the implementation of varied instructional strategies, such as a slide show, structured conversations, station cards for group collaboration, and pattern blocks for hands-on experience.

The materials offer clear instructions for effective lesson delivery, featuring detailed lesson plans that include step-by-step directions, recommended pacing, and strategies for differentiation tailored to each lesson. For example, in the "Division Models" scope, the lesson incorporates at least three distinct instructional approaches: direct instruction through teacher-led modeling of the algorithm, collaborative learning through structured partner and group activities, and visual and hands-on learning using base-ten blocks and optional area models.

The materials provide guidance for implementing various instructional approaches. These include small group instruction in the "Intervention" section and the "Scaffolded Instruction Guide," which offers teacher facilitation points for game-based activities and collaborative, project-based station activities designed for student groups. For example, in the "Place Value of Whole Numbers" scope, the teacher is guided to instruct students to use the place value disk to represent the value in the place value chart and have students name the value of a specified digit based on its location in the place value chart.

3.2c – Materials include multi-tiered intervention methods for various types of practice and structures and educator guidance to support effective implementation.

STEMscopes Math Pulse Grade 4 includes multi-tiered intervention methods to support various types of practice. For example, the "Place Value of Whole Numbers Scope" incorporates guided, independent, and collaborative intervention methods across different subsections. The "Explore" subsection features guided and collaborative practice; the "Explain" and "Show What You Know" subsections provide independent practice; and the "Evaluate" subsection assesses skill reinforcement. The grade 4 materials include educator guidance to support the effective implementation of multi-tiered intervention methods.

The materials include educator guidance to support the effective implementation of multi-tiered intervention methods. Each scope includes a "Scaffolded Instruction Guide" that provides a detailed chart to help educators identify students in need of intervention based on assessment score percentiles. The guide offers explicit guidance for interpreting assessment data and selecting targeted instructional materials aligned to each TEKS. For example, students who score between 0 and 25 percent on TEKS 4.2A

go to the previous grade level remediation and explore place value relationships from grade 3, and take a grade 3 skills quiz to assess mastery.

The materials offer multi-tiered interventions to support students through various practice models. For instance, teacher-led activities during "Small Group Interventions" lessons provide targeted support for students. Peer collaboration is encouraged as students work together to solve problems in many "Engage" subsection activities. "Fluency Builders" foster self-paced mastery by helping students independently enhance their fact fluency. Additionally, interactive platforms facilitate adaptive learning through engaging exercises, instant feedback, and opportunities for students to progress through different levels of practice through games and other engaging exercises.

3.2d – Materials include enrichment and extension methods that support various forms of engagement, and guidance to support educators in effective implementation.

STEMscopes Math Pulse Grade 4 provides educators with guidance on implementing enrichment and extension activities effectively. Each scope features an "Elaborate" section designed to allow students to apply their newly acquired knowledge and skills in various contexts, thereby deepening their understanding. In addition, each scope includes an "Accelerate" section that offers students opportunities to explore connections and applications of math alongside other subjects through interactions with authentic, real-world media and various other methods.

The materials include guidance to help educators effectively implement enrichment and extension methods, with detailed support outlining procedures and facilitation points for acceleration activities provided within each Scope. For example, the "Represent and Interpret Data Scope" includes a "Math Today—Sand Sculptures" acceleration activity where educators are given detailed guidance to easily implement the activity. Procedure and facilitation points include the teacher having students watch a video, discussing what they notice and what they wonder, and completing a student page independently or with a partner.

The materials include scopes with enrichment and extension methods that support multiple forms of engagement through collaborative problem-solving, individual reflection, and multimodal tools. For example, in the "Area and Perimeter" scope, students apply area and perimeter formulas in a real-world toy design challenge, such as calculating the material needed for packaging or exploring whether a rectangle’s area and perimeter can be the same number. Engagement is promoted through group work using "Task Cards," individual reflections in their student journals and on exit tickets, and whole-class "Math Chats" with questions like "How is finding an unknown side length different from finding the area or perimeter?"

3.2e – Materials include prompts and guidance to support educators in providing timely feedback during lesson delivery.

STEMscopes Math Pulse Grade 4 includes prompts and guidance to support educators in providing timely feedback during lesson delivery. For example, in the "Place Value of Whole Numbers" scope," the "Explore" subsection mini-lesson on "Representing Multi-Digit Whole Numbers" includes scripted prompts guiding teachers to ask DOK 1 and DOK 2 questions to support student understanding, monitor student thinking, and engage students during activities. The lesson also contains formative assessment tools such as "Exit Tickets," "Student Journals," "Math Chats," "Spiraled Reviews," and "Observation Checklists."

The materials include prompts and guidance to support educators in providing timely feedback during lesson delivery. For example, in the "Explore 1: Compose and Decompose Fractions in Multiple Ways," teachers check for understanding, address misconceptions, and deepen student reasoning throughout the lesson by using question prompts, such as "How can the pie model help us determine an equation using unit fractions? How can we turn the information at each station into a mixed number?"

3.3 Support for Emergent Bilingual Students

An emergent bilingual student is a student who is in the process of acquiring English and has another language as the primary language. The term emergent bilingual student replaced the term English learner in the Texas Education Code 29, Subchapter B after the September 1, 2021 update. Some instructional materials still use English language learner or English learner and these terms have been retained in direct quotations and titles.

GUIDANCE	SCORE SUMMARY	RAW SCORE
3.3a	All criteria for guidance met.	4/4
3.3b	This guidance is not applicable to the program.	N/A
3.3c	All criteria for guidance met.	1/1
3.3d	All criteria for guidance met.	8/8
3.3e	This guidance is not applicable to the program.	N/A
—	**TOTAL**	13/13

3.3a – If designed to be static, materials include educator guidance on providing and incorporating linguistic accommodations for all 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.

STEMscopes Math Pulse Grade 4 includes educator guidance on providing and incorporating linguistic accommodations for all levels of language proficiency as defined by the ELPS, with a focus on helping students develop increasingly academic language. Each "Explore" activity includes a "Language Supports" document tailored to that specific task, offering strategies for differentiating instruction across at least two or three levels of language proficiency. For example, in the "Area and Perimeter" scope, the "Explore" tab features two activities, each accompanied by a "Language Supports" document. These guides suggest various accommodations, such as connecting mathematical cognates, restating information, using oral explanations before written responses, and incorporating sentence stems, all of which support emergent bilingual students in building academic vocabulary. Students are provided with sentence structures to help them ask and answer questions. Example sentence structures include: "To find the ___, we need to _____.", "We find the perimeter by _____.", "We find the area by _____."

The materials include comprehensive guidance for linguistic accommodations aligned with the ELPS. The "Linguistic Diversity" tab offers suggested sentence stems, word activities, and question prompts designed to support student progression from Intermediate to Advanced proficiency, helping them engage in mathematical discourse using increasingly academic language. Sentence structures include: "I heard you say _____. Is that correct? I heard you say _____. I agree or disagree because _____."

In addition, the "Multilingual" tab provides differentiated strategies across at least three levels of language proficiency: Beginning, Intermediate, and Advanced. These supports include leveled activities

and sentence frames that are tailored to each stage, effectively scaffolding students toward more complex academic language and deeper mathematical understanding. An example sentence structure includes: Partner A: "How did you create your frequency table?" Partner B: "To create my frequency table, I _____."

3.3b – If designed to be adaptive, materials include embedded linguistic accommodations for all 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.

