



## 7<sup>th</sup> Grade Mathematics Curriculum Framework

	Mathematics Curriculum Framework	Lesson Number	Lesson Title
<b>NUMBER SENSE</b>			
1.1.	Read, write, and compare rational numbers in scientific notation (positive and negative powers of 10) with approximate numbers using scientific notation.	MPA-021	Converting Between Standard and Scientific Notation
*1.2.	Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.	MPA-002	Adding, Subtracting, Multiplying, and Dividing Whole Numbers
		MPA-013	Using Powers and Exponents in Expressions
		MPA-018	Adding and Subtracting Decimals
		MPA-019	Multiplying Decimals
		MPA-020	Multiplying Decimals by Powers of Ten
		MPA-022	Dividing Decimals
		MPA-034	Adding and Subtracting Fractions
		MPA-035	Adding and Subtracting Mixed Numbers with Unlike Denominators
		MPA-036	Multiplying Fractions and Mixed Numbers and Simplifying
		MPA-037	Dividing Fractions and Mixed Numbers and Simplifying
		MPA-047	Adding Integers with Like Signs
		MPA-048	Adding Integers with Unlike Signs
		MPA-050	Subtracting Integers with Unlike Signs
		MPA-051	Multiplying Integers with Like and Unlike Signs
		MPA-052	Dividing Integers with Like and Unlike Signs
		MPA-053	Adding, Subtracting, Multiplying, and Dividing Integers
		MPA-119	Dividing Decimals
1.3.	Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.	MPA-029	Converting Fractions and Decimals
		MPA-081	Converting Fractions, Decimals, and Percents I
		MPA-082	Converting Fractions, Decimals, and Percents II
*1.4.	Differentiate between rational and irrational numbers.	MPA-124	Classifying Numbers in the Real Number System
*1.5.	Know that every rational number is either a terminating or repeating decimal and be able to convert terminating decimals into reduced fractions.	MPA-029	Converting Fractions and Decimals
		MPA-124	Classifying Numbers in the Real Number System
1.6.	Calculate the percentage of increases and decreases of a quantity.	MPA-087	Finding Percent Increase and Decrease
*1.7.	Solve problems that involve discounts, markups, commissions, and profit and compute simple and compound interest.	MPA-127	Solving Real-World Problems Involving Discounts, Markup, and Commission
		MPA-128	Solving Real-World Problems Involving Simple and Compound Interest
		MPA-088	Solving Real-World Problems Involving Percent
		MM1-355	Solving Multiple Step Problems (profit)
2.1.	Understand negative whole-number exponents. Multiply and divide	MPA-013	Using Powers and Exponents in Expressions

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	expressions involving exponents with a common base.		
		MPA-014	Evaluating Expressions for Given Variables
		HA1-860	Using the Laws of Exponents
*2.2.	Add and subtract fractions by using factoring to find common denominators.	MPA-027	Finding the Greatest Common Factor
		MPA-034	Adding and Subtracting Fractions
		MPA-035	Adding and Subtracting Mixed Numbers with Unlike Denominators
*2.3.	Multiply, divide, and simplify rational numbers by using exponent rules.	MPA-013	Using Powers and Exponents in Expressions
		MPA-014	Evaluating Expressions for Given Variables
		HA1-860	Using the Laws of Exponents
2.4.	Use the inverse relationship between raising to a power and extracting the root of a perfect square integer; for an integer that is not square, determine without a calculator the two integers between which its square root lies and explain why.	MPA-064	Finding Square Roots of Perfect Squares
		MPA-065	Estimating Square Roots
*2.5.	Understand the meaning of the absolute value of a number; interpret the absolute value as the distance of the number from zero on a number line; and determine the absolute value of real numbers.	MPA-044	Finding Opposite and Absolute Values of Integers
		HA1-030	Using Opposites and Absolute Values
<b>ALGEBRA AND FUNCTIONS</b>			
1.1.	Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A).	MPA-041	Writing Simple Algebraic Expressions from Phrases
		MPA-042	Solving Problems Using an Equation
		HA1-095	Translating Word Phrases into Algebraic Expressions
		HA1-104	Translating Word Statements into Equations
		HA1-105	Translating Word Statements into Inequalities
1.2.	Use the correct order of operations to evaluate algebraic expressions such as $3(2x + 5^2)$ .	MPA-008	Order of Operations
		MPA-014	Evaluating Expressions for Given Variables
*1.3.	Simplify numerical expressions by applying properties of rational numbers (e.g., identity, inverse, distributive, associative, commutative) and justify the process used.	MPA-002	Adding, Subtracting, Multiplying, and Dividing Whole Numbers
		MPA-008	Order of Operations
		MPA-014	Evaluating Expressions for Given Variables
		HA1-076	Basic Distributive Property
1.4.	Use algebraic terminology (e.g., variable, equation, term, coefficient, inequality, expression, constant) correctly.	<i>Throughout</i>	
1.5.	Represent quantitative relationships graphically and interpret the meaning of a specific part of a graph in the situation represented by the graph.	MPA-102	Graphing Equations by Plotting Points
		MPA-103	Distinguishing Between Relations and Functions
		MPA-135	Determining the Slope of a Line (Fall 2009)
		MPA-140	Examining Linear Equations in Slope-Intercept Form
		MPA-142	Solving Problems With Linear Functions and Direct Variation
		MPA-150	Identifying and Graphing Linear and Nonlinear Functions
2.1.	Interpret positive whole-number powers as repeated multiplication and negative whole-number powers as repeated division or multiplication by the multiplicative inverse. Simplify and evaluate expressions that include exponents.	MPA-013	Using Powers and Exponents in Expressions
		MPA-014	Evaluating Expressions for Given Variables

