



## 6<sup>th</sup> Grade Correlation to Mathematics Framework

	Mathematics Curriculum Framework	Lesson Number	Lesson Title
<b>NUMBER SENSE AND OPERATIONS</b>			
6.N.1	Demonstrate an understanding of positive integer exponents, in particular, when used in powers of ten, e.g., 102, 105.	MM1-017	Identifying Exponential and Standard Form of a Number
6.N.2	Demonstrate an understanding of place value to billions and thousandths.	MM1-001	Identifying Place Value to the Billions
		MM1-270	Identifying Place Value in Decimal Numbers
		MM1-280	Identifying and Writing Decimals to the Hundredths and Thousandths
6.N.3	Represent and compare very large (billions) and very small (thousandths) positive numbers in various forms such as expanded notation without exponents, e.g., $9724 = 9 \times 1000 + 7 \times 100 + 2 \times 10 + 4$ .	MM1-005	Writing Numbers in Expanded Form
6.N.4	Demonstrate an understanding of fractions as a ratio of whole numbers, as parts of unit wholes, as parts of a collection, and as locations on the number line.	MM1-110	Comparing and Ordering Fractions with Like Denominators
		MM1-120	Identifying Proper and Improper Fractions
		MM1-135	Comparing and Ordering Fractions with Like and Unlike Denominators
6.N.5	Identify and determine common equivalent fractions, mixed numbers, decimals, and percents.	MM1-115	Writing Fractions in Simplest Form
		MM1-125	Writing Mixed Numbers as Improper Fractions
		MM1-358	Converting Fractions and Mixed Numbers with Denominators of Powers of Ten to Decimals
		MM1-360	Expressing Percent as a Ratio
		MM1-365	Converting Decimals to Fractions and Fractions to Decimals
		MM1-370	Converting Decimals to Percents and Percents to Decimals
		MM1-375	Converting Fractions to Percents and Percents to Fractions
		MM1-380	Converting Fractions to Decimals and Percents
6.N.6	Find and position integers, fractions, mixed numbers, and decimals (both positive and negative) on the number line.	MM1-602	Comparing and Ordering Rational Numbers
6.N.7	Compare and order integers (including negative integers), and positive fractions, mixed numbers, decimals, and percents.	MM1-602	Comparing and Ordering Rational Numbers
		MM1-575	Comparing and Ordering Integers
		MM1-358	Converting Fractions and Mixed Numbers with Denominators of Powers of Ten to Decimals
		MM1-360	Expressing Percent as a Ratio
		MM1-365	Converting Decimals to Fractions and Fractions to Decimals
		MM1-370	Converting Decimals to Percents and Percents to Decimals
		MM1-375	Converting Fractions to Percents and Percents to Fractions
		MM1-380	Converting Fractions to Decimals and Percents
6.N.8	Apply number theory concepts—including prime and composite numbers, prime factorization, greatest common factor, least common multiple, and divisibility rules for 2, 3, 4, 5, 6, 9, and 10—to the solution of problems.	MM1-088	Applying the Divisibility Rules for 2, 3, 4, 5, 6, 9 and 10
		MM1-090	Identifying Prime and Composite Numbers
		MM1-095	Expressing a Number as a Product of Prime Numbers
		MM1-105	Identifying the Greatest Common Factor and the Least Common Multiple