This guidance is not applicable to the program because it is not designed to be adaptive.

3.3c – Materials include implementation guidance to support educators in effectively using the materials in state-approved bilingual/ESL programs.

STEMscopes Math Pulse Grade 4 includes implementation guidance to support educators in effectively using the materials within state-approved bilingual and ESL programs. The "Implementation Guide" includes a section on multilingual language support, outlining how to address the needs of emergent bilingual students.

Within the "Resources and Tools" section, seventeen integrated resources are described, each accompanied by an explanation of its purpose and how it supports language development. These include "Proficiency Levels by Domain," which helps teachers identify a student's English proficiency; "Sentence Stems and Frames" that enable students to practice engaging in purposeful conversation; and "Language Supports" that can be applied during the lesson to assist students at any proficiency level.

The "Implementation Guide" provides visuals like anchor charts and suggested linguistic scaffolds to help teachers meet the needs of multilingual learners. For example, translations of "Math Stories" from English to Spanish provide educators in a dual-language immersion program with explicit ways to plan language bridging with an additional lens of positive and negative transfer between grammar and phonics.

The materials include clear implementation guidance for use in state-approved bilingual and ESL programs. The "Multilingual Learners" tab in the "Teacher Toolbox" provides ELPS-aligned strategies, "Proficiency Levels by Domain," "Sentence Stems," "Working on Words," and guidance on how to use these tools.

3.3d – Materials include embedded guidance to support emergent bilingual students in developing academic vocabulary, increasing comprehension, building background knowledge, and making cross-linguistic connections through oral and written discourse.

STEMscopes Math Pulse Grade 4 includes comprehensive support for facilitating oral and written discourse among emergent bilingual students. In the "Multilingual Learners" section, discussion protocols guide teachers in promoting oral discourse to improve comprehension of math concepts, with strategies that support language transfer by helping students make language connections between English and Spanish. For example, the "Teacher Notes" provide scaffolds such as background knowledge builders, visual supports, and vocabulary pre-teaching to help connect new content to prior knowledge through written discourse. Additionally, the materials guide teachers in developing students' academic vocabulary by encouraging cross-linguistic connections (e.g., connecting the English *area* to the Spanish *perímetro*) and supporting students in orally rehearsing and revising their written responses in the student journal.

The materials include "Picture Vocabulary," which provides support for emergent bilingual students in building their academic vocabulary. Teachers are prompted to read and define the vocabulary for each lesson with students, engage in discussions, and practice during suggested activities that promote academic vocabulary development through oral discourse.

The materials emphasize strategies that support teachers in helping students monitor their comprehension and make adjustments when they struggle to understand. Both the "Implementation Guide" and the "Multilingual Learners" section provide a range of integrated, research-based strategies and tools to support educators in promoting language development. Two key strategies include "Structured Conversation Routines," where students engage in guided discussions around specific questions or prompts, and "Sentence Stems and Frames" to help students participate in meaningful discussions and practice academic writing, promoting both comprehension and communication skills. For example, in the "Number Patterns" scope in the "Language Support" section, the teacher facilitates a structured conversation between pairs of students. The teacher provides sentence structures to support students in asking and answering questions: "Partner A: How did you model the problem? Partner B: I modeled the problem by_____."

3.3e – If designed for dual language immersion (DLI) programs, materials include resources that outline opportunities to address metalinguistic transfer from English to the partner language.

This guidance is not applicable because the program is not designed for dual language immersion (DLI) programs.

4. Depth and Coherence of Key Concepts

Materials are designed to meet the rigor of the standards while connecting concepts within and across grade levels/courses.

4.1 Depth of Key Concepts

GUIDANCE	SCORE SUMMARY	RAW SCORE
4.1a	All criteria for guidance met.	2/2
4.1b	All criteria for guidance met.	4/4
—	**TOTAL**	6/6

4.1a – Practice opportunities throughout learning pathways (including instructional assessments) require students to demonstrate depth of understanding aligned to the TEKS.

STEMscopes Math Pulse Grade 4 includes instructional assessments throughout the learning pathways that require students to demonstrate a deep understanding aligned to the TEKS. For example, in the "Compare Fractions" scope tile, students engage in progressively more complex tasks. They begin by representing and generating equivalent fractions through modeling and evaluating similarities and differences. Next, they compare fractions using visual models, and finally, they compare fractions on number lines through student journals and exit tickets. These tasks guide students through DOK levels 1–3.

The materials provide numerous practice opportunities for students to demonstrate depth of understanding and mastery of the TEKS. Each scope lesson includes a variety of engaging activities aligned with the standards. For example, the "Explore" section on "Place Value of Whole Numbers" starts with simpler tasks, such as using clue cards to identify the value of each digit by using a place value chart and place value disk, and advances to more complex practice that require students to represent the value of a missing value that is 10 times the value of another without use of the place value chart and disk. Throughout the learning pathways, guiding questions prompt students to show deep understanding aligned with the TEKS.

The materials require students to demonstrate depth of understanding aligned with the TEKS throughout the learning pathways. This is demonstrated through activities like the "Would You Rather" game, which encourages students to compare fractions using real-world scenarios. In addition, students work collaboratively in groups, moving around the classroom to solve riddles that provide numbers for input-output tables, helping them organize, record, and communicate mathematical ideas while analyzing relationships.

4.1b – Questions and tasks, including enrichment and extension materials, increase in rigor and complexity, leading to grade-level and above grade-level proficiency in the mathematics TEKS.

STEMscopes Math Pulse Grade 4 includes questions and tasks that are intentionally designed to increase in rigor and complexity, guiding students toward grade-level proficiency in the mathematics TEKS. Lessons are scaffolded to build conceptual understanding and support student progression toward mastery. Students begin their exploration of equivalent fractions by using visual models to build conceptual understanding. Once they have a solid grasp of the concept, they progress to generating equivalent fractions without the use of models, and they represent these equivalent fractions on a number line to visualize and reinforce the relationships among them.

Each scope lesson includes enrichment and extension materials that deepen learning and make real-world connections, further engaging students in the learning process. For example, in the "Area and Perimeter" scope lesson, the "Acceleration" section features the activity "Math Today – South African Worms," which connects mathematical concepts to real-world applications. These types of activities encourage students to think critically and apply their understanding beyond routine practice. The "Acceleration" subsection also offers opportunities for cross-curricular connections and advanced exploration, supporting students in deepening their knowledge beyond grade-level expectations.

The materials include tasks and questions that increase in rigor and complexity, leading to grade-level proficiency and above. Students begin by using hundreds grid models and concrete visual models to represent and write equations for adding and subtracting decimals. As their understanding develops, they progress to adding and subtracting decimals using partial sums. Students then transition to using the standard algorithm to add and subtract decimals. To deepen their understanding, they solve real-world word problems that require applying the standard algorithm to addition and subtraction of decimals. As part of the learning process, students reflect on their strategies by answering questions such as: "How did you use the grid model to add your decimals? How is the partial sums method similar to the standard algorithm?" These reflections help students make connections between visual models and procedural methods, reinforcing both conceptual understanding and computational fluency.

4.2 Coherence of Key Concepts

GUIDANCE	SCORE SUMMARY	RAW SCORE
4.2a	All criteria for guidance met.	1/1
4.2b	All criteria for guidance met.	1/1
4.2c	All criteria for guidance met.	4/4
—	**TOTAL**	6/6

4.2a – Materials demonstrate coherence across concepts horizontally within the grade level by connecting patterns, big ideas, and relationships.

STEMscopes Math Pulse Grade 4 includes a "Content Support Overview" that explains how students develop an understanding of equivalent fractions. The learning begins with exploring why two fractions are equivalent, building a foundation that allows students to justify equivalency using objects and pictorial models.

The materials include a "Course Rationale" that outlines how STEMscopes Math is intentionally designed to build on prior knowledge, ensuring smooth transitions between topics. The guide explains the overall structure and connections between patterns, big ideas, and relationships. For example, it begins with the "Place Value of Whole Numbers" scope, which deepens students' understanding of place value by emphasizing the relationship between adjacent place values and representing multi-digit numbers in various forms.

The "Scope Lessons" demonstrate horizontal coherence by exploring how concepts are interconnected and build toward solving real-world problems. For example, in the grade 4 "Measurement" scope, students first identify units within the metric and customary systems, then progress to converting between larger and smaller units, and ultimately apply their understanding to solve word problems using the concrete knowledge they have developed.

4.2b – Materials demonstrate coherence vertically across concepts and grade bands, including connections from grade K–6, by connecting patterns, big ideas, and relationships.

STEMscopes Math Pulse Grade 4 includes a "Content Support" document that outlines the background knowledge students have developed from grade 1 through grade 4 in comparing fractions. For example, in grade 1, students learned to partition shapes into halves and fourths. The document also features a "Coming Attractions" section, which explains how this foundational understanding of fractions will be applied in grades 5 and 6, emphasizing the importance of mastering fractions for future mathematical success.

The materials include "Vertical Alignment Charts" that span from Kindergarten through Algebra II, illustrating how concepts build and connect across grade levels. These charts use color coding to make each strand easy to follow; for example, Process Skills are consistently marked in red across all grades. Each strand includes detailed listings of the TEKS covered, helping educators clearly see the progression of skills and standards over time.

In the "Represent and Interpret Data" lesson, the "Background Knowledge" section outlines the progression of the concept beginning in Kindergarten, where students learn to collect and sort data. In grade 1, they advance to collecting, analyzing, and organizing data using T-charts and pictographs. By grade 2, students begin interpreting data to solve addition and subtraction problems. In grade 3, students further develop these skills by collecting, organizing, representing, and analyzing data using frequency tables and bar graphs with scaled intervals, demonstrating a clear progression that leads to the content of grade 4.

4.2c – Materials demonstrate coherence across lessons or activities by connecting students' prior knowledge of concepts and procedures to the mathematical concepts to be learned in the current grade level and future grade levels.

STEMscopes Math Pulse Grade 4 demonstrates coherence across lessons by connecting students' prior knowledge of concepts to new mathematical concepts within the "Properties of Two-Dimensional Figures" scope. In this scope, students build on their understanding of two-dimensional figures, angles, and line relationships to classify right, acute, and obtuse triangles. For example, in the "Explore 2—Classify Triangles" activity, the "Procedure and Facilitation Points" include guiding questions such as, "What are the three different types of angles? What is an acute angle?" to activate prior knowledge before applying it to the classification of triangles.

The materials demonstrate coherence across lessons by linking students' prior knowledge to future grade-level concepts through the "Content Support" and "Explore" tabs. For instance, in the grade 4 "Angles" scope, students develop foundational skills such as identifying angle types, understanding angle attributes, and measuring angles. These concepts prepare them for grade 5, where they classify geometric figures into sets and subsets, and for future grades where they solve problems involving angles in triangles, find missing angles, and apply angle-measurement skills. The "Explore" section lessons—"Measuring Angles," "Drawing Angles," and "Adjacent Angles"—lay the groundwork for this continued learning progression.

Students participate in an introductory lesson focused on finding area and perimeter. The teacher provides guidance through discussion prompts and extension tasks that link these concepts to prior knowledge. Students explore questions such as: "What do we already know? How can we approach solving a problem like this? What distinguishes perimeter from area?" The materials include an "Educator's Content Support" tool with a "Coming Attractions" section that outlines how current student mastery connects to future grade-level concepts. For example, in grade 4, it notes that students will build

on their understanding in grade 5 by learning to find the perimeter and area of rectangles with fractional and decimal side lengths using visual models and formulas.

Materials demonstrate coherence by linking students' prior knowledge to current mathematical procedures through "Scopes Standard Lessons." These lessons provide step-by-step methods or algorithms, starting with foundational operations such as addition, subtraction, multiplication, and division, and progressing to more complex concepts like area, volume, and fraction operations. For example, in the grade 4 "Addition and Subtraction Algorithms" scope, the "Explore" section mini lesson on multi-digit addition begins with estimation—a previously learned concept—and then guides students through proper number alignment by place value and systematic addition from the smallest to the largest place value.

4.3 Coherence and Variety of Practice

GUIDANCE	SCORE SUMMARY	RAW SCORE
4.3a	All criteria for guidance met.	2/2
4.3b	All criteria for guidance met.	2/2
—	**TOTAL**	4/4

4.3a – Materials provide spaced retrieval opportunities with previously learned skills and concepts across learning pathways.

STEMscopes Math Pulse Grade 4 materials offer spaced retrieval opportunities by revisiting previously learned concepts across different learning pathways. Area models, introduced early in the year, are consistently used to interpret and solve problems. For example, in the "Multiplication Models and Strategies" scope, students apply area models to solve multiplication problems. They continue to retrieve and apply this strategy in other pathways, such as the "Solving Problems with Four Operations" scope, and in spiraled reviews like the "Number Patterns Spiraled Review," reinforcing their understanding over time.

The materials include "Fact Fluency" for addition, subtraction, multiplication, and division, to provide strategic fluency support across learning pathways. These activities promote spaced retrieval of essential skills, helping students build and maintain mastery in solving problems involving the four basic operations.

The materials include a Spiraled Review in the "Elaborate" subsection that offers students opportunities to review and retrieve essential content from previous or current grade levels, reinforcing critical learning areas. For example, in the "Profit, Budgets, and Banking" scope, the spiral review prompts students to apply prior knowledge of concepts such as dot plots, measurement conversions, angles, and parallel/perpendicular lines.

4.3b – Materials provide interleaved practice opportunities with previously learned skills and concepts across learning pathways.

The *STEMscopes Math Pulse Grade 4* materials offer interleaved practice by integrating previously learned concepts across learning pathways, particularly with addition and subtraction. Students explore multiple strategies to solve problems involving fractions, mixed numbers, and decimals. For example, the curriculum includes separate scopes—"Addition and Subtraction Algorithms," "Add and Subtract Fractions and Mixed Numbers," and "Add and Subtract Decimals"—that allow students to apply and reinforce their understanding of addition and subtraction in varied contexts.

The materials include assessments that prompt students to apply previously learned strategies to solve multiplication problems. For example, students may be asked to estimate the solution first, then select

and use a strategy such as arrays, area models, partial products, or the standard algorithm to solve the problem.

Materials include interleaved practice, which is evident in the Spiraled Review section of the STEMscopes Standard Lesson "Elaborate" subsection and its corresponding print files. For example, in the "Add and Subtract Fractions and Mixed Numbers" scope, the Monday activity integrates multiple concepts, including the relationship between money and fractions, writing equations, equivalent fractions, comparing fractions, and using the distributive property to solve money-related addition problems.

5. Balance of Conceptual and Procedural Understanding

Materials are designed to balance conceptual understanding, procedural skills, and fluency.

