ALIGNMENT GUIDE

Grade 7

What this document covers

Part 1: ELPS Integration

Magma Math is designed to support emergent bilingual (EB) students across all four ELPS language domains: listening, speaking, reading, and writing. The platform includes built-in features that reduce linguistic barriers while maintaining rigorous, grade-level mathematical content. The features described below are available across all grade levels and learning pathways.

Multilingual Translation and Text-to-Speech

Magma Math provides high-quality translation of all student-facing content, including problem text and instructions, into over 140 languages. This translation is paired with a text-to-speech feature that reads content aloud while highlighting each word in real time as it is spoken. This dual modality directly supports multiple ELPS expectations:

ELPS (1)(B), Listening. Students can hear content-specific mathematical vocabulary pronounced accurately in English or their home language, supporting comprehension of grade-level terms during both formal and informal interactions with the platform.

ELPS (1)(F), Listening. The text-to-speech feature functions as an auditory multimedia source from which students derive meaning to build and reinforce both mathematical concepts and language acquisition. The word-by-word highlighting synchronizes visual and auditory input, reinforcing the connection between written and spoken forms of academic language.

ELPS (3)(C), Reading. By providing translated content alongside the original English, students can leverage contextual factors and cognates to comprehend content-area vocabulary in text. A student encountering a word problem can toggle to their home language to confirm understanding of context before solving in the mathematical register.

ELPS (3)(F), Reading. Students derive meaning from content-area texts using visual, contextual, and linguistic supports. Magma Math's translated text serves as linguistic support, while the platform's visual problem representations (number lines with rational numbers and directional jumps for integer operations, Venn diagrams for classifying number types, coordinate planes with graphed proportional relationships, ratio tables displaying equivalent ratios, box plots and dot plots for comparing data distributions, circle diagrams with labeled radii and diameters, 3D prism and pyramid nets for surface area computation, composite figures with labeled dimensions for area problems, spinners and outcome tables for probability experiments, triangle diagrams with interior and exterior angles labeled with algebraic expressions, and scale drawings on grids showing similar figures) provide language-independent visual support.

Visual and Multimodal Problem Representations

Across all learning pathways, Magma Math presents problems using visual models that communicate mathematical relationships without relying solely on text. These include number lines with rational numbers and directional jumps for integer operations, Venn diagrams for classifying number types, coordinate planes with graphed proportional relationships, ratio tables displaying equivalent ratios, box plots and dot plots for comparing data distributions, circle diagrams with labeled radii and diameters, 3D prism and pyramid nets for surface area computation, composite figures with labeled dimensions for area problems, spinners and outcome tables for probability experiments, triangle diagrams with interior and exterior angles labeled with algebraic expressions, and scale drawings on grids showing similar figures. These representations support:

ELPS (4)(C), Writing. Students write responses using a combination of high-frequency words and content-area vocabulary as they interact with problems that pair visual models with mathematical notation. The visual context scaffolds written mathematical expression.

ELPS (2)(E), Speaking. When teachers use Magma Math problems as anchors for classroom discussion, the visual representations provide EB students with concrete referents for narrating, describing, explaining, and justifying their mathematical reasoning with increasing specificity and detail.

Part 2: Grade-Level Design and Horizontal Alignment

Program Context

Magma Math is a TEKS-aligned digital supplemental resource. Content is organized into learning pathways that function like chapters in a traditional curriculum. Each pathway bundles related TEKS and key concepts so teachers can assign coherent sets of problems, even though Magma does not prescribe a day-by-day lesson sequence.

Rationale for Grade 7 Learning Paths

The Grade 7 scope and sequence is organized into three Instructional Strands that reflect the mathematical strands and focal areas defined in the TEKS introduction for Grade 7 mathematics (19 TAC §111.27). TEKS within the same strand relate to the same big idea, and TEKS across strands connect in a variety of ways. These strands are designed to build conceptual understanding before application, connecting patterns, big ideas, and relationships within the grade so that students see later topics as extensions of earlier ones rather than isolated skills. Mathematics tells a continuous, connected story, and the strand organization ensures that Grade 7 students experience that story coherently throughout the year.

Strand 1: Number Systems, Proportional Reasoning, and Percent Applications (Chapters 1-4)

Grade 7 begins by deepening students' command of the rational number system and proportional reasoning. Chapter 1 (Operations on Rational Numbers) extends Grade 6 work with integers and positive rational numbers to all four operations on rational numbers, including negative fractions and decimals, and requires students to classify numbers within the real number system using set notation and visual representations such as Venn diagrams (TEKS 7.2.A, 7.3.A-B). Chapter 2 (Proportional Relationships) formalizes proportional reasoning: students calculate and compare unit rates, represent proportional relationships with equations, tables, and graphs, identify the constant of proportionality, and solve problems involving ratios and rates in real-world contexts, including conversions between measurement systems (TEKS 7.4.A-E). Chapter 3 (Solving Percent Problems) applies proportional reasoning to percent contexts: students solve multi-step problems involving tax, markups, markdowns, gratuities, commissions, percent increase and decrease, and simple and compound interest (TEKS 7.4.D, 7.13.E). Chapter 4 (Scaling and Similarity) connects proportional reasoning to geometry: students identify scale factors between similar figures, use scale drawings to solve problems, and describe the relationship between corresponding sides and angles (TEKS 7.5.A, 7.5.C). The sequencing ensures that students establish operational fluency with rational numbers before applying those operations in increasingly complex proportional and percent contexts.

Strand 2: Probability, Data, and Algebraic Reasoning (Chapters 5-8)

Once number sense and proportional reasoning are established, Strand 2 shifts focus to probability, statistical inference, and early algebraic reasoning. Chapter 5 (Probability) introduces students to sample spaces for simple and compound events, theoretical and experimental probability, and making predictions from data (TEKS 7.6.A, 7.6.C-E, 7.6.I). Chapter 6 (Data and Statistical Inferences) develops students' ability to make comparative inferences about two populations using measures of center and variability, interpret bar graphs, dot plots, and circle graphs, describe the likelihood of events, and draw inferences from random samples (TEKS 7.6.F-H, 7.12.A-C). Chapter 7 (Linear Relationships) introduces the concept of a constant rate of change: students define and identify linear relationships, represent them graphically and algebraically, and write linear equations in slope-intercept form (TEKS 7.7.A). Chapter 8 (Equations and Inequalities) synthesizes the algebraic strand: students write and solve two-step equations and inequalities with rational number coefficients, check solutions, and apply angle relationships involving complementary, supplementary, and triangle angle-sum properties (TEKS 7.10.A-B, 7.11.A-C). This strand intentionally links statistical reasoning with algebraic thinking so that students see equations and graphs as tools for describing the data patterns and probability relationships they explored in Chapters 5 and 6.

Strand 3: Geometry and Measurement (Chapters 9-11)

The final strand applies the numerical, proportional, and algebraic skills from Strands 1 and 2 to geometric and measurement contexts. Chapter 9 (Circles) introduces the relationships between radius, diameter, circumference, and area of circles, requiring students to apply formulas using rational number dimensions and the value of pi (TEKS 7.8.C, 7.9.B). Chapter 10 (Volume) requires students to model the relationship between the volume of a rectangular prism and a rectangular pyramid, and to solve problems involving the volume of prisms and pyramids with rational number dimensions (TEKS 7.8.A-B, 7.9.A). Chapter 11 (Area and Surface Area) extends two-dimensional measurement to composite figures involving circles and polygons, and to three-dimensional measurement through lateral and total surface area of prisms and pyramids (TEKS 7.9.C-D). The sequencing is intentional: circle area tasks in Chapter 9 assume fraction and decimal fluency from Strand 1, volume tasks in Chapter 10 require equation-solving skills from Strand 2, and composite-figure tasks in Chapter 11 synthesize all prior measurement and algebraic reasoning, so students' cognitive energy is focused on geometric relationships, not basic computation.

Artifact 2.1: Grade 7 Scope and Sequence

Seq	Chapter (Learning Pathway)	Subchapters	Focus TEKS
1	Operations on rational numbers (7.2.A, 7.3.A-B)	Classify rational, integers, whole and natural numbers using visual representation; Adding rational numbers; Adding rational numbers	7.2.A, 7.3.A, 7.3.B

		including percents; Subtracting rational numbers; Subtracting rational numbers including percents; Multiplying rational numbers; Multiplying rational numbers including percents; Dividing rational numbers; Dividing rational numbers including percents; Multi-step problems with rational numbers	
2	Proportional relationships (7.4.A-E)	Graphing proportional relationships; Proportional relationships as equations; Rates and unit rates; Comparing unit rates; Identifying constant of proportionality; Find part with percents; Find percents; Find whole with percents; Solving proportions; Convert between measurement systems	7.4.A, 7.4.B, 7.4.C, 7.4.D, 7.4.E
3	Solving percent problems (7.4.D, 7.13.E)	Solving percent problems; Percent increase and percent decrease; Calculating tax; Tax, markups, markdowns, gratuities, and commissions; Simple interest; Compound interest	7.4.D, 7.13.E
4	Scaling and similarity (7.5.A, 7.5.C)	Identifying scale and scale factor; Similar figures; Points and vertices in similar figures	7.5.A, 7.5.C
5	Probability (7.6.A, 7.6.C-E, 7.6.I)	Sample spaces of simple events; Sample spaces of compound events; Making predictions from experimental data; Making predictions using theoretical probabilities; Probability of simple events; Probability of compound events	7.6.A, 7.6.C, 7.6.D, 7.6.E, 7.6.I
6	Data and statistical inferences (7.6.F-H, 7.12.A-C)	Populations and samples; Inferences from samples; Solve problems using bar graphs, dot plots, and circle graphs; Describing likelihood; Comparing center and variability; Comparative inferences; Making qualitative inferences from samples	7.6.F, 7.6.G, 7.6.H, 7.12.A, 7.12.B, 7.12.C
7	Linear relationships (7.7.A)	Defining linear relationships; Writing linear equations in slope-intercept form	7.7.A
8	Equations and inequalities (7.10.A-B, 7.11.A-C)	Writing two-step equations; Writing two-step inequalities; Solving two-step equations; Solving two-step inequalities; Checking solutions of	7.10.A, 7.10.B, 7.11.A, 7.11.B, 7.11.C

		two-step equations; Calculations using complementary and supplementary angles; Angle sum and exterior angles	
9	Circles (7.8.C, 7.9.B)	Area of circles; Circumference	7.8.C, 7.9.B
10	Volume (7.8.A-B, 7.9.A)	Volume of right rectangular prisms; Volume of prisms; Volume of pyramids	7.8.A, 7.8.B, 7.9.A
11	Area and surface area (7.9.C-D)	Area of irregular polygons; Area and circumference of composite figures (incl. circles); Surface area of rectangular prisms; Surface area of triangular prisms; Surface area of pyramids	7.9.C, 7.9.D

Part 3: Vertical Alignment (Grades 3-12 Learning Progressions)

Vertical Rationale

Magma Math is built on a coherent progression where concepts spiral in complexity across grades. TEKS across grade levels within the same strand connect patterns, big ideas, and relationships between mathematical concepts, and the key concepts for each grade level build on previous foundations while preparing students for future learning. Grade 7 occupies a central position in the 3-12 continuum: it is where students extend operations to all rational numbers, formalize proportional reasoning with constant rates of change, and transition from arithmetic to algebraic problem solving. The Grade 7 TEKS introduction states that students should "use concepts, algorithms, and properties of rational numbers to explore mathematical relationships and to describe increasingly complex situations" (19 TAC §111.27). Below, we trace five key mathematical strands from Grade 3 through the high school course sequence, with Grade 7 as the central reference point. This strategic progression of learning ensures that new understandings are built on previous foundations, and that students experience mathematics as an interconnected system rather than a set of disconnected skills.

Linear Relationships and Proportional Reasoning

In Grades 3-5, students explore multiplicative relationships through equal groups, arrays, and input-output tables, generating numerical patterns and describing relationships between paired quantities (TEKS 3.5, 4.5, 5.4). Grade 6 formalizes this work into ratios, rates, and unit rates, requiring students to compare two quantities using ratio language, generate equivalent ratios using tables, and graph proportional relationships on the coordinate plane (TEKS 6.4, 6.5). Grade 7 deepens proportional reasoning by applying it to constant rates of change, representing proportional relationships with equations of the form $y = kx$, computing and comparing unit rates from tables and graphs, applying proportional reasoning to similar figures and scale drawings, and solving multi-step percent problems including tax, markup, markdown, and interest (TEKS 7.4, 7.5, 7.7). Grade 8 formalizes the transition to linear functions: students distinguish proportional from non-proportional linear relationships, define slope as a rate of change, and write equations in $y = mx + b$ form (TEKS 8.4, 8.5). Algebra I provides a comprehensive study of linear functions through multiple representations and solution methods (TEKS A.2, A.3, A.5), and Algebra II extends to systems of three equations and more complex function analysis (TEKS A2.3).

Expressions, Equations, and Algebraic Reasoning

In Grades 3-5, students represent unknowns in equations, use strip diagrams, and generate equivalent expressions using properties of operations (TEKS 3.5, 4.5, 5.4). Grade 6 marks the formal transition to algebra: students distinguish expressions from equations, generate equivalent expressions by combining like terms and using the distributive property, write and solve one-step equations and inequalities, and apply order of operations with exponents (TEKS 6.7, 6.9, 6.10). Grade 7 extends to two-step equations and inequalities with rational number coefficients, writing equations to represent real-world situations, checking solutions, and applying algebraic reasoning to angle relationships involving complementary, supplementary, and triangle angle-sum properties (TEKS 7.10, 7.11). Grade 8 requires solving multi-step equations with variables on both sides, including those with rational coefficients and cases with no solution or infinitely many solutions (TEKS 8.8). Algebra I provides the full algebraic toolkit: students solve multi-step equations and inequalities, manipulate literal equations, perform operations on polynomials, and factor quadratic expressions (TEKS A.5, A.10, A.11, A.12.E). Algebra II extends to rational expressions, radical equations, and polynomial division (TEKS A2.7).

Non-Linear Functions and Patterns

In Grades 3-5, students explore patterns through input-output tables and describe rules for generating sequences (TEKS 3.5, 4.5, 5.4). Grade 6 introduces students to patterns that grow by different rules, including additive and multiplicative growth, and provides the first encounter with exponents through order of operations and prime factorization (TEKS 6.4.A, 6.6, 6.7.A). Grade 7 develops proportional and non-proportional reasoning more deeply: students distinguish linear relationships from non-linear ones by analyzing tables and graphs, and they encounter compound interest as a context where growth is multiplicative rather than additive (TEKS 7.7, 7.13.E). Grade 8 introduces the Pythagorean theorem and squared quantities in geometric contexts, and students begin to describe non-linear patterns in scatter plots (TEKS 8.6, 8.7, 8.11). Algebra I provides formal treatment of quadratic and exponential functions through multiple representations and solution methods (TEKS A.6, A.7, A.8, A.9). Algebra II expands to all function families: polynomial, rational, radical, exponential, and logarithmic (TEKS A2.2, A2.4-A2.8).

Number Systems and Operations

In Grades 3-5, students develop fluency with operations on positive whole numbers, fractions, and decimals (TEKS 3.3-3.5, 4.3-4.4, 5.3). Grade 6 expands the number system to include all rational numbers: students classify numbers as whole, integer, or rational, understand absolute value and opposites, and perform all four operations on integers and positive rational numbers (TEKS 6.2, 6.3). Grade 7 completes the extension by requiring fluency with all four operations on all rational numbers, including negative fractions and decimals, and embedding these operations in multi-step real-world problems involving proportions, percents, and measurement conversions (TEKS 7.2, 7.3). Grade 8 introduces irrational numbers and the real number system, ordering real numbers on a number line and approximating irrational values (TEKS 8.2). Algebra I works within the real number system throughout: students operate on polynomial expressions with real coefficients and evaluate functions at real-valued inputs (TEKS A.10, A.11). Algebra II introduces complex numbers, completing the extension from natural numbers to the full complex number system (TEKS A2.7).

Data Analysis and Statistical Reasoning

In Grades 3-5, students collect, organize, and interpret data using pictographs, bar graphs, line plots, dot plots, frequency tables, and stem-and-leaf plots (TEKS 3.8, 4.9, 5.9). Grade 6 introduces formal statistical measures and more complex displays: students create and interpret box plots, dot plots, histograms, and stem-and-leaf plots, calculate mean, median, mode, range, and interquartile range, identify outliers, and describe data distributions (TEKS 6.11, 6.12, 6.13). Grade 7 deepens statistical reasoning by introducing population sampling, comparative inferences between two populations using measures of center and variability, experimental and theoretical probability, and predictions from sample data (TEKS 7.6, 7.12). Grade 8 develops bivariate data analysis: students construct scatter plots, describe trend patterns, and use linear approximations to make predictions (TEKS 8.5, 8.11). Algebra I formalizes this work with correlation coefficients, regression equations, and the distinction between correlation and causation (TEKS A.4.A-C). Algebra II extends to non-linear regression models and residual analysis (TEKS A2.4).

Part 4: Coherence and Concept Depth

Within-Pathway Coherence

Within each subchapter, Magma Math sequences problems to scaffold student understanding from concrete models to abstract applications. Because Magma does not prescribe a lesson sequence, this coherence appears in the structure of each learning pathway: students encounter tasks that move from models and visual supports to symbolic procedures and then to multistep applications. This ensures that students are not just memorizing procedures but building durable understanding of mathematical relationships.

The Scaffolding Framework: Mild, Medium, and Spicy

Magma Math uses a three-level scaffolding framework, Mild, Medium, and Spicy (M/M/S), that aligns with standards-based grading principles. The framework is grounded in a simple premise: every problem in a subchapter assesses the same grade-level standard. What changes across levels is not the mathematical content, but the degree of support provided to the student and the strategic demand of the task. Levels are visible only to teachers while they are creating assignments, although they may choose to reveal them to students if they so choose.

This approach ensures that all students, regardless of their entry point, are engaged with on-grade-level content. The levels are not remediation or acceleration. They are a deliberate instructional sequence that removes scaffolding incrementally and then increases strategic complexity, all within the boundaries of the current grade's TEKS.

Level	Characteristics
Mild	Students work on the grade-level standard with structured support. Problems include visual models, simplified numerical contexts, and direct prompts that isolate the core concept. The goal is to build confidence and activate prior knowledge while keeping students engaged with the current year's mathematics.
Medium	Students demonstrate the standard as written, without scaffolding. Visual supports are removed unless the standard itself requires interpreting a representation. Numbers reflect the full complexity expected at the grade level, and routine word problems require students to independently determine the appropriate operation or strategy.
Spicy	Students apply the same grade-level mathematics to tasks that require an additional layer of strategic thinking. This may involve error analysis, working backwards from a solution, synthesizing multiple pieces of information, or applying the concept in a non-routine context. The mathematical content does

	not advance to a future grade level. Instead, cognitive demand increases through the task's structure and framing.

Design principle: Magma Math sections progress by removing supports (Mild to Medium) and then increasing strategic thinking (Medium to Spicy), without drifting into past or future grade-level standards. A problem is not made Mild by reverting to a prior year's content, and a problem is not made Spicy by introducing next year's content or simply increasing numerical complexity.

Connecting Prior Knowledge to Current and Future Learning

The M/M/S progression serves as the mechanism by which Magma Math connects students' prior knowledge to the mathematical concepts and procedures they are learning and will encounter in future grades. This connection operates across four dimensions: prior conceptual knowledge and prior procedural knowledge, each linked to both current and future learning.

Connecting Prior Conceptual Knowledge to Current Grade-Level Learning

At the Mild level, problems activate students' prior conceptual understanding from Grade 6 by using familiar models and representations while introducing a new Grade 7 concept. In the Operations on Rational Numbers pathway (TEKS 7.3.A), Mild problems display a number line with a starting point and a directional arrow representing the addition of a positive value to a negative number, such as adding 1.5 to negative 3. The number line visual directly leverages the Grade 6 understanding of integers, absolute value, and positioning on number lines (TEKS 6.2.B-D), bridging the prior concept of integer addition with visual supports to the new demand of operating on all rational numbers, including negative fractions and decimals. Similarly, in the Scaling and Similarity pathway (TEKS 7.5.A), Mild problems present two shapes on a grid with labeled side lengths and ask students to determine the scale factor by comparing corresponding sides. The grid-based visual representation connects to Grade 6 work with coordinate planes and multiplicative comparisons (TEKS 6.4.B), ensuring students build new understanding of similarity on a proportional reasoning foundation they already possess.

Connecting Prior Procedural Knowledge to Current Grade-Level Learning

At the Medium level, students apply and extend procedural skills they developed in Grade 6 to perform current grade-level tasks. In the Proportional Relationships pathway (TEKS 7.4.B), Medium problems present multi-step rate comparison scenarios, such as determining which of two animals gains weight faster by computing and comparing unit rates from different time intervals, without visual models or scaffolding. Students rely on procedural fluency with fraction and decimal division developed in Grade 6 (TEKS 6.3.A-B) while extending to more complex rate contexts that require independent identification of the appropriate operation. In the Equations and Inequalities pathway (TEKS 7.11.A), Medium problems require students to solve two-step equations with rational number coefficients without scaffolding. The procedural foundation of solving one-step equations and applying properties of equality built in Grade 6 (TEKS 6.9.A-B, 6.10.A-B) is extended, as students must independently determine the sequence of inverse operations needed for two-step solution processes.

Connecting Current Learning to Future Conceptual Demands

At the Spicy level, problems foreshadow future conceptual demands by requiring students to synthesize, generalize, or transfer concepts. In the Linear Relationships pathway (TEKS 7.7.A), Spicy problems present multiple linear relationships on the same coordinate plane, such as three warehouses being loaded with grain at different constant rates with different starting amounts, and ask students to compare initial values and rates of change to determine which warehouse reaches a target first. This multi-constraint reasoning, comparing initial conditions and slopes across functions, previews the formal function analysis demands of Grade 8 and Algebra I (TEKS 8.5, A.3). In the Data and Statistical Inferences pathway (TEKS 7.12.C), Spicy problems present two dot plots comparing customer purchases across two weeks and ask students to make a comparative inference about population behavior from the sample data. This multi-step contextual reasoning, drawing conclusions about populations from limited samples, previews the statistical modeling demands of Grade 8 and Algebra I. The mathematical content stays within Grade 7, but the strategic complexity builds conceptual habits that future grades require.

Connecting Current Learning to Future Procedural Demands

The progression also prepares students procedurally for future grades. As students move from Mild to Medium within a Grade 7 subchapter, they internalize procedures that become prerequisite fluencies in Grade 8 and beyond. In the Equations and Inequalities pathway (TEKS 7.11.A-B), Medium problems develop fluency with solving two-step equations and checking solutions with rational number coefficients. Grade 8 assumes this fluency in the context of solving multi-step equations with variables on both sides (TEKS 8.8). At the Spicy level, problems in the Equations and Inequalities pathway (TEKS 7.11.C) require students to find unknown angle measures in triangles where angles are expressed as algebraic expressions such as x, $(2x - 30)$, and an exterior angle of $(2x + 26)$, combining geometric reasoning with equation solving in a single task. This procedural complexity directly prepares students for the algebraic and geometric synthesis required in Grade 8 and Algebra I. The M/M/S structure ensures that procedural fluency is not developed in isolation but within a coherent progression that serves both current mastery and future readiness.

Across all four dimensions, the M/M/S structure ensures that each problem type within a subchapter builds on the one before it, and the full progression connects backward to foundational knowledge and forward to future learning goals.

Part 5: Types of Content and Representations

Concrete, Representational, and Abstract Models

Magma Math provides opportunities for students to engage with mathematical concepts through concrete models, pictorial representations, and abstract (symbolic/numeric/algorithmic) models, as required by the TEKS. The M/M/S scaffolding structure maps naturally to the Concrete-Representational-Abstract (CRA) progression: Mild problems tend to anchor understanding in concrete and pictorial models, Medium problems transition to abstract procedures, and Spicy problems require flexible movement between representations.

Concrete and pictorial models. Mild problems across Magma Math's Grade 7 course use a range of visual representations to ground new concepts before students work symbolically. In the Operations on Rational Numbers pathway (TEKS 7.3.A), number lines with directional arrows show the addition of rational numbers, such as a blue dashed segment starting at negative 3 and extending 1.5 units to the right, making the operation and its result visible before students compute symbolically. In the Scaling and Similarity pathway (TEKS 7.5.A), two rectangles on a grid with labeled dimensions allow students to determine scale factors by visual comparison of corresponding side lengths. In the Data and Statistical Inferences pathway (TEKS 7.12.C), side-by-side box plots on labeled number lines display the distributions of two populations, allowing students to read medians and ranges directly from the visual before computing comparative statistics. In the Probability pathway (TEKS 7.6.I), outcome tables showing all possible results of tossing a coin twice and spinners divided into equal colored sections ground probability concepts in concrete visual reasoning.

Transition to abstract models. Medium problems remove these visual supports and require students to work with symbolic and algorithmic representations. Adding rational numbers appears without number lines or directional arrows. Computing unit rates requires executing division algorithms without visual rate tables. Solving two-step equations requires applying inverse operations without scaffolded steps. This deliberate removal of the concrete scaffold is what distinguishes Medium from Mild: the mathematical content is the same, but the representational demand shifts to the abstract.

Connecting, creating, defining, and explaining representations. Spicy problems frequently require students to create representations and to define or explain how those representations connect to abstract concepts. In the Linear Relationships pathway (TEKS 7.7.A), Spicy tasks present multiple linear functions on a coordinate plane and ask students to interpret initial values and rates of change, requiring them to connect the graphical representation to the algebraic equation and define what each parameter means in context. In the Equations and Inequalities pathway (TEKS 7.11.C), students encounter a triangle with angles labeled as algebraic expressions and must create an equation from the angle-sum property, define the variable, and explain how the geometric and algebraic representations relate. In the Area and Surface Area pathway (TEKS 7.9.C), Spicy problems present composite figures combining semicircles and triangles and require students to decompose the figure, create appropriate area expressions for each component, and define how the sub-areas combine. Throughout Magma Math, students are not only interpreting provided models but actively constructing, defining, and explaining how concrete and pictorial representations relate to the abstract mathematical concepts they encode.

Interpreting, Analyzing, and Evaluating

Magma Math problems across all levels require students to interpret, analyze, and evaluate mathematical concepts and situations, not merely compute. This is built into the M/M/S framework by design.

Interpret

At the Mild level, interpretation is the primary cognitive demand. Students examine two side-by-side box plots on a number line and identify the median height for boys versus girls from the visual (TEKS 7.12.C), interpret a spinner divided into equal sections to list the sample space for a compound event (TEKS 7.6.A), or read a coordinate plane with a line passing through the origin to interpret the proportional relationship (TEKS 7.4.A). These tasks activate comprehension before computation.

Analyze

At the Medium level, analysis takes center stage. Determining which of two animals gains weight at a faster rate requires analyzing rate structures and computing unit rates from different time intervals (TEKS 7.4.B). Reading a graph of a linear relationship to determine the constant rate and initial value requires analyzing the relationship between plotted points and algebraic form (TEKS 7.7.A). Finding the area of composite figures with semicircles attached to a polygon requires analyzing the geometric structure to identify component shapes and their dimensions (TEKS 7.9.C).

Evaluate

At the Spicy level, evaluation is foregrounded. Tasks present a triangle with angles expressed as algebraic expressions and require students to evaluate which equation correctly represents the angle-sum relationship, demanding conceptual judgment about mathematical structure (TEKS 7.11.C). Problems that present two dot plots comparing customer behavior across two weeks and ask students to evaluate which population exhibits greater variability demand evaluation of competing data distributions (TEKS 7.12.C). Multi-constraint real-world problems, such as determining whether a gas purchase at a given per-gallon price including tax matches a claimed total, require students to formulate, evaluate, and justify their reasoning (TEKS 7.4.D). These problems demand judgment, not just execution.

Applying Conceptual Understanding to New Situations

Spicy problems throughout Magma Math are specifically designed to require transfer of conceptual understanding to non-routine contexts. These are not simply harder computations; they are novel situations that demand flexible thinking.

In the Proportional Relationships pathway (TEKS 7.4.B), Spicy problems present three plant species growing at different rates expressed in different units (meters, centimeters, decimeters) over different time periods and ask students to determine which grows fastest, requiring unit conversion and proportional reasoning simultaneously in a non-routine format. In the Probability pathway (TEKS 7.6.I), Spicy problems present a spinner with both positive and negative point values across eight sections and ask students to determine how many of the possible two-spin outcomes yield a positive total, requiring systematic enumeration and signed-number reasoning in an unfamiliar game context. In the Volume pathway (TEKS 7.9.A), Spicy tasks present composite three-dimensional figures, such as a house-shaped solid combining a rectangular prism base with a triangular prism roof, requiring students to decompose the figure, compute each volume, and combine them.

Automaticity and Fluency

Medium problems across all chapters are the primary vehicle for developing student automaticity and fluency with grade-level procedures. Because each subchapter contains multiple problems at the Medium level targeting the same standard, students encounter repeated opportunities to practice key procedures without scaffolding. This structured repetition builds automaticity: students internalize the steps for solving two-step equations, the mechanics of computing unit rates with rational numbers, or the routine of finding the area of a circle so that execution becomes reliable and efficient over time. Because Medium problems test the standard as written, they require students to carry out procedures accurately and efficiently using the numbers, expressions, and contexts expected at the grade level.

Efficiency, Flexibility, and Accuracy

Spicy problems provide opportunities for students to evaluate mathematical representations, strategies, and solutions for efficiency, flexibility, and accuracy. Tasks that present a composite figure composed of a rhombus and two semicircles and require students to determine the total area demand evaluation of different decomposition strategies for efficiency: students who recognize that the two semicircles form a full circle complete the task far more efficiently than those who compute each semicircle separately. Error analysis tasks, such as problems presenting a student's claim about the value of an unknown angle in a triangle and asking the student to verify using the angle-sum property, develop the habit of evaluating solutions for accuracy. And problems that can be approached through multiple valid methods, such as finding a scale factor between similar figures by comparing any pair of corresponding sides, build procedural flexibility by requiring students to select, compare, and reason about different strategies rather than relying on a single approach.

Part 6: Process Standards Integration

Overview

The TEKS process standards (b)(1)(A) through (G) are not taught in isolation within Magma Math. They are woven into the content of every learning pathway through the design of the problems themselves. Because Magma Math is a problem-based platform, every student interaction is an opportunity to engage with one or more process standards. The M/M/S scaffolding structure ensures that process standards are engaged at every level of complexity: Mild problems emphasize selecting tools and creating representations (C, E), Medium problems emphasize applying mathematics and communicating ideas (A, D), and Spicy problems emphasize analyzing relationships, justifying reasoning, and evaluating problem-solving processes (B, F, G).

How Process Standards Are Incorporated Throughout Learning Pathways

(A) Apply mathematics to everyday life, society, and the workplace

Real-world contexts are embedded across all three M/M/S levels and throughout every strand. At the Mild level, students encounter accessible scenarios such as identifying which of two drivers is traveling faster given their speeds in miles per hour (TEKS 7.4.B), or determining how much tax is owed on a shirt given a simple whole-number percent (TEKS 7.4.D). At the Medium level, problems situate proportional reasoning in realistic contexts: a puppy adoption scenario requires comparing weight gain rates across different time intervals (TEKS 7.4.B), and predicting how many times a spinner lands on red in 200 spins based on experimental data connects probability to decision-making (TEKS 7.6.C). At the Spicy level, multi-constraint real-world problems bring several skills together, such as determining the total cost of gasoline including tax when the price per gallon with tax and the tax rate are both given (TEKS 7.4.D), or calculating how many students in a school of 360 are expected to own both a dog and a cat based on survey proportions (TEKS 7.6.C). Process standard (A) is embedded most densely in the Proportional Relationships pathway (Chapter 2), the Solving Percent Problems pathway (Chapter 3), and the Probability pathway (Chapter 5), but it appears across every strand.

(B) Use a problem-solving model: analyze, formulate, determine, justify, evaluate

Spicy problems consistently require students to engage the full problem-solving cycle. In the Equations and Inequalities pathway (TEKS 7.11.C), a Spicy task presents a triangle with angles expressed as algebraic expressions and an exterior angle, requiring students to analyze the angle-sum and exterior-angle relationships, formulate the equation, determine the solution, and evaluate whether the resulting angle measures are geometrically valid. In the Probability pathway (TEKS 7.6.I), Spicy tasks present a spinner with eight sections of positive and negative point values and ask students to determine how many two-spin outcomes produce a positive total, requiring them to analyze the sample space, formulate a systematic listing strategy, determine the count, and justify why their enumeration is complete. In the Data and Statistical Inferences pathway (TEKS 7.12.C), Spicy tasks ask students to compare two populations from dot plot displays, analyze measures of center and spread, formulate a comparative inference, and justify their conclusion using evidence from the data.

(C) Select tools, including real objects, manipulatives, paper and pencil, and technology

Mild problems explicitly provide or reference tools for students to use. In the Operations on Rational Numbers pathway (TEKS 7.3.A), number lines with directional arrows scaffold addition and subtraction of rational numbers. In the Scaling and Similarity pathway (TEKS 7.5.A), grids with labeled figures serve as measurement tools for determining scale factors by counting grid units. In the Volume pathway (TEKS 7.8.B), labeled three-dimensional diagrams with dimensions displayed on each face provide the visual reference needed to set up volume computations. As students progress to Medium and Spicy, the explicit tool provision is removed, and students must select appropriate computational strategies, algebraic methods, or graphical approaches independently. In the Equations and Inequalities pathway, for instance, Spicy problems present a triangle with algebraic angle expressions where students must independently recognize that the angle-sum property provides the equation structure needed to find the unknown.

(D) Communicate mathematical ideas using multiple representations

Problems across all levels engage multiple representations: symbolic notation, visual models, tables, graphs, and verbal descriptions. In the Proportional Relationships pathway (TEKS 7.4.A), Mild tasks present a graph of a proportional relationship passing through the origin and ask students to write the equation it represents, translating between graphical and algebraic forms. In the Linear Relationships pathway (TEKS 7.7.A), Medium tasks require students to interpret a graph showing the relationship between pool volume and filling duration, translating between the visual display and a verbal description of the constant rate. In the Solving Percent Problems pathway (TEKS 7.4.D), Spicy tasks require students to move fluidly among fraction, decimal, and percent representations within a single real-world tax or discount scenario, connecting all three forms of the same quantity.

(E) Create and use representations to organize, record, and communicate

Students create their own representations throughout Magma Math. In the Probability pathway (TEKS 7.6.A), Mild tasks provide a two-way outcome table for coin tosses, and Medium tasks require students to construct their own sample spaces for compound events such as spinning a three-color spinner twice. In the Data and Statistical Inferences pathway (TEKS 7.12.B), students use sample data to create inferences about populations, organizing numerical information into comparative statements. In the Area and Surface Area pathway (TEKS 7.9.C), Spicy tasks present composite figures and require students to decompose them into component shapes, creating area expressions for each part and organizing the computation into a total. These tasks go beyond interpreting provided representations; students must organize data, select appropriate formats, and construct displays that communicate mathematical relationships.

(F) Analyze mathematical relationships to connect and communicate

Problems requiring relational analysis appear across all strands. In the Proportional Relationships pathway (TEKS 7.4.C), Medium tasks require students to identify the constant of proportionality from a table of values, analyzing the multiplicative relationship between input and output. In the Linear Relationships pathway (TEKS 7.7.A), Spicy tasks present multiple linear relationships on the same graph with different starting values and rates, requiring students to analyze how changes in slope and intercept affect the relationship between duration and quantity. In the Data and Statistical Inferences pathway (TEKS 7.12.A), students analyze the relationship between sample data and population characteristics, connecting the structure of a random sample to the validity of the inference drawn from it.

(G) Display, explain, and justify using precise mathematical language

Explain and justify prompts appear at every level. At the Mild level, students identify internal and external angles in a triangle diagram with extended sides, requiring precise language about angle classification (TEKS 7.11.C). At the Medium level, problems requiring students to determine whether a given value satisfies a two-step equation engage precise language about equality, substitution, and inverse operations (TEKS 7.11.B). At the Spicy level, problems presenting a fishing scenario with rational number depths, such as determining the expression that represents a fish swimming upward toward bait from a depth below sea level, require students to construct a mathematical argument using signed-number language and justify their selection among competing expressions (TEKS 7.3.A). Error analysis tasks asking students to verify a peer's claim about an angle measure and explain the mistake develop mathematical argumentation across the full range of complexity (TEKS 7.11.C). These tasks develop mathematical argumentation across the full range of complexity.

Process Standards by Chapter

The following table provides an overview of the primary process standards engaged in each learning pathway. All chapters engage process standard (A) through real-world contexts and (D) through multiple representations. The table highlights additional emphasis areas:

Chapter	Primary Process Standards Emphasis
Ch 1: Operations on Rational Numbers	(C) Number lines and Venn diagrams as tools for rational number operations and classification. (G) Explaining and justifying rules for signed-number operations.
Ch 2: Proportional Relationships	(D) Multiple representations: tables, graphs, equations, verbal descriptions. (F) Analyzing relationships between unit rates, constants of proportionality, and graphical slopes.

Ch 3: Solving Percent Problems	(A) Real-world contexts: tax, markup, markdown, interest, commission. (B) Full problem-solving cycle for multi-step percent scenarios.
Ch 4: Scaling and Similarity	(C) Grid-based scale drawings as tools. (E) Creating scaled representations and computing dimensions from scale factors.
Ch 5: Probability	(E) Creating sample spaces, outcome tables, and tree diagrams. (B) Strategic thinking for compound event enumeration.
Ch 6: Data and Statistical Inferences	(F) Analyzing relationships between samples and populations. (G) Justifying comparative inferences with evidence from data displays.
Ch 7: Linear Relationships	(D) Multiple representations: graphs, equations, tables, verbal descriptions. (F) Analyzing relationships between slope, intercept, and real-world context.
Ch 8: Equations and Inequalities	(B) Full problem-solving cycle: formulate, solve, check, justify. (G) Explaining and justifying solutions to equations and angle relationships.
Ch 9: Circles	(C) Circle diagrams with labeled radii and diameters as tools. (E) Creating area and circumference computations from geometric models.
Ch 10: Volume	(E) Creating volume equations from labeled 3D diagrams. (F) Analyzing relationships between prism and pyramid volumes.
Ch 11: Area and Surface Area	(B) Strategic decomposition of composite figures. (E) Creating area expressions for composite figures and surface area nets.

End of Alignment Guide. Grade 7. Magma Math IMRA Submission.