



High School Correlation to Mathematics Framework

	Mathematics Curriculum Framework	Lesson Number	Lesson Title
7.6 ARITHMETIC, NUMBER, AND OPERATION CONCEPTS			
MHS:1	Accurately solves problems involving conceptual understanding and magnitude of real numbers, or simple vectors.	HA1-025	Comparing and Ordering Real Numbers
		HA1-235	Writing, Multiplying, and Dividing Numbers Written in Scientific Notation
		HA1-860	Using the Laws of Exponents
		HA1-861	Simplifying Expressions with Negative and Zero Exponents
MHS:4	Accurately solves problems involving proportional reasoning or percents involving the effect of changing the base, rate, or percentage (the three cases of percent), or variations on order of finding percentages (10% off followed by 5% off), and compound interest. (IMPORTANT: Applies the conventions of order of operations.)	MPA-083	Finding Number Given Percent and Total
		MPA-084	Finding Percent Given Number and Total
		MPA-085	Finding Total Given Number and Percent
		MPA-086	Solving Problems Using Percent
		MPA-087	Finding Percent Increase and Decrease
		MPA-088	Solving Real-World Problems Involving Percent
		MPA-126	Solving Real-World Problems Involving Sales Tax
		MPA-127	Solving Real-World Problems Involving Discounts
		MPA-128	Solving Real-World Problems Involving Simple Interest
		HA1-165	Using Equations to Solve Percent Problems
		HA1-170	Solving Percent of Change Problems
		HA1-360	Expressing Ratios in Simplest Form and Solving Equations Involving Proportions
MHS:7	Estimates and evaluates the reasonableness of numerical computations and solutions, including those carried out with technology.	Throughout	
MHS:8	Applies properties of numbers (greatest common factor [GCF], least common multiple [LCM], prime factorization, inverses, and identities), or properties of operations to solve problems and to simplify computations.	MPA-026	Using Prime Factorization
		MPA-027	Finding the Greatest Common Factor
		MPA-030	Finding Least Common Multiple of Two or More Numbers
		HA1-050	Multiplying Real Numbers
		HA1-055	Dividing Real Numbers
		HA1-075	Simplifying Algebraic Expressions by Combining Like Terms
		HA1-076	Basic Distributive Property
		HA1-080	Simplifying and Evaluating Algebraic Expressions Containing Grouping Symbols
		HA1-085	Simplifying Expressions Using the Properties of Real Numbers
		HA1-090	Simplifying Expressions Using the Property of -1
		HA1-130	Identifying Postulates, Theorems, and Properties

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		HA1-265	Writing a Number in Prime Factorization and Finding the Greatest Common Factor
		HA1-860	Using the Laws of Exponents
		HA1-861	Simplifying Expressions with Negative and Zero Exponents
		Throughout	
7.7 GEOMETRY AND MEASUREMENT CONCEPTS			
MHS:9	Models situations geometrically to solve problems connecting to other areas of mathematics or to other disciplines (i.e., diagrams, coordinate systems, transformations).	MPA-108	Graphing Translations and Reflections on the Coordinate Plane
		MPA-120	Applying Dilations in the Coordinate Plane
		HA1-515	Using the Pythagorean Theorem
		HA1-516	Applications of the Pythagorean Theorem
		HA1-520	Finding the Distance Between Two Points on a Coordinate Plane
		HA1-876	Applying Length, Midpoint and Slope of a Segment on a Cartesian Plane
MHS:11	Uses the attributes, geometric properties, or theorems involving lines, polygons and circles (e.g., parallel, perpendicular, bisectors, diagonals, radii, diameters, central angles, arc length excluding radians), the Pythagorean Theorem, Triangle Inequality Theorem to solve mathematical situations or problems in context.	MPA-055	Finding the Perimeter of a Figure
		MPA-056	Classifying Angles
		MPA-057	Identifying and Applying Supplementary and Complementary Angles
		MPA-058	Identifying Polygons
		MPA-059	Classifying Triangles and Quadrilaterals
		MPA-060	Determining Which Figures Tessellate
		MPA-070	Finding the Circumference of a Circle
		MPA-071	Finding the Area of a Circle
		MPA-072	Identifying 3-D Figures
		MPA-105	Determining the Measure of Angles Made by Parallel Lines and a Transversal
		MPA-106	Identifying a Solid Figure From a Net
		MPA-107	Constructing Three-Dimensional Figures and Examining Their Dimensions
		HA1-515	Using the Pythagorean Theorem
		HA1-516	Applications of the Pythagorean Theorem
		HA1-889	Complementary and Supplementary Angles
		Grade Level Content Under Review	
MHS:13	Applies concepts of similarity, congruency or right triangle trigonometry to determine length or angle measures and to solve problems involving scale.	MPA-111	Comparing Perimeters, Areas, and Volumes of Similar Geometric Figures and Solids
		MPA-120	Applying Dilations in the Coordinate Plane
		MPA-121	Identifying Similar and Congruent Polygons Using Proportions
MHS:14	Demonstrates conceptual understanding of perimeter, circumference, or area of two-dimensional figures or composites of two-dimensional figures or surface area or volume of three-dimensional figures or composites of three-dimensional figures in problem-solving situations and uses appropriate units of measure and expresses formulas for the perimeter, and area of two-dimensional figures or composites of two-dimensional figures or surface area or volume of three-dimensional figures or composites of three-dimensional figures.	MPA-067	Finding the Area of Rectangles and Parallelograms
		MPA-068	Finding the Area of Irregular Figures
		MPA-069	Finding the Area of Triangles and Trapezoids
		MPA-070	Finding the Circumference of a Circle