5.1 Development of Conceptual Understanding

GUIDANCE	SCORE SUMMARY	RAW SCORE
5.1a	All criteria for guidance met.	3/3
5.1b	All criteria for guidance met.	2/2
5.1c	All criteria for guidance met.	1/1
—	**TOTAL**	6/6

5.1a – Questions and tasks provide opportunities for students to interpret, analyze, and evaluate models and representations for mathematical concepts and situations.

The *STEMscopes Math Pulse Grade 4* materials include questions and tasks that require students to evaluate models and representations of mathematical concepts and real-world situations. In the "Multiplication Models and Strategies" scope, the "The Hook" activity prompts students to use base-ten blocks to create area models and rectangular arrays to represent the multiplication of two-digit numbers. Through a real-life scenario, students model and determine the area of a dancing stage, encouraging them to evaluate and apply mathematical representations to solve meaningful problems.

The materials include an "Explore" section that offers questions and tasks that provide opportunities for students to interpret models and representations of mathematical concepts. For example, in the "Represent and Compare Decimals" scope, the "Explore" subsection of the "Relate Decimals to Fractions" activity engages students in exploring the connection between decimals and fractions. Using craft sticks, students build visual models of decimals and then convert those models into fractional representations, reinforcing conceptual understanding through both hands-on modeling and symbolic reasoning.

Students analyze and evaluate array models through a series of engaging verbal prompts designed to deepen conceptual understanding. Prompts guide students through the process: "What information are you given on the card?" "How does your array model relate to the given information?" "How can you determine an expression that represents this scenario?" "How can you use the array model to determine how many groups of each place value are represented?" As they respond to these questions, students record their findings and develop a mathematical representation of the given scenario.

5.1b – Questions and tasks provide opportunities for students to create concrete models and pictorial representations to represent mathematical situations.

STEMscopes Math Pulse Grade 4 includes questions and tasks that provide multiple and varied opportunities for students to create concrete models to represent mathematical situations. For example, in the lesson "Multiplication Models and Strategies," the "Explore 2" subsection titled "Arrays" includes activities where students build array models to solve real-world mathematical problems.

The materials include questions and tasks that require students to create pictorial representations of mathematical situations to support conceptual understanding. For example, in the "Multiplication Models and Strategies" scope under the "Explore" tab, students create pictorial models and write multiplication expressions when solving problems in both the "Student Journal" and "Exit Ticket."

5.1c – Questions and tasks provide opportunities for students to apply conceptual understanding to new problem situations and contexts.

The *STEMscopes Math Pulse Grade 4* materials include questions and tasks that provide opportunities for students to apply their conceptual understanding to new problem situations and real-world contexts. In the "Multiplication Models and Strategies" scope's spiraled review, students extend their understanding of multiplication through a scenario involving a boy who helps with his family's lawn-mowing business and earns an allowance to build his savings. Students apply their mathematical knowledge to solve a variety of problems, including calculating the square footage of lawns mowed, comparing fractions of time spent mowing over two weeks, tracking and graphing lawn areas mowed throughout the week, and calculating the perimeter of one of the yards.

Students deepen their understanding of measurement by engaging with real-life contexts. For example, students explore questions, such as "Why might math and measurement be helpful for scientists studying landslides?"

The materials include questions and tasks in the "STEMscopes Standard Scope Lessons" that provide opportunities for students to apply their conceptual understanding to new problem situations and real-world contexts. For example, in the lesson "Problem-Solve Using the Four Operations," the print materials and teacher directions guide students to apply their knowledge of the four basic operations (addition, subtraction, multiplication, and division) to solve problems. In this lesson, students work with "Concert Scenario" cards, which present situational math problems that require them to reason through and apply their understanding of operations to find solutions.

5.2 Development of Fluency

GUIDANCE	SCORE SUMMARY	RAW SCORE
5.2a	All criteria for guidance met.	2/2
5.2b	All criteria for guidance met.	3/3
5.2c	All criteria for guidance met.	3/3
5.2d	All criteria for guidance met.	1/1
—	**TOTAL**	9/9

5.2a – Materials provide tasks that are designed to build student automaticity and fluency necessary to complete grade-level mathematical tasks.

STEMscopes Math Pulse Grade 4 provides tasks designed to build students' fluency in performing math operations. For example, in the grade 4 STEMscopes Teacher Resource "Fact Fluency: Addition and Subtraction," the materials offer strategies and practice opportunities that support students in developing fluency with addition and subtraction. These include a variety of engaging methods, such as station-based activities and games, which help students recall math facts quickly and accurately.

The materials include lessons, such as the "Explore 1—Patterns Using Numerical Expressions" lesson, that provide tasks designed to build the student automaticity necessary to complete grade-level mathematical tasks. This lesson builds students' automaticity by engaging them in repeated, hands-on practice identifying numerical patterns and writing corresponding expressions. Students rotate through five stations using manipulatives to model relationships between inputs and outputs, such as recognizing that Fynn's age is always four more than Amari's and expressing that relationship as "position + 4." Repetition, structured tables, and visual models reinforce the process of identifying consistent patterns, developing fluency with numerical reasoning, and writing expressions, all foundational for algebraic thinking at this grade level.

The materials include interactive tasks designed to build the fluency necessary to complete grade-level mathematical tasks. Topics include sums of 5 to 20, using doubles, and multiplication factors from 0 to 10.

5.2b – Materials provide opportunities for students to practice the application of efficient, flexible, and accurate mathematical procedures throughout learning pathways.

STEMscopes Math Pulse Grade 4 provides opportunities for students to practice applying efficient and accurate mathematical procedures through structured learning pathways. For example, in the lesson "Division Models and Strategies," the "Engage" subsection introduces students to multiple approaches for solving division problems, such as using equal groups, area models, arrays, and standard algorithms. These varied methods allow students to explore and practice efficient and accurate procedures while building a deeper understanding of division concepts through flexible learning pathways.

Materials provide consistent opportunities for students to practice applying accurate mathematical procedures across structured learning pathways. Each scope includes a progression of skills that allows students to build and reinforce their understanding through multiple practice opportunities. For example, in the "Division Models and Strategies" scope, students begin solving division problems using area models and partial quotients. They then use partial quotients alongside standard algorithms, apply their division skills in a game-based activity, and ultimately demonstrate their understanding by completing a skills quiz incorporating models, partial quotients, and standard algorithms. This progression supports the development of procedural accuracy and fluency through varied and scaffolded practice.

The materials include spiraled review opportunities throughout all scopes. Revisiting mathematical concepts allows students opportunities to practice efficient and flexible mathematical procedures.

5.2c – Materials provide opportunities for students to evaluate mathematical representations, models, strategies, and solutions for efficiency, flexibility, and accuracy throughout learning pathways.

The *STEMscopes Math Pulse Grade 4* materials enable students to evaluate the accuracy of mathematical representations, models, strategies, and solutions throughout the learning pathways. In STEMscopes under the "Explore" tab, students explore different activities and then reflect on their learning by evaluating their work. For example, in the "Division Models and Strategies" scope, the "Algorithms: Explore" activity has students modeling division using area models, partial quotients, and equations. Students then evaluate and reflect on their learning by answering questions like "What is the relationship between the partial quotients strategy and the standard algorithm?"

The materials include subsections, such as "Show What You Know—Part 2: Represent Tenths and Hundredths with Expanded Notation," that provide opportunities for students to evaluate mathematical representations, models, strategies, and solutions for both flexibility and accuracy throughout learning pathways. This task allows students to evaluate and connect multiple mathematical representations to demonstrate their understanding of decimal place value, including standard form, expanded notation, fractional notation, visual models, and word form. The activity supports flexible thinking by requiring students to interpret and generate different expressions for the same value, while also promoting accuracy through precise alignment with place value concepts.

The materials include opportunities for students to evaluate the efficiency and flexibility of different mathematical strategies and representations after solving a multi-step problem that involves one or more of the four operations. The materials prompt students with questions like "Can someone explain another way to solve this problem? Why do different equations yield the same answers? What made you choose the equation you used to solve it?"

5.2d – Materials contain guidance to support students in selecting increasingly efficient approaches to solve mathematics problems.

STEMscopes Math Pulse Grade 4 contains guidance to support students in selecting increasingly efficient approaches to solve mathematical problems. The "Content Support" section of each scope introduces strategies to students that promote more effective problem solving. For example, in the grade 4 "Multiplication and Division Algorithms" scope, the "Content Support" guides students to use area models, the distributive property, and partial products to help them understand the structure of multiplying multi-digit whole numbers. These strategies build conceptual understanding and lead students toward more efficient and flexible methods for solving problems.

The materials have lessons, such as the "Fluency Builder—Problem Solving with Measurement – Metric and Customary," that contain guidance to support students in selecting increasingly efficient approaches to solve mathematics problems. Students are prompted to "Record the problem you are trying to solve, show your thinking, and circle your solution." This activity supports students in developing increasingly efficient approaches through frequent practice, peer interaction, and gameplay that rewards quick and correct responses.

5.3 Balance of Conceptual Understanding and Procedural Fluency

GUIDANCE	SCORE SUMMARY	RAW SCORE
5.3a	All criteria for guidance met.	2/2
5.3b	All criteria for guidance met.	3/3
5.3c	All criteria for guidance met.	6/6
—	**TOTAL**	11/11

5.3a – Materials explicitly state how the conceptual and procedural emphasis of the TEKS are addressed.

The *STEMscopes Math Pulse Grade 4* materials clearly explain how the conceptual and procedural emphasis of the TEKS is addressed within the "Content Support" section of each scope. For example, in the "Multiplication Models and Strategies" scope, the materials outline the progression of multiplication concepts and illustrate how the area model connects to partial products, as well as how partial products relate to the standard algorithm. In the lesson overview, the procedural skills that students will practice during the lesson include identifying patterns when multiplying by 10 and 100, solving problems with two-digit products, and creating array models based on information or equations.

The materials explicitly state how the conceptual emphasis of the TEKS is addressed by including a detailed progression in each scope that highlights prior knowledge, common misconceptions, and current learning goals. In the "Compare Fractions" scope, the progression focuses on developing a deep understanding of unit fractions, equivalency, and comparison through the use of visual models, number lines, and benchmark fractions.

The materials include a "Content Support" section and a "Teacher Facilitation" script within each scope that directly address the conceptual emphasis of the TEKS. In the "Represent and Interpret Data" scope, for instance, in the "Explore" section, students use a measuring tape to help them understand measuring to the nearest half and fourth. This helps students capture data between whole numbers and record it on a graph. This structure supports a clear and coherent development of conceptual understanding as outlined in the TEKS.

5.3b – Questions and tasks provide opportunities for students to use concrete models, pictorial representations, and abstract models as required by the TEKS.

The *STEMscopes Math Pulse Grade 4* materials include virtual manipulatives and a variety of print-based activities that offer students multiple opportunities to engage with concrete models. For instance, in the "Angles" scope, the "Explore" section allows students to use paper plates to represent angles as fractions of a circle. In the "Area and Perimeter" Standard Lesson scope, students begin with concrete models (colored tiles) to conceptually understand the area and perimeter and then apply abstract formulas to

calculate area and perimeter. These tasks align with the TEKS by reinforcing both conceptual understanding and procedural fluency through the use of concrete, pictorial, and abstract models.

The materials include questions and tasks that align with the TEKS by providing opportunities for students to use abstract models. In the "Division Models and Strategies" scope, the "Explain" section guides students in transitioning from using concrete models during the "Explore" activities to applying abstract models, such as partial quotients, to represent and solve division problems. This progression supports deeper conceptual understanding and reflects the expectations of the TEKS.

The materials include tasks that align with the TEKS by requiring students to use concrete, pictorial representations, and abstract models. In the "Would You Rather?" fraction comparison lesson, students first model and compare fractions using manipulatives such as fraction circles and tiles, then draw these representations to support their reasoning. They also generate equivalent fractions and use symbolic comparisons, such as <, >, or =, to justify their decisions, promoting fluency in transitioning between concrete, pictorial, and abstract representations.

5.3c – Materials include supports for students in connecting, creating, defining, and explaining concrete and representational models to abstract (symbolic/numeric/algorithmic) concepts, as required by the TEKS.

The *STEMscopes Math Pulse Grade 4* materials provide comprehensive support for students in connecting, creating, defining, and explaining concrete and representational models as they transition to abstract concepts, aligning with the TEKS. In the "Division Models and Strategies" scope, students engage in a structured progression that begins with a real-world connection through a video in the "Engage" tab. This is followed by a series of five activities in the "Explore" and "Explain" tabs, which progress from concrete models, such as school supplies and base-ten blocks, to representational models like arrays and area models, and finally to abstract algorithms. The "Elaborate" tab provides additional opportunities for students to apply their understanding across these levels by playing a game in pairs where they take turns solving problems. The "Acceleration" tab challenges them to transfer their learning to real-world problem-solving scenarios by watching the video, "Math Today—Knowing What You Eat," and solving a problem that is presented in the video: "Your friend loves bacon! He wanted to try some bacon jerky (bacon that has been dried), so he bought one bag. There is 1,650 milligrams of sodium (salt) in each bag. Your friend shares his bag equally with you and another friend. How many milligrams of sodium is in your share of bacon jerky?"

The materials support students in connecting, creating, and explaining transitions between models and abstract concepts, as required by the TEKS. In the "Would You Rather?" lesson, students use fraction circles and fraction tiles to model and compare fractions. They create visual representations of fractional values, record symbolic comparisons using <, >, or =, and explain how their models justify the abstract comparison. Students also generate equivalent fractions using their models and explain their reasoning using numeric representations and mathematical vocabulary.

The materials provide strong support for students in connecting concrete models to abstract concepts, aligning with the TEKS. Many tasks begin with hands-on or visual representations and guide students toward expressing ideas in symbolic, numerical, or algorithmic forms. For example, in the "Area and Perimeter" lesson, students start with concrete diagrams of geometric figures and then use abstract formulas to calculate area and perimeter. The materials also help students define and explain this transition. In the same lesson, "The Hook" subsection offers guidance as students analyze a concrete model of a garden and apply abstract reasoning to determine how much fencing is needed, reinforcing their understanding of area and perimeter through real-world application.

5.4 Development of Academic Mathematical Language

GUIDANCE	SCORE SUMMARY	RAW SCORE
5.4a	All criteria for guidance met.	1/1
5.4b	All criteria for guidance met.	2/2
5.4c	All criteria for guidance met.	1/1
5.4d	All criteria for guidance met.	2/2
5.4e	All criteria for guidance met.	2/2
—	**TOTAL**	8/8

5.4a – Materials provide opportunities for students to develop academic mathematical language using visuals, manipulatives, or other language development strategies.

The *STEMscopes Math Pulse Grade 4* materials consistently provide opportunities for students to develop academic mathematical language through the use of visuals, manipulatives, and structured language development strategies. For example, in the "Place Value of Whole Numbers" scope, students explore expanded notation by engaging with place value disks, place value charts, and hands-on modeling. Teacher prompts and scaffolded discussions guide students in articulating their thinking using academic mathematical language, such as *digit*, *value*, *place*, and *expanded form*, supporting the development of academic language.

In grade 4, students explore and explain the relationship between equivalent fractions using tools like fraction circles, fraction tiles, and equivalent fraction work mats. They engage in discussions using academic mathematical language, including terms such as *numerator*, *denominator*, *represent*, *equivalent fractions*, and *symbol*.

The materials provide sentence stems to support students' academic language acquisition. For example, in the "Represent and Interpret Data" scope, students create frequency tables. Then, the teacher facilitates a structured conversation between pairs. Students are provided with sentence structures to help them ask and answer questions. An example dialogue includes the following: Partner A: "How did you create your frequency table?" Partner B: "To create my frequency table, I . . . ."

5.4b – Materials include embedded educator guidance to scaffold, support, and extend students' use of academic mathematical vocabulary in context when communicating with peers and educators.

The *STEMscopes Math Pulse Grade 4* materials include embedded educator guidance that supports and extends students' use of academic vocabulary in context during peer and teacher interactions. For example, in the "Profit, Budgets, and Banking" scope, the "Explore 1" activity provides structured opportunities for students to collaborate as they distinguish between fixed and variable expenses, calculate profit, and evaluate the advantages and disadvantages of various savings options in real-world

scenarios. Teacher supports prompt students to engage in mathematical discourse through guided "Math Chat" questions, which encourage the use of precise academic terms, such as *profit*, *expense*, *budget*, and *savings*. Example questions students might encounter include "How are fixed and variable expenses similar? How are they different?"

The materials feature "Explore" sections that include embedded guidance for educators, designed to scaffold and support students in using academic vocabulary. Each "Explore" section is accompanied by a "Language Supports" section, which can help extend the use of academic vocabulary in context while communicating with peers and educators.

For instance, in grade 4, teacher prompts encourage students to use academic language as they collaborate to classify various figures and to highlight the importance of using precise mathematical vocabulary. Students take turns articulating their thoughts aloud to a partner, posing questions from the "Math Chat," receiving feedback, and revising their responses as necessary. For example, "An acute triangle can still have different angle measures, but it is still an acute triangle as long as all three angles are less than 90 degrees."

The "STEMscopes Lesson Script" provides teachers with explicit strategies and prompts for vocabulary development, beginning with foundational concepts and gradually progressing to more complex terminology. This includes using sentence stems aligned with the lesson standard and guidance for facilitating discourse between peers and educators using newly acquired academic language. For example, the teacher provides sentence structures to support students in asking and answering questions, such as: Partner A: "How did you model the problem?" and Partner B: "I modeled the problem by . . ."

Each Lesson Scope's "Explain" subsection includes a "Picture Vocabulary" feature, which supports student understanding by pairing academic terms with visual representations. This scaffolding helps students make meaningful connections between words and concepts, promoting accurate and confident use of vocabulary in both spoken and written communication.

5.4c – Materials include embedded guidance to support student application of appropriate mathematical language and academic vocabulary in discourse.

The *STEMscopes Math Pulse Grade 4* materials include embedded guidance to support students in applying appropriate mathematical language and academic vocabulary during discourse. In the "Properties of Two-Dimensional Figures" scope, under the "Engage" tab, educators are provided with guiding questions designed to prompt students to justify their thinking using precise mathematical terms while identifying lines of symmetry. Questions encourage students to connect mathematical concepts to real-world contexts while using academic vocabulary accurately and purposefully. For example: "What is symmetry? Why might a lot of architects and artists use symmetry in their designs? Where might you see symmetry in everyday life?"

The materials include "Math Chat" prompts, structured conversation routines, and sentence stems to support students in using appropriate mathematical language and vocabulary during discourse. For example, in "Explore 2: Multiplication Models and Strategies," prompts guide students to articulate their mathematical thinking using precise terms like *array*, *group*, and *place value*: "How does your array model relate to the given information on the station card? How can you determine an expression that represents this scenario?" These targeted prompts encourage students to explain relationships between visual models and symbolic representations, reinforcing their use of academic vocabulary in meaningful, standards-based contexts.

5.4d – Materials include embedded guidance to facilitate mathematical conversations allowing students to hear, refine, and use math language with peers.

The *STEMscopes Math Pulse Grade 4* materials include embedded guidance to facilitate mathematical conversations by encouraging students to engage in structured small group discussions, "Situation Card" activities, and "Math Chat" routines in the "Explore" section of the "Expenses, Profits, and Savings" lesson. These instructional supports promote peer-to-peer interaction and provide multiple opportunities for students to hear and use precise mathematical language in context. As students collaborate to distinguish between fixed and variable expenses, calculate profit, and compare savings options, they are prompted to apply targeted academic vocabulary, such as *income*, *expense*, *profit*, *variable*, *fixed*, and *investment*.

The materials include embedded guidance to facilitate mathematical conversations that allow students to refine and use mathematical language with their peers. In the "Represent and Interpret Data" scope, after students engage in structured partner discussions, the teacher is guided to summarize the key ideas and highlight essential vocabulary such as *tally*, *frequency*, *data*, and *dot plot*. Educator prompts model how to use these terms accurately and meaningfully in context, encouraging students to enrich their discourse and deepen their understanding through the intentional use of academic language. For example, in the "Procedure and Facilitation" points, the teacher explains to students that they will "use a measuring tape to measure the length from their wrist to their longest finger to the nearest inch. They will record the length on the back of their group’s index card and will use that data to create a frequency table and dot plot."

The materials offer embedded dialogues and lesson scripts to facilitate mathematical conversations in the "Engage" section of all scopes. This section supports teachers in guiding students to refine and use mathematical language during peer interactions. It includes DOK questions along with sample student responses, providing a model for effective discourse. Additionally, the mini-lesson scripts found in the "Explore" subsection of each "STEMscopes Standard Lesson Scope" offer targeted guidance to educators for encouraging student-to-student dialogue. These supports ensure that students have repeated opportunities to hear, practice, and apply academic math language in meaningful contexts.

5.4e – Materials include embedded guidance to anticipate a variety of student answers including exemplar responses to questions and tasks, including guidance to support and/or redirect inaccurate student responses.

The *STEMscopes Math Pulse Grade 4* materials include embedded guidance to help educators anticipate a variety of student responses, including exemplar answers. For example, in the "Explore: Represent Decimals Using Base-Ten Blocks" lesson, anticipated student responses include statements, such as "A base-ten rod is one-tenth because it takes 10 rods to make the flat" and "The decimal 1.2 is used because one whole sculpture and two-tenths were completed." These exemplar responses are used to model appropriate mathematical reasoning and language. Teachers are further supported through embedded prompts with each question accompanied by a modeled student response to illustrate the expected level of understanding; for example, "How is your decimal notation related to your model?"

The materials include common inaccurate student responses for each lesson to help teachers anticipate and address areas of difficulty. For example, in the grade 4 "Represent and Interpret Data" scope, students may struggle with interpreting data. On a stem leaf plot, the key may read 6|½ = 6 ½, and they label the graph incorrectly. The teacher suggests that the students label the stem with the whole number and the leaves with the fractions. To support comprehension of what each data point represents, the materials suggest allowing students to create various types of data representations before focusing on interpretation. In addition, embedded guidance assists teachers in responding to inaccurate student answers by encouraging active monitoring and discussion. Teachers are supported with guiding questions and sample responses, such as "How can we order the values on the frequency table and dot plot?"

The materials include embedded guidance to support and redirect inaccurate student responses through the "Content Support" guide provided in each scope. For instance, in the "Multiplication Models and Strategies" scope, the "Misconceptions and Obstacles" section highlights common misunderstandings, such as students confusing rows and columns in arrays or area models, and offers strategies for addressing them. In the "Explore 2: Arrays" activity, guiding questions are provided to help teachers respond to student errors. Examples include: "How many rows are you going to have in this array? (Student: 4 rows)", "What do the rows describe in our scenario? (Student: The groups of crops planted in each row)", and "How is the array model related to the multiplication equations written for each place value? (Student: The array model visually shows how many groups of each crop are in each row, and the multiplication equation explains how many ones, tens, hundreds, or thousands are in each group.)"

5.5 Process Standards Connection

GUIDANCE	SCORE SUMMARY	RAW SCORE
5.5a	All criteria for guidance met.	1/1
5.5b	All criteria for guidance met.	2/2
5.5c	All criteria for guidance met.	1/1
—	**TOTAL**	4/4

5.5a – TEKS process standards are integrated appropriately into the materials.

The *STEMscopes Math Pulse Grade 4* materials appropriately integrate the TEKS process standards throughout instruction. Each scope includes a "Content Support" section that lists all relevant TEKS process standards addressed, along with explanations of how each is applied. For example, in the "Represent and Interpret Data" scope, the "Content Support" section identifies TEKS 4.1A–4.1G as being covered. Specifically, TEKS 4.1B emphasizes that students will collect, represent, and interpret data using various methods, evaluate the results, and reflect on whether their conclusions make sense.

In the "Representing Equivalent Fractions" scope, students participate in a hands-on card sort activity where they match visual models to equivalent fractions and explain their reasoning. Teachers facilitate a "Math Talk" using sentence stems that encourage students to reflect on their strategies and clearly communicate mathematical ideas.

TEKS 4.1G and 4.1B are addressed by prompting students to communicate mathematical ideas and use representations to organize, record, and share their thinking. For example, in the "Problem-Solve Using the Four Operations" scope, students partner together and take turns explaining their diagrams and thoughts on how they solved the problem. Sentence structures include: "I heard you say . . .. Is that correct?", "I heard you say . . .", and "I agree or disagree because . . . ."

5.5b – Materials include a description of how process standards are incorporated and connected throughout the learning pathways.

The *STEMscopes Math Pulse Grade 4* materials include a clear description of how the TEKS process standards are incorporated throughout the learning pathways. STEMscopes provides a "Process Standards Guide" that offers an overview of each standard and illustrates how it progresses across grade levels from Kindergarten through Algebra I. This guide also explains how each process standard is addressed within the grade-level pathways, or scopes. For example, the section titled "Process Standards – Analyze Relationships to Communicate Ideas" identifies that this standard is addressed in the grade 4 scopes for "Represent and Interpret Data," "Addition and Subtraction of Fractions," and "Perimeter and Area." Each scope includes a detailed breakdown of how the process standard is applied within the instructional sequence.

The materials include a "Process Standards" tab that describes how the TEKS process standards are connected throughout the learning pathways. This section includes an explanation of each process standard, guidance for teachers on effective implementation, practical examples demonstrating application at each grade level, and a summary that encapsulates the key concepts.

The process standards are integrated throughout the learning pathways by engaging students in analyzing mathematical relationships and communicating their ideas using multiple representations. For example, in the scope on fraction equivalence, students use visual models such as fraction bars and number lines to explore and develop an understanding of equivalent fractions. These activities align with the TEKS process standards 4.1C and 4.1G by prompting students to use mathematical tools, justify their reasoning, and articulate their methods through both written and oral communication.

5.5c – Materials include an overview of the TEKS process standards incorporated into each lesson.

The *STEMscopes Math Pulse Grade 4* materials include an overview of the TEKS process standards embedded within each lesson, specifically highlighted in each "Explore" activity. For example, in the "Compare and Order Numbers" scope, the "Explore 1: Compare Numbers" activity features a dedicated section titled "Mathematical Process Standards" that lists the relevant standards TEKS 4.1A–4.1F, along with descriptions of how each is addressed within the lesson.

An overview of the TEKS process standards is incorporated into each lesson by providing explicit references to the standards within the lesson objectives. For instance, in the scope on adding and subtracting fractions, the process standards related to problem-solving and mathematical communication, TEKS 4.1B and 4.1D, are highlighted in the lesson overview. Students are prompted to apply strategies for solving problems, explain their reasoning, and represent their solutions using both visual models and symbols. This ensures alignment with TEKS standards for communication, problem-solving, and representation.

6. Productive Struggle

Materials support students in applying disciplinary practices to productive problem-solving, including explaining and revising their thinking.

6.1 Student Self-Efficacy

GUIDANCE	SCORE SUMMARY	RAW SCORE
6.1a	All criteria for guidance met.	3/3
6.1b	All criteria for guidance met.	3/3
6.1c	All criteria for guidance met.	3/3
—	**TOTAL**	9/9

6.1a – Materials provide opportunities for students to think mathematically, persevere through solving problems, and to make sense of mathematics.

The *STEMscopes Math Pulse Grade 4* materials include a lesson in the "Area and Perimeter" scope that asks questions to guide students in thinking mathematically, including, "What do we know? How could you solve a problem like this? What is the difference between perimeter and area?" The lesson includes a prompt for teachers to monitor and talk with students as needed to check for understanding using the following guiding questions: "How can you use the information given on the task card to determine if you are trying to find the area, perimeter, or an unknown side? What formula can help you find the information you need? How can an equation support you in determining an answer to this problem?" This interaction provides students with opportunities to persevere through problem-solving.

The materials include opportunities for students to think mathematically, persevere through solving problems, and make sense of mathematics. In the "Compare Fractions" scope, students solve problems to represent and generate equivalent fractions. Students create models and must make sense of the mathematics by using reasoning to explain how they know the fractions are equivalent. Lastly, students extend their thinking by naming another equivalent fraction to the ones they created and explaining their thinking. A sample student response is "We need two fraction circle pieces that represent sixths for each fraction circle piece that represents a third. Since the sixths are being repeated two times for every third, we multiply the given fraction by 2 to generate the equivalent fraction."

In the grade 4 lesson on "Problem-Solving Using the Four Operations," students engage in the problem-solving process to help them make sense of the math. This includes representing the problem using manipulatives, writing an equation, making an estimate, and solving the problem. The teacher script intentionally provides opportunities for students to think mathematically by responding to guiding questions, such as, "What parts are needed to write an equation? What do you use if there is a part of the equation that is unknown?"

6.1b – Materials support students in understanding, explaining, and justifying that there can be multiple ways to solve problems and complete tasks.

The *STEMscopes Math Pulse Grade 4* materials provide support to help students understand and justify that there are multiple ways to solve problems and complete tasks. In the "Problem Solving Using the Four Operations" scope, students are guided by the educator to explore different strategies for solving real-world problems. For example, a student might respond, "I could use equations to solve the problem or act it out using base ten blocks or an open number line." The "Explain" section further reinforces this understanding by prompting students to reflect on and justify the methods they used. The final step in the problem-solving process emphasizes the creation of a solution statement, in which students must explain their reasoning. For instance, a sample solution statement might be, "Lauren and her friends will save $16 using the family and friends package." Students justify their solution by creating a strip diagram, writing an equation, estimating, and solving the problem, demonstrating multiple methods and a deep understanding of the task.

The materials support students in understanding, explaining, and justifying that there can be multiple ways to solve problems and complete tasks. In the "Compare Fractions" scope, the "Explore: Compare Fractions with Models" activity provides opportunities for students to compare fractions and mixed numbers while justifying their reasoning using both concrete and pictorial models. Students engage with real-world "Would You Rather" scenario cards, such as "Would you rather go to the beach for 1 2/3 hours or 1 5/9 hours?" They are encouraged to solve the problem using multiple strategies (such as drawing models or using multiplication), determine which option they prefer, and clearly explain their reasoning.

In the "Area and Perimeter" scope, students are introduced to multiple methods for finding the perimeter of a rectangle, including formulas $P = 2l + 2w$ and $P = (l + w) \times 2$. This approach helps students understand that there are various valid strategies for solving the same problem. The materials encourage students to explain and justify their reasoning, reinforcing the idea that there can be multiple ways to solve problems and complete tasks. Students collaborate to explore different methods and discuss their reasoning while estimating and calculating given values. They are prompted with reflective questions: "How did you use the relationship between the operations to solve the problems related to area and perimeter? How did you determine the measurement of a missing side when the area was provided?"

6.1c – Materials are designed to require students to make sense of mathematics through multiple opportunities for students to do, write about, and discuss math with peers and/or educators.

The *STEMscopes Math Pulse Grade 4* materials are designed to require students to make sense of mathematics through multiple opportunities for students to do math and write about it with peers and/or educators. The "Compare Fractions" scope engages students in hands-on experiences with their peers. Students work in groups to create models of two fractions given using fraction circles or fraction tiles. Students use their fraction models to decide which fraction they would prefer. A sample student

response states, "I would rather have 2 ¾ dollars because both amounts have $2, and 3/4 is a greater fraction of the dollar than 5/12, and I would rather have more money." Each decision is recorded and explained in the "Student Journal."

The materials are designed to require students to make sense of mathematics by providing multiple opportunities for discussion with peers and educators. For example, in the "Angles" scope, under the "Explore" tab, students engage in collaborative learning through structured discussions. The "Math Chat" feature includes four question stems that prompt mathematical thinking and peer interaction. Sample prompts include the following: "Why do we name angles? In what situations would measuring angles be helpful?"

Students engage in collaborative, scenario-based subtraction tasks, structured mathematical conversations supported by sentence stems, and written reflections recorded in the "Student Journal" and "Exit Ticket." In one example, students work in small groups to solve a series of subtraction scenarios. They are then expected to explain their use of rounding and regrouping, first within their groups and later during a whole-class "Math Chat." The lesson incorporates "Structured Conversation" routines using sentence stems, such as "I noticed . . ." and "We need to regroup because . . ."

6.2 Facilitating Productive Struggle

GUIDANCE	SCORE SUMMARY	RAW SCORE
6.2a	All criteria for guidance met.	6/6
6.2b	All criteria for guidance met.	4/4
—	**TOTAL**	10/10

6.2a – Materials support educators in guiding students to share and reflect on their problem-solving approaches, including explanations, arguments, and justifications.

The *STEMscopes Math Pulse Grade 4* materials support educators in guiding students to reflect on their problem-solving approaches through structured opportunities for explanation, discussion, and written reflection. For example, "Student Journals" are incorporated throughout lessons, allowing students to draw, explain, and record their problem-solving processes. In the "Compare Fractions" scope, prompts include questions, such as "How can you use reasoning to explain why the fractions on Order 3 are equivalent? What did you notice about the models you drew for each order?" Additionally, the materials guide educators to facilitate "Math Chat" feedback circles, where students share their observations and learning with peers and the teacher. Sample discussion questions include: "What connections did you make during this Explore? (I noticed that each model is composed of unit fractions. I noticed how a smaller denominator means the whole is only broken into a few pieces, so the pieces are larger! I noticed we could make equivalent fractions by partitioning each piece into an equivalent number of equal pieces.) How did you decide which math manipulatives to use? (It did not really matter whether we used fraction circles or fraction tiles as long as we created both options with the same-sized whole)."

The materials include open-ended problems that allow students to use different strategies to find a solution. After solving, students explain their reasoning through peer discussion and written reflections. The materials also provide educators with prompts to support students in justifying and refining their thinking. For example, in the "Elapsed Time" scope, under the "Explore 2: Solve Problems Involving Time," educators are given guiding questions, as well as open-ended questions to facilitate learning and to prompt peer discussions. Peer discussions in the "Math Chat" include questions like "What processes did you use to solve the different kinds of problems? What connections did you make during this activity? Why could different students use different strategies to solve the same problem?" These questions promote student explanations, arguments, and justifications with peers. In addition, during this activity, students collaborate with peers on strategies and solutions by explaining and justifying answers in the "Student Journal." Prompts include "What information helped you solve question A? Describe how you found the time the family needed to leave their house. Which strategy did you find most helpful?"

6.2b – Materials include prompts and guidance to support educators in providing explanatory feedback based on student responses and anticipated misconceptions.

The *STEMscopes Math Pulse Grade 4* materials include guidance to support educators in providing explanatory feedback based on student responses and anticipated misconceptions. The "Content Support" document within each scope contains a "Misconceptions and Obstacles" guide, which explains possible student misconceptions that educators should look for during lessons in the scope. For example, in the "Addition and Subtraction Algorithms" scope, the "Content Support" section contains nine possible student misconceptions for educators. One possible misconception is that students may place numbers between the wrong consecutive multiples on a number line. A way to support the misconception is to review skip counting and discuss what values belong between which multiples.

Within the "Explore 1: Round to Any Place Value," educators are directed under "Procedure and Facilitation Points" to monitor and check for understanding with questions in the "Monitor and Talk" section. Questions include: "What number is directly in the middle of two multiples on your number line? How does knowing the middle number help you?" These prompts provide clear strategies for identifying misunderstandings and offering corrective feedback in real time.

The materials are designed to support educators in providing explanatory feedback through prompts and scaffolds that address anticipated misconceptions about decimals and place value. For example, students who confuse decimal notation with fraction representation are guided through targeted questions that connect dimes to tenths and pennies to hundredths (What fraction is equivalent to 0.10?). Misconceptions about expanded notation are anticipated and addressed with model-based questions, such as "How do the dimes relate to the tenths place? How is the value of each place related to the expanded form?" Educators are prompted to provide visual and tactile supports (play money, place value mats) and to model how values in different columns correspond to multiplication expressions (3 dimes → 3 × 0.10). Additional guidance is included in instructional supports, suggesting chunked modeling, anchor charts, and manipulatives for students who struggle to connect decimals and fractions, ensuring that explanatory feedback is both proactive and aligned to likely misunderstandings.

The materials provide possible student answers for all problems in the "Represent and Interpret Data" scope, along with suggested teacher feedback prompts designed to guide and extend student thinking. For example, a guiding question and student response include the following: "How can we decompose the values in the frequency table to represent a stem-and-leaf plot? (We can place the hundreds and tens places together in the stem and place the ones in the leaves.)"