

**Colorado Model Content Standards for Math
correlated to
Merit Software Math Programs**

Responsible and productive members of today's technological society need to have a broad, connected, and useful knowledge of mathematics. The Colorado Model Content Standards for Mathematics are designed to serve as a guide for school districts as they define standards that will enable every Colorado student to develop the mathematical literacy needed for citizenship and employment in the 21st century.

Merit's Process Writing programs address the following Colorado Model Content Standards for Math:

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Grades 3-4

Subhead	Standard	Grade Level Expectation	Merit Software
Number Sense	Standard 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> demonstrating meanings for whole numbers, and commonly-used fractions and decimals (<i>for example, 1/3, 3/4, 0.5, 0.75</i>), and representing equivalent forms of the same number through the use of physical models, drawings, calculators, and computers; 	Fraction Shape-Up; Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Number Sense	Standard 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> reading and writing whole numbers and knowing place-value concepts and numeration through their relationships to counting, ordering, and grouping; 	Word Problem Shape-Up Set 1, 2, 3

Number Sense	Standard 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • using numbers to count, to measure, to label, and to indicate location; 	Word Problem Shape-Up Set 1, 2, 3
Number Sense	Standard 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • developing, testing, and explaining conjectures* about properties of whole numbers, and commonly-used fractions and decimals (<i>for example, 1/3, 3/4, 0.5, 0.75</i>); 	Fraction Shape-Up; Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Number Sense	Standard 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • using number sense to estimate and justify the reasonableness of solutions to problems involving whole numbers, and commonly-used fractions and decimals (<i>for example, 1/3, 3/4, 0.5, 0.75</i>). 	Fraction Shape-Up; Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Algebra	Standard 2: Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • reproducing, extending, creating, and describing patterns and sequences using a variety of materials (<i>for example, beans, toothpicks, pattern blocks, calculators, unifix cubes, colored tiles</i>); 	Fraction Shape-Up; Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Algebra	Standard 2: Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • describing patterns and other relationships using tables, graphs, and open sentences*; 	Fraction Shape-Up; Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Algebra	Standard 2: Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • recognizing when a pattern exists and using that information to solve a problem; and 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up

Algebra	Standard 2: Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> observing and explaining how a change in one quantity can produce a change in another (<i>for example, the relationship between the number of bicycles and the numbers of wheels</i>). 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Probability and Statistics	Standard 3: Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> constructing, reading, and interpreting displays of data including tables, charts, pictographs, and bar graphs; 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Probability and Statistics	Standard 3: Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> interpreting data using the concepts of largest, smallest, most often, and middle; 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Probability and Statistics	Standard 3: Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> generating, analyzing, and making predictions based on data obtained from surveys and chance devices; and 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Probability and Statistics	Standard 3: Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> solving problems using various strategies for making combinations* (<i>for example, determining the number of different outfits that can be made using two blouses and three skirts</i>). 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Geometry	Standard 4: Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> recognizing shapes and their relationships (<i>for example, symmetry*, congruence*</i>) using a variety of materials (<i>for example, pasta, boxes, pattern blocks</i>); 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up

Geometry	Standard 4: Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> identifying, describing, drawing, comparing, classifying, and building physical models of geometric figures; 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Geometry	Standard 4: Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> relating geometric ideas to measurement and number sense; 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Geometry	Standard 4: Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> solving problems using geometric relationships and spatial reasoning* (<i>for example, using rectangular coordinates* to locate objects, constructing models of three-dimensional objects</i>); 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Geometry	Standard 4: Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> recognizing geometry in their world (<i>for example, in art and in nature</i>). 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Measurement	Standard 5: Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> knowing, using, describing, and estimating measures of length, perimeter, capacity, weight, time, and temperature; comparing and ordering objects according to measurable attributes (<i>for example, longest to shortest, lightest to heaviest</i>); 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Measurement	Standard 5: Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> demonstrating the process of measuring and explaining the concepts related to units of measurement; 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up

Measurement	Standard 5: Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • using the approximate measures of familiar objects (<i>for example, the width of your finger, the temperature of a room, the weight of a gallon of milk</i>) to develop a sense of measurement; 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Measurement	Standard 5: Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • selecting and using appropriate standard and non-standard units of measurement in problem-solving situations. 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Number Concepts	Standard 6: Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • demonstrating conceptual meanings for the four basic arithmetic operations of addition, subtraction, multiplication, and division; 	Fraction Shape-Up; Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Number Concepts	Standard 6: Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • adding and subtracting commonly-used fractions and decimals using physical models (<i>for example, 1/3, 3/4, 0.5, 0.75</i>); 	Fraction Shape-Up; Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Number Concepts	Standard 6: Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • demonstrating understanding of and proficiency with basic addition, subtraction, multiplication, and division facts without the use of a calculator; 	Fraction Shape-Up; Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up

Number Concepts	Standard 6: Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • constructing, using, and explaining procedures to compute and estimate with whole numbers; and 	Fraction Shape-Up; Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Number Concepts	Standard 6: Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • selecting and using appropriate methods for computing with whole numbers in problem-solving situations from among mental arithmetic, estimation, paper-and-pencil, calculator, and computer methods. 	Fraction Shape-Up; Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up

Grades 5 - 8

Subhead	Standard	Grade Level Expectation	Merit Software
Number Sense	Standard 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • demonstrating meanings for integers*, rational numbers*, percents, exponents, square roots*, and pi (p) using physical materials and technology in problem-solving situations; 	Fraction Shape-Up; Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Number Sense	Standard 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • reading, writing, and ordering integers, rational numbers, and common irrational numbers* such as $\sqrt{2}$, $\sqrt{5}$, and π; 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2

Number Sense	Standard 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • applying number theory concepts (<i>for example, primes, factors, multiples</i>) to represent numbers in various ways; 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Number Sense	Standard 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • using the relationships among fractions, decimals, and percents, including the concepts of ratio and proportion, in problem-solving situations; 	Fraction Shape-Up; Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Number Sense	Standard 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • using number sense to estimate and justify the reasonableness of solutions to problems involving integers, rational numbers, and common irrational numbers such as $\sqrt{2}$, $\sqrt{5}$, and π. 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Algebra	Standard 2: Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • representing, describing, and analyzing patterns and relationships using tables, graphs, verbal rules, and standard algebraic notation; 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Algebra	Standard 2: Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • describing patterns using variables, expressions, equations, and inequalities in problem-solving situations; 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Algebra	Standard 2: Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • analyzing functional relationships to explain how a change in one quantity results in a change in another (<i>for example, how the area of a circle changes as the radius increases, or how a person's height changes over time</i>); 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2

Algebra	Standard 2: Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> distinguishing between linear* and nonlinear functions through informal investigations; and 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Algebra	Standard 2: Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> solving simple linear equations in problem-solving situations using a variety of methods (<i>informal, formal, graphical</i>) and a variety of tools (<i>physical materials, calculators, computers</i>). 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Probability and Statistics	Standard 3: Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> reading and constructing displays of data using appropriate techniques (<i>for example, line graphs, circle graphs, scatter plots*, box plots*, stem-and-leaf plots*</i>) and appropriate technology; 	Pre-Algebra Shape-Up
Probability and Statistics	Standard 3: Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> displaying and using measures of central tendency*, such as mean, median, and mode, and measures of variability*, such as range and quartiles; 	Pre-Algebra Shape-Up
Probability and Statistics	Standard 3: Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> evaluating arguments that are based on statistical claims; 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Probability and Statistics	Standard 3: Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> formulating hypotheses, drawing conclusions, and making convincing arguments based on data analysis; 	Pre-Algebra Shape-Up
Probability and Statistics	Standard 3: Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> determining probabilities through experiments or simulations; 	Pre-Algebra Shape-Up

Probability and Statistics	Standard 3: Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> making predictions and comparing results using both experimental and theoretical probability drawn from real-world problems; and 	Pre-Algebra Shape-Up
Probability and Statistics	Standard 3: Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> using counting strategies to determine all the possible outcomes from an experiment (<i>for example, the number of ways students can line up to have their picture taken</i>). 	Pre-Algebra Shape-Up
Geometry	Standard 4: Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> relating geometric ideas to measurement and number sense; 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Geometry	Standard 4: Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> recognizing geometry in their world (<i>for example, in art and in nature</i>). 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Measurement	Standard 5: Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> estimating, using, and describing measures of distance, perimeter, area, volume, capacity, weight, mass, and angle comparison; 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Measurement	Standard 5: Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> estimating, making, and using direct and indirect measurements to describe and make comparisons; 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Measurement	Standard 5: Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> estimating, making, and using direct and indirect measurements to describe and make comparisons; 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up

Measurement	Standard 5: Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • selecting and using appropriate units and tools to measure to the degree of accuracy required in a particular problem-solving situation. 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up
Number Concepts	Standard 6: Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • using models to explain how ratios, proportions, and percents can be used to solve real-world problems; 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Number Concepts	Standard 6: Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • constructing, using, and explaining procedures to compute and estimate with whole numbers, fractions, decimals, and integers; 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Number Concepts	Standard 6: Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • developing, applying, and explaining a variety of different estimation strategies in problem-solving situations, and explaining why an estimate may be acceptable in place of an exact answer; and 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Number Concepts	Standard 6: Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.	<ul style="list-style-type: none"> • selecting and using appropriate methods for computing with commonly used fractions and decimals, percents, and integers in problem-solving situations from among mental arithmetic, estimation, paper-and-pencil, calculator, and computer methods, and determining whether the results are reasonable. 	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2