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2.2.	Multiply and divide monomials; extend the process of taking powers and extracting roots to monomials when the latter results in a monomial with an integer exponent.	HA1-810	Simplifying Expressions Using the Multiplication Properties of Exponents (Fall 2009)
		HA1-815	Simplifying Expressions with Negative and Zero Exponents
		HA1-818	Simplifying Expressions Using the Division Properties of Exponents
		HA1-220	Identifying and Multiplying Monomials
		HA1-225	Dividing Monomials and Simplifying Expressions Having an Exponent of Zero
3.1.	Graph functions of the form $y = nx^2$ and $y = nx^3$ and use in solving problems.	MPA-150	Identifying and Graphing Linear and Nonlinear Functions
3.2.	Plot the values from the volumes of three-dimensional shapes for various values of the edge lengths (e.g., cubes with varying edge lengths or a triangle prism with a fixed height and an equilateral triangle base of varying lengths).	HA1-891	Using Models to Derive Formulas for Three-Dimensional Solids
*3.3.	Graph linear functions, noting that the vertical change (change in y-value) per unit of horizontal change (change in x-value) is always the same and know that the ratio ("rise over run") is called the slope of a graph.	MPA-135	Determining the Slope of a Line (Fall 2009)
		MPA-140	Examining Linear Equations in Slope-Intercept Form
*3.4.	Plot the values of quantities whose ratios are always the same (e.g., cost to the number of an item, feet to inches, circumference to diameter of a circle). Fit a line to the plot and understand that the slope of the line equals the quantities.	MPA-140	Examining Linear Equations in Slope-Intercept Form
		MPA-142	Solving Problems With Linear Functions and Direct Variation
*4.1.	Solve two-step linear equations and inequalities in one variable over the rational numbers, interpret the solution or solutions in the context from which they arose, and verify the reasonableness of the results.	MPA-100	Solving Two-Step Equations with Positive Coefficients (updated Fall 2009)
		MPA-165	Solving Two-Step Equations with Negative Coefficients (Fall 2009)
		MPA-101	Solving Two-Step Equations by Combining Like Terms (updated Fall 2009)
		MPA-170	Solving Two-Step Equations Using the Distributive Property (Fall 2009)
		MPA-175	Solving Equations with Variables on Both Sides (Fall 2009)
		MPA-109	Solving and Graphing Linear Inequalities on a Number Line
*4.2.	Solve multistep problems involving rate, average speed, distance, and time or a direct variation.	MPA-142	Solving Problems With Linear Functions and Direct Variation
		MPA-077	Solving Problems Using a Formula
		MPA-079	Unit rates
		MPA-080	Solving Proportions
		HA1-160	Writing an Equation to Solve Distance, Rate, and Time Problems
<b>MEASUREMENT AND GEOMETRY</b>			
1.1.	Compare weights, capacities, geometric measures, times, and temperatures within and between measurement systems (e.g., miles per hour and feet per second, cubic inches to cubic centimeters).	MM1-605	Converting Fahrenheit and Celsius
		MPA-061	Converting Metric Units of Length, Capacity, and Mass
		MPA-062	Converting Units in Customary System
		MPA-063	Converting Units Between Metric and Customary System
		MPA-155	Comparing and Converting Rates
1.2.	Construct and read drawings and models made to scale.	MPA-110	Solving Problems Using Proportions, Scale Drawings, Models, and Maps
*1.3.	Use measures expressed as rates (e.g., speed, density) and measures expressed as products (e.g., person-days) to solve problems; check the units of the solutions; and use dimensional analysis to check the reasonableness of the answer.	MPA-079	Unit rates
		MPA-155	Comparing and Converting Rates
		MPA-130	Developing a Sense of Relative Sizes and Measures
2.1.	Use formulas routinely for finding the perimeter and area of basic two-	MPA-055	Finding the Perimeter of a Figure