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		MPA-071	Finding the Area of a Circle
		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
		HA1-890	Using Models to Derive Formulas for Two-Dimensional Geometric Figures
		HA1-891	Using Models to Derive Formulas for Three-Dimensional Solids
		HA1-893	Constructing Solids from Different Perspectives
MHS:15	Measures and uses units of measures appropriately and consistently when solving problems across the content strands. Makes conversions within or across systems and makes decisions concerning an appropriate degree of accuracy in problem situations involving measurement. Uses measurement conversion strategies, such as unit/dimensional analysis or uses quotient measures, such as speed and density, that give per unit amounts, or uses product measures, such as person hours to solve problems.	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-130	Developing a Sense of Relative Sizes of Measures
		<i>Future Release Lesson</i>	<i>MPA-133 Distinguishing Between Exact and Approximate Answers</i>
MHS:17	Constructs or accurately represents congruent angles, perpendicular lines, equilateral or isosceles triangles, triangle given the side segments, or inscribe or circumscribe a figure.	Throughout	
		Grade Level Content Under Review	
7.8 FUNCTIONS AND ALGEBRA CONCEPTS			
MHS:19	Solves and models problems by formulating, extending, or generalizing linear and common nonlinear functions/relations.) And makes connections among representations of functions/relations (equations, tables, graphs, symbolic notation, text).	HA1-436	Identifying Relations
		HA1-437	Identifying Relations as Functions
		HA1-438	Finding the Domain and Range of Functions
		HA1-439	Using Function Notation
		HA1-892	Data Analysis Using the Graphing Calculator
		HA1-441	Applications of Functions and Relations Involving Distance, Rate, and Time
MHS:20	Demonstrates conceptual understanding of linear relationships and linear and nonlinear functions (including $f(x) = ax^2$, $f(x) = ax^3$, absolute value function, exponential growth) through analysis of intercepts, domain, range and constant and variable rates of change in mathematical and contextual situations.	HA1-380	Graphing Linear Equations
		HA1-385	Finding the Slope of a Line from its Graph or from the Coordinates of Two Points
		HA1-394	Interchanging Linear Equations Between Standard Form and Slope-Intercept Form
		HA1-395	Drawing a Line Using Slope-Intercept and Determining if Two Lines are Parallel
		HA1-398	Graphing Linear Equations Using Slope and y-Intercept or Slope and a Point
		HA1-401	How Variations of "m" and "b" Affect the Graph of $y = mx + b$
		HA1-405	Determining an Equation of a Line Given the Slope and Coordinates of One Point
		HA1-410	Determining an Equation of a Line Given the Coordinates of Two Points
		HA1-436	Identifying Relations
		HA1-437	Identifying Relations as Functions

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		HA1-438	Finding the Domain and Range of Functions
		HA1-439	Using Function Notation
		HA1-441	Applications of Functions and Relations Involving Distance, Rate, and Time
		HA1-855	Solving Exponential Equations
		HA1-887	Applications of Absolute Value, Step, and Constant Functions
		HA1-892	Data Analysis Using the Graphing Calculator
		HA1-927	Graphing $f(x) = ax^2$ Using Dilations
		HA1-928	Graphing $f(x) = ax^2$ Using Dilations and Reflections
		HA1-929	Graphing $f(x) = ax^2 + c$ Using Dilations, Reflections, and Vertical Translations
		HA1-935	Analyzing Graphs of Quadratic Functions
		HA1-940	Applications of Quadratic Equations
		HA1-945	Real-World Applications of Quadratic Functions
		HA1-950	Graphing Absolute Value Functions
		HA1-955	Analyzing Linear Functions
		HA1-960	Real-World Applications of Linear Functions
		HA1-965	Determining the Best-Fitting Line
MHS:21	Demonstrates conceptual understanding of algebraic expressions by evaluating, simplifying, or writing algebraic expressions; and writes equivalent forms of algebraic expressions or formulas ($d = rt \rightarrow r = d/t$ or solves a multivariable equation or formula for one variable in terms of the others).	HA1-005	Evaluating Algebraic Expressions
		HA1-065	Evaluating Expressions Containing Exponents
		HA1-070	Evaluating Formulas for Given Values of the Variables
		HA1-075	Simplifying Algebraic Expressions by Combining Like Terms
		HA1-076	Basic Distributive Property
		HA1-080	Simplifying and Evaluating Algebraic Expressions Containing Grouping Symbols
		HA1-085	Simplifying Expressions Using the Properties of Real Numbers
		HA1-090	Simplifying Expressions Using the Property of -1
		HA1-095	Translating Word Phrases into Algebraic Expressions
		HA1-135	Evaluating Formulas
		HA1-175	Solving Literal Equations
MHS:22	Demonstrates conceptual understanding of equality by solving linear equations, systems of two linear equations, or problems using tables, graