CONCEPTUAL AND PROCEDURAL EMPHASIS

Grades 2–Algebra I

How Magma Math addresses the conceptual and procedural emphasis of the TEKS at each grade level

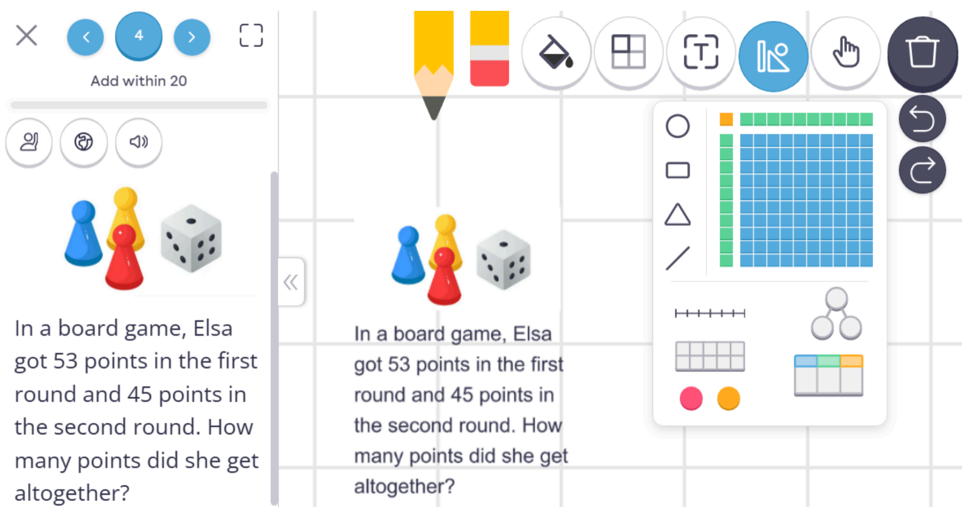
Introduction

The TEKS require that students develop both conceptual understanding and procedural fluency—and that these develop together, not in isolation. This guide describes how Magma Math addresses the conceptual emphasis and the procedural emphasis of the TEKS at every grade level from 2 through Algebra I.

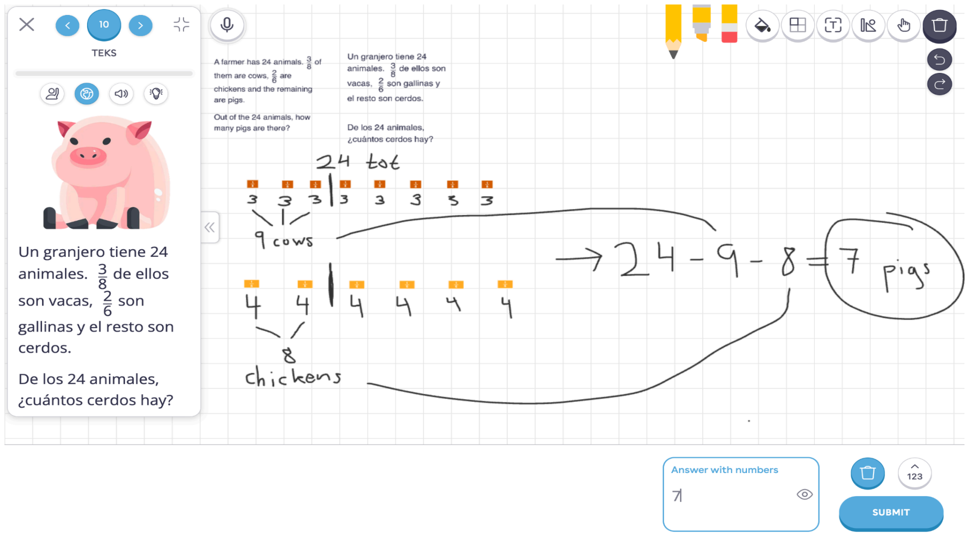
The Student Canvas: Where Conceptual and Procedural Learning Happen

Every problem in Magma Math opens on the Student Canvas—a digital workspace where students show their full thinking, not just select an answer. The canvas supports freehand drawing, typed responses with math symbols, and built-in digital manipulatives that students drag directly onto their workspace to model problems.

This open workspace is designed around the Concrete–Representational–Abstract (CRA) instructional progression. Students can model a problem concretely with manipulatives, represent it visually with drawings and diagrams, and express it abstractly with symbolic notation—all on the same canvas, in the same assignment. The canvas captures every step, giving teachers a window into whether students are building conceptual understanding or executing procedures, and how the two connect.



A grade 2 student uses the canvas with base-ten blocks to solve an addition problem. The manipulatives panel (right) provides direct access to concrete models.



A student's canvas showing handwritten reasoning alongside the problem text, with translation support enabled. The canvas preserves every step of the student's thinking.

For a full description of the built-in manipulatives available by grade band (K–2, 3–5, 6–12) and how teachers use student work to guide instruction, see the Implementation Guide and the Efficient Approaches Guide.

The Mild/Medium/Spicy Progression

Within each TEKS standard, Magma Math organizes problems into three difficulty levels—Mild, Medium, and Spicy—that map directly to the CRA progression:

Mild problems ground new ideas in concrete and pictorial models. Students use manipulatives, visual representations, and scaffolded formats to build meaning for the standard before computing.

Medium problems remove visual scaffolding and require students to execute procedures using abstract notation. Structured repetition across multiple problems builds automaticity.

Spicy problems present non-routine tasks that demand flexibility—students must select strategies, work across representations, reason through multi-step contexts, and evaluate their approaches for efficiency and accuracy.

This progression ensures that the conceptual emphasis and the procedural emphasis of each standard are addressed deliberately: conceptual understanding is built at Mild, procedural fluency is developed at Medium, and the connection between them is demonstrated at Spicy.

Magma Math's content library is fully aligned to the TEKS at every grade level. Below, we walk through one representative standard per grade to illustrate how the Mild/Medium/Spicy structure addresses both the conceptual and procedural emphasis within that standard. For comprehensive alignment detail across all standards, see the Magma Math Alignment Guides for each grade-level submission, Part 5: Types of Content and Representations.

Grade 2

In the Addition within 20 subchapter (TEKS 2.4.A), Mild problems present addition using pictorial groups of objects—pumpkins arranged in sets of two and one, broccoli arranged in groups—so students count and combine concrete quantities before writing a number sentence. This grounds the conceptual emphasis of the standard: students see what addition means before they compute.

At the Medium level, all visual support is removed. Problems present addition facts as number decomposition tasks—for example, 7 + 8 is broken into 5 + 2 + 8 = 5 + 10 = 15—requiring students to execute making-ten strategies through structured repetition. This addresses the procedural emphasis: students build automaticity with efficient addition procedures. At the Spicy level, problems present three-addend sums (6 + 12 + 2) requiring students to select efficient grouping strategies, connecting conceptual understanding of number composition to procedural flexibility.

Students who counted objects at Mild understand why the making-ten decomposition works when they encounter it at Medium. The progression from concrete counting to abstract strategy to flexible application ensures that conceptual understanding and procedural fluency develop together.

Grade 3

In the Multiplying 2-digit by 1-digit numbers with regrouping subchapter (TEKS 3.4.G), Mild problems present multiplication through area models that decompose factors into tens and ones—for example, 24 × 3 is shown as a grid where rows of 10-blocks and 1-blocks make the distributive property visible. This grounds the conceptual emphasis: students see why 24 × 3 equals (20 × 3) + (4 × 3) before computing symbolically.

At the Medium level, the area model is removed. Problems present multiplication as word problems—"In a soccer competition, 8 teams participated. Each team has 16 players. How many players are there?"—requiring students to execute the computation without visual scaffolding. At the Spicy level, multi-step contexts demand flexible application: "The distance between Liam's house and his school is 3 miles. He cycles to school and back 23 days a month. How far did he cycle in total?"

The area model at Mild shows students why partial products work, so when they multiply without the model at Medium they understand the structure behind the algorithm. Spicy problems confirm that conceptual and procedural knowledge work together when students must plan a multi-step computation strategy.

Grade 4

In the Adding multi-digit whole numbers subchapter (TEKS 4.4.A), Mild problems present addition in a place-value grid that visually separates hundreds, tens, and ones columns—for example, 213 + 146 displayed with each digit in its own cell, making regrouping across place values visible. This grounds the conceptual emphasis: students see the structure of the standard algorithm before executing it.

At the Medium level, the place-value grid is removed. Problems present bare multi-digit addition—for example, 4,517 + 2,753—requiring students to execute the standard algorithm independently. At the Spicy level, problems present multi-addend sums and real-world contexts—"A factory made 1,329 t-shirts, 428 jackets, and 2,789 shorts. What is the total number of items?"—requiring students to apply the procedure strategically and verify their answers.

The place-value grid at Mild makes regrouping concrete, so students who transition to Medium can execute the algorithm with understanding of why carrying works. Spicy problems demand that students evaluate their approach for accuracy in context.

Grade 5

In the Adding decimals subchapter (TEKS 5.3.K), Mild problems present decimal addition using base-ten block models—colored bars represent whole units while smaller segments represent tenths and hundredths (1.35 + 1.23 shown as blue and orange blocks)—connecting place value structure to the visual before students compute. A second Mild format uses a place-value grid that separates the decimal point and each digit column. This grounds the conceptual emphasis: students build meaning for decimal place value through concrete models.

At the Medium level, all visual scaffolding is removed. Problems present bare decimal computation—for example, 0.234 + 0.525—requiring students to execute the addition algorithm using abstract notation. At the Spicy level, multi-step word problems embed decimal operations in real-world contexts—for example, tracking bacteria growth measured in millimeters across multiple days.

Students who grouped blocks at Mild understand why decimal alignment matters when they compute without scaffolding at Medium. The progression from concrete models to abstract procedures to contextual application ensures that conceptual understanding and procedural fluency develop together.

Grade 6

In the Simplifying linear expressions subchapter (TEKS 6.7.C), Mild problems present combining like terms using algebra tile models—rectangular bars represent x-terms and small colored squares represent constants. For example, $2x + 4 + x$ is shown as tiles grouped by type, making the concept of "like terms" physically visible. This grounds the conceptual emphasis: students see why $2x + x = 3x$ before they simplify symbolically.

At the Medium level, the tiles are removed. Problems present simplification as purely symbolic tasks—for example, $5x + 4 - 2x - 3$—requiring students to combine like terms and manage negative signs independently. At the Spicy level, expression simplification is applied to geometric contexts—for example, finding the third side of a triangle given a perimeter expression of $6y + 8$—requiring students to connect algebraic procedures to spatial reasoning.

Students who grouped algebra tiles at Mild understand what "combining like terms" means concretely, so they execute the symbolic procedure at Medium with conceptual grounding rather than rote rule-following.

Grade 7

In the Solving two-step equations subchapter (TEKS 7.11.A), Mild problems present equations using algebra tile models—rectangular bars represent variables, colored squares represent positive and negative constants. For example, $2x - 4 = 6$ is modeled with two x-bars, four negative-unit tiles, and six positive-unit tiles, allowing students to reason about balance and equivalence visually. This grounds the conceptual emphasis: students see why inverse operations restore balance before they execute them symbolically.

At the Medium level, the tiles are removed. Problems present equations in purely symbolic form—for example, $35 = 3x + 2$ and $x/4 + 2 = 18$—requiring students to apply inverse operations without scaffolded steps. At the Spicy level, equations involve fractional coefficients and distribution—for example, $(3/7)(t + 7/4) = 6/14$—demanding procedural flexibility and accuracy with rational number operations.

Students who modeled equations with tiles at Mild understand why subtracting from both sides works when they encounter the bare equation at Medium. Spicy problems confirm that conceptual understanding supports procedural fluency when the computation becomes complex.

Grade 8

In the Approximations of irrational numbers subchapter (TEKS 8.2.B), Mild problems present irrational numbers on a number line with labeled points—students locate $\sqrt{24}$ by reasoning about its position between integers (between 4 and 5, since $4^2 = 16$ and $5^2 = 25$), building conceptual understanding of irrational number magnitude through a visual, spatial representation.

At the Medium level, the number line is removed. Problems require students to estimate irrational values to the nearest tenth or hundredth—for example, $\sqrt{98} \approx 9.9$ and $\sqrt{200} \approx 14.1$—developing procedural fluency with square root estimation through structured practice. At the Spicy level, problems require comparing complex expressions—for example, deciding whether $\pi - 1$ or 3.1 is greater—demanding both conceptual number sense and procedural estimation accuracy.

Students who located $\sqrt{24}$ on a number line at Mild understand the magnitude of irrational numbers when they estimate computationally at Medium. At Spicy, the comparison tasks require both conceptual understanding of irrational values and procedural skill in estimation, confirming that the two develop together.

Algebra I

In the Exponential growth and decay subchapter (TEKS A.9.B), Mild problems present exponential functions as graphs—a curve plotted on the coordinate plane with key points visible—and ask students to classify the function as representing growth or decay by reading the visual behavior of the graph. This grounds the conceptual emphasis: students see what exponential growth and decay look like before they work with the symbolic form.

At the Medium level, the graph is removed. Problems present functions in symbolic form—for example, $f(x) = -7 \cdot (1.13)^x$—and ask students to determine whether the function represents growth or decay by reasoning about the base. Context is added: “A small town has an initial population of 2 thousand. The population is modeled by $f(x) = 2 \cdot (5/3)^x$. What is the factor of growth or decay?” At the Spicy level, problems embed exponential functions in real-world investment and modeling contexts—for example, $V(t) = 1{,}250 \cdot (1.12)^t$—requiring students to identify initial values and interpret parameters.

Students who read exponential behavior from graphs at Mild understand the algebraic structure when they classify functions symbolically at Medium. Spicy problems confirm that conceptual understanding of exponential patterns supports procedural interpretation of parameters in applied contexts.