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6.N.9	Select and use appropriate operations to solve problems involving addition, subtraction, multiplication, division, and positive integer exponents with whole numbers, and with positive fractions, mixed numbers, decimals, and percents.		Problem solving exists throughout the lessons. For examples, see the following:
		MM1-195	Identifying the Mathematical Question Given in a Word Problem
		MM1-355	Solving Multiple-Step Problems
		MM1-320	Performing Mathematical Operations with Decimal Numbers in Application Problems
6.N.10	Use the number line to model addition and subtraction of integers, with the exception of subtracting negative integers.	MM1-580	Adding Integers with Like and Unlike Signs
		MM1-585	Subtracting Integers with Like and Unlike Signs
6.N.11	Apply the Order of Operations for expressions involving addition, subtraction, multiplication, and division with grouping symbols (+, −, ×, ÷).	MM1-080	Identifying the Order of Operations Using Multiplication, Addition, and Subtraction
		MPA-008	Order of Operations
6.N.12	Demonstrate an understanding of the inverse relationship of addition and subtraction, and use that understanding to simplify computation and solve problems.	MM1-040	Using the Inverse Operations of Addition and Subtraction to Solve Problems Related to Number Sentences
6.N.13	Accurately and efficiently add, subtract, multiply, and divide (with double-digit divisors) whole numbers and positive decimals.	MM1-035	Adding Three or More Whole Numbers and Subtracting with Regrouping
6.N.14	Accurately and efficiently add, subtract, multiply, and divide positive fractions and mixed numbers. Simplify fractions.	MM1-050	Identifying Special Patterns in Multiplication
		MM1-055	Multiplying Whole Numbers with Two and Three Digits
		MM1-065	Solving Division in Three Forms
		MM1-075	Dividing with Remainders and Zeros in the Quotient
		MM1-300	Adding and Subtracting Decimals
		MM1-310	Multiplying Decimals
		MM1-311	Using a One-Digit Divisor, Express the Remainder as a Decimal
		MM1-313	Using a Two-Digit Divisor, Express the Remainder as a Decimal
6.N.15	Add and subtract integers, with the exception of subtracting negative integers.	MM1-580	Adding Integers with Like and Unlike Signs
		MM1-585	Subtracting Integers with Like and Unlike Signs
6.N.16	Estimate results of computations with whole numbers, and with positive fractions, mixed numbers, decimals, and percents. Describe reasonableness of estimates.	MM1-030	Estimating Sums and Differences
		MM1-060	Estimating Products
		MM1-070	Estimating Quotients
		MM1-305	Estimating Products by Rounding to the Nearest Whole Number
		MM1-340	Rounding Quotients
<b>PATTERNS, RELATIONS, AND ALGEBRA</b>			
6.P.1	Analyze and determine the rules for extending symbolic, arithmetic, and geometric patterns and progressions, e.g., ABBCCC; 1, 5, 9, 13 ...; 3, 9, 27,	MM1-020	Identifying and Finding Number Patterns Using Whole Numbers
		MPA-104	Recognizing Patterns
6.P.2	Replace variables with given values and evaluate/simplify, e.g., $2(m) + 3$ when $m = 4$ .	MM1-620	Using the Order of Operations in Algebraic Expressions
		MPA-014	Evaluating Expressions for Given Variables
6.P.3	Use the properties of equality to solve problems, e.g., if $c + 7 = 13$ , then $c = 13 - 7$ , therefore $c = 6$ ; if $3 \times c = 15$ , then $1/3 \times 3 \times c = 1/3 \times 15$ , therefore $c = 5$ .	MPA-009	Solving One-Step Equations Using a Box
		MM1-040	Using the Inverse Operations of Addition and Subtraction to Solve Problems Related to Number Sentences
6.P.4	Represent real situations and mathematical relationships with concrete models, tables, graphs, and rules in words and with symbols, e.g., input-output tables.		Real situations and mathematical relationships with concrete models, tables, and graphs exist throughout the lessons. For examples, see the following:
		MPA-122	Modeling Multiplication and Division of Decimals

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		MPA-123	Modeling Multiplication and Division of Fractions
		MM1-640	Solving Algebraic Word Problems
		MM1-425	Classifying Information from a Mathematical Story
		MM1-430	Using Graphs to Solve Story Problems
6.P.5	Solve linear equations using concrete models, tables, graphs, and paper-pencil methods.	MM1-625	Solving Algebraic Equations Using the Inverse Operations of Addition and Subtraction
		MM1-630	Solving Algebraic Equations Using the Inverse Operations of Multiplication and Division
		MM1-605	Converting Fahrenheit and Celsius
		MM1-610	Finding Simple Interest
		MM1-635	Calculating Distance, Rate, or Time by Solving Equations
		MM1-640	Solving Algebraic Word Problems
		MM1-641	Graphing the Solution to an Algebraic Equation
6.P.6	Produce and interpret graphs that represent the relationship between two variables in everyday situations.	MPA-104	Recognizing Patterns
6.P.7	Identify and describe relationships between two variables with a constant rate of change. Contrast these with relationships where the rate of change is not constant.	MPA-140	Examining Linear Equations in Slope-Intercept Form
		MPA-142	Solving Problems With Linear Functions
		MPA-150	Identifying and Graphing Linear and Nonlinear Functions
<b>GEOMETRY</b>			
6.G.1	Identify polygons based on their properties, including types of interior angles, perpendicular or parallel sides, and congruence of sides, e.g., squares, rectangles, rhombuses, parallelograms, trapezoids, and isosceles, equilateral, and right triangles.	MM1-455	Identifying Basic Terms Used in Geometry
		MM1-460	Measuring and Classifying Angles
		MM1-465	Naming and Classifying Polygons by Characteristics
6.G.2	Identify three-dimensional shapes (e.g., cubes, prisms, spheres, cones, and pyramids) based on their properties, such as edges and faces.	MPA-072	Identifying 3-D Figures
6.G.3	Identify relationships among points, lines, and planes, e.g., intersecting, parallel, perpendicular.	MM1-455	Identifying Basic Terms Used in Geometry
6.G.4	[1]Graph points and identify coordinates of points on the Cartesian coordinate plane (all four quadrants).	MM1-642	Exploring the Coordinate Plane and Graphing Ordered Pairs
6.G.5	Find the distance between two points on horizontal or vertical number lines.	MM1-642	Exploring the Coordinate Plane and Graphing Ordered Pairs
6.G.6	Predict, describe, and perform transformations on two-dimensional shapes, e.g., translations, rotations, and reflections.	MM1-500	Using Translations, Rotations and Reflections to Transform Shapes
		MPA-108	Graphing Translations and Reflections on the Coordinate Plane
6.G.7	Identify types of symmetry, including line and rotational.	<i>New Lesson in development</i>	MPA-180 - Line and Rotational Symmetry
6.G.8	Determine if two shapes are congruent by measuring sides or a combination of sides and angles, as necessary; or by motions or series of motions, e.g., translations, rotations, and reflections.	MM1-480	Identifying and Labeling Triangles According to Their Sides and Angles
		MPA-108	Graphing Translations and Reflections on the Coordinate Plane
6.G.9	Match three-dimensional objects and their two-dimensional representations, e.g., nets, projections, and perspective drawings.	MPA-106	Identifying a Solid Figure From a Net
		HA1-893	Constructing Solids from Different Perspectives
<b>MEASUREMENT</b>			
6.M.1	Apply the concepts of perimeter and area to the solution of problems. Apply formulas where appropriate.	MM1-505	Determining the Perimeter of Any Polygon
		MM1-510	Determining the Area of Parallelograms and Triangles
		MM1-515	Defining a Circle