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	dimensional figures and the surface area and volume of basic three-dimensional figures, including rectangles, parallelograms, trapezoids, squares, triangles, circles, prisms, and cylinders.		
		MPA-067	Finding the Area of Rectangles and Parallelograms
		MPA-069	Finding the Area of Triangles and Trapezoids
		MPA-070	Finding the Circumference of a Circle
		MPA-071	Finding the Area of a Circle
		MPA-160	Plotting Polygons and Finding the Area
		MPA-073	Finding the Surface Area of Rectangular Prisms
		MPA-074	Finding the Surface Area of Cylinders
		MPA-075	Finding the Volume of Rectangular Prisms
		MPA-076	Finding the Volume of Cylinders
		MPA-115	Finding the Volumes of Prisms, Cylinders, Pyramids, and Cones Using Models
2.2.	Estimate and compute the area of more complex or irregular two- and three-dimensional figures by breaking the figures down into more basic geometric objects.	MPA-068	Finding the Area of Irregular Figures
2.3.	Compute the length of the perimeter, the surface area of the faces, and the volume of a three-dimensional object built from rectangular solids. Understand that when the lengths of all dimensions are multiplied by a scale factor, the surface area is multiplied by the square of the scale factor and the volume is multiplied by the cube of the scale factor.	MPA-111	Comparing Perimeters, Areas, and Volumes of Similar Geometric Figures and Solids
2.4.	Relate the changes in measurement with a change of scale to the units used (e.g., square inches, cubic feet) and to conversions between units (1 square foot = 144 square inches or $[1 \text{ ft}^2] = [144 \text{ in}^2]$ , 1 cubic inch is approximately 16.38 cubic centimeters or $[1 \text{ in}^3] = [16.38 \text{ cm}^3]$ ).	MPA-061	Converting Metric Units of Length, Capacity, and Mass
		MPA-062	Converting Units in Customary System
		MPA-063	Converting Units Between Metric and Customary System
3.1.	Identify and construct basic elements of geometric figures (e.g., altitudes, mid-points, diagonals, angle bisectors, and perpendicular bisectors; central angles, radii, diameters, and chords of circles) by using a compass and straightedge.	Content under review	
3.2.	Understand and use coordinate graphs to plot simple figures, determine lengths and areas related to them, and determine their image under translations and reflections.	MPA-108	Graphing Translations and Reflections on the Coordinate Plane
		MPA-160	Plotting Polygons and Finding the Area
*3.3.	Know and understand the Pythagorean theorem and its converse and use it to find the length of the missing side of a right triangle and the lengths of other line segments and, in some situations, empirically verify the Pythagorean theorem by direct measurement.	MPA-066	Solving Problems Using the Pythagorean Theorem
		HA1-515	Using the Pythagorean Theorem
		HA1-516	Applications of the Pythagorean Theorem
*3.4.	Demonstrate an understanding of conditions that indicate two geometrical figures are congruent and what congruence means about the relationships between the sides and angles of the two figures.	MPA-058	Identifying Polygons
		MPA-059	Classifying Triangles and Quadrilaterals
		MPA-121	Identifying Similar and Congruent Polygons Using Proportions
3.5.	Construct two-dimensional patterns for three-dimensional models, such as cylinders, prisms, and cones.	MPA-106	Identifying a Solid Figure From a Net
		MPA-107	Constructing Three-Dimensional Figures and Examining Their Dimensions
*3.6.	Identify elements of three-dimensional geometric objects (e.g.,	MPA-106	Identifying a Solid Figure From a Net

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	diagonals of rectangular solids) and describe how two or more objects are related in space (e.g., skew lines, the possible ways three planes might intersect).		
		MPA-107	Constructing Three-Dimensional Figures and Examining Their Dimensions
<b>STATISTICS, DATA ANALYSIS, AND PROBABILITY</b>			
1.1.	Know various forms of display for data sets, including a stem-and-leaf plot or box-and-whisker plot; use the forms to display a single set of data or to compare two sets of data.	MPA-094	Interpreting and Constructing Line Plots
		MPA-096	Constructing Stem-and-Leaf Plots
		MPA-097	Constructing Box-and-Whisker Plots
		MPA-131	Interpreting and Creating Histograms
		MPA-132	Interpreting and Creating Scatterplots
1.2.	Represent two numerical variables on a scatterplot and informally describe how the data points are distributed and any apparent relationship that exists between the two variables (e.g., between time spent on homework and grade level).	MPA-132	Interpreting and Creating Scatterplots
		HA1-965	Determining the Best-Fitting Line
*1.3.	Understand the meaning of, and be able to compute, the minimum, the lower quartile, the median, the upper quartile, and the maximum of a data set.	MPA-097	Constructing Box-and-Whisker Plots
<b>MATHEMATICAL REASONING</b>			
1.1.	Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.	MM1-195	Identifying the Mathematical Question Given in a Word Problem
		MPA-003	Using Four-Step Plan for Problem Solving
		MPA-099	Recognizing Misleading Statistics and Graphs
1.2.	Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed.	MM1-195	Identifying the Mathematical Question Given in a Word Problem
		MPA-125	Formulating a Possible Problem Situation Given an Equation
1.3.	Determine when and how to break a problem into simpler parts.	MPA-003	Using Four-Step Plan for Problem Solving
		MPA-007	Solving Problems Using Logical Reasoning Skills
		MPA-116	Solving Real-Life Problems by Using Guess-and-Check and Working Backwards
2.1.	Use estimation to verify the reasonableness of calculated results.	MPA-004	Using Rounding to Estimate
		MPA-005	Estimating Products and Quotients Using Patterns
		MPA-006	Determining Reasonableness of Answers and Appropriate Method of Computation
		MPA-017	Rounding Decimals and Estimating Computations Using Decimals
		MPA-033	Estimating Computations with Fractions and Mixed Numbers
		MPA-065	Estimating Square Roots
2.2.	Apply strategies and results from simpler problems to more complex problems.	Throughout	
2.3.	Estimate unknown quantities graphically and solve for them by using logical reasoning and arithmetic and algebraic techniques.	Throughout	
2.4.	Make and test conjectures by using both inductive and deductive reasoning.	MPA-006	Determining Reasonableness of Answers and Appropriate Method of Computation
		MPA-007	Solving Problems Using Logical Reasoning Skills
2.5.	Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.	Throughout	
2.6.	Express the solution clearly and logically by using the appropriate mathematical notation and terms and clear language; support solutions with evidence in both verbal and symbolic work.	Throughout	
2.7.	Indicate the relative advantages of exact and approximate solutions	MPA-133	Distinguishing Between Exact and Approximate Answers

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	to problems and give answers to a specified degree of accuracy.		
		MPA-134	Distinguishing Between Precision and Accuracy and Use Significant Digits in Computational Problems
2.8.	Make precise calculations and check the validity of the results from the context of the problem.	MPA-003	Using Four-Step Plan for Problem Solving
		MPA-006	Determining Reasonableness of Answers and Appropriate Method of Computation
		MPA-116	Solving Real-Life Problems by Using Guess-and-Check and Working Backwards
3.1.	Evaluate the reasonableness of the solution in the context of the original situation.	MPA-006	Determining Reasonableness of Answers and Appropriate Method of Computation
3.2.	Note the method of deriving the solution and demonstrate a conceptual understanding of the derivation by solving similar problems.	MPA-003	Using Four-Step Plan for Problem Solving
		MPA-006	Determining Reasonableness of Answers and Appropriate Method of Computation
3.3.	Develop generalizations of the results obtained and the strategies used and apply them to new problem situations.	Throughout	
		MPA-125	Formulating a Possible Problem Situation Given an Equation
1.3.	Determine when and how to break a problem into simpler parts.	MPA-003	Using Four-Step Plan for Problem Solving
		MPA-007	Solving Problems Using Logical Reasoning Skills
		MPA-116	Solving Real-Life Problems by Using Guess-and-Check and Working Backwards

MM1-Fundamentals of Mathematics

MPA-Pre-Algebra

HA1-Algebra 1

Note: Standards were taken from the Mathematics Content Standards for California Public Schools - Kindergarten Through Grade Twelve document adopted by the California State Board of Education in December 1997 and published in 1999.

\* Denotes Key Standards