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		<i>New Lesson in development</i>	MM1-643-Finding the Perimeter of a Polygon in the Coordinate Plane (first quadrant)
6.M.2	Identify, measure, describe, classify, and construct various angles, triangles, and quadrilaterals.	MPA-160 MM1-460	Plotting Polygons and Finding the Area Measuring and Classifying Angles
		MM1-480	Identifying and Labeling Triangles According to Their Sides and Angles
		MM1-465	Naming and Classifying Polygons by Characteristics
6.M.3	Solve problems involving proportional relationships and units of measurement, e.g., same system unit conversions, scale models, maps, and speed.	MM1-475	Naming and Classifying Polygons by Characteristics
		MM1-535	Converting Customary Units of Measurement for Length
		MM1-540	Converting Customary Unit of Measurement for Capacity and Weight
		MM1-545	Converting Metric Units of Measurement for Length
		MM1-550	Converting Metric Units of Measurement for Mass and Capacity
		MM1-635	Calculating Distance, Rate, or Time by Solving Equations
		MPA-110	Solving Problems Using Proportions, Scale Drawings, Models, and Maps
6.M.4	Find areas of triangles and parallelograms. Recognize that shapes with the same number of sides but different appearances can have the same area. Develop strategies to find the area of more complex shapes.	MM1-510	Determining the Area of Parallelograms and Triangles
		MPA-068	Finding the Area of Irregular Figures
		MPA-160	Plotting Polygons and Finding the Area
6.M.5	Identify, measure, and describe circles and the relationships of the radius, diameter, circumference, and area (e.g., $d = 2r$ , $p = C/d$ ), and use the concepts to solve problems.	MM1-515	Defining a Circle
6.M.6	Find volumes and surface areas of rectangular prisms.	MM1-520	Finding the Surface Area of a Rectangular Prism
		MM1-525	Finding the Volume of Rectangular and Triangular Prisms
6.M.7	Find the sum of the angles in simple polygons (up to eight sides) with and without measuring the angles.	MPA-060	Determining Which Figures Tessellate
<b>DATA ANALYSIS, STATISTICS, AND PROBABILITY</b>			
6.D.1	Describe and compare data sets using the concepts of median, mean, mode, maximum and minimum, and range.	MM1-410	Interpreting Box-and-Whisker Plots
		MM1-415	Defining and Calculating the Range and the Mean
		MM1-420	Defining and Calculating the Median and the Mode
6.D.2	Construct and interpret stem-and-leaf plots, line plots, and circle graphs.	MM1-390	Understanding Data in Bar Graphs, Line Graphs, and Stem-and-Leaf Plots
		MM1-405	Interpreting and Constructing Circle Graphs
6.D.3	Use tree diagrams and other models (e.g., lists and tables) to represent possible or actual outcomes of trials. Analyze the outcomes.	MPA-089	Using Tree Diagrams
		MPA-112	Constructing Sample Spaces for Compound Events (Dependent and Independent)
6.D.4	Predict the probability of outcomes of simple experiments (e.g., tossing a coin, rolling a die) and test the predictions. Use appropriate ratios between 0 and 1 to represent the probability of the outcome and associate the probability with the likelihood of the event.	MM1-230	Finding the Probability of Simple Events
		MM1-235	Finding Experimental Probability

MM1-Fundamentals of Mathematics

MPA- Pre-Algebra

HA1-Algebra 1

Note: Standards were taken from the Massachusetts Mathematics Curriculum Framework for Grade 6 for Massachusetts Department of Education - PreK - 6 standards document adopted by the Massachusetts State Board of Education in 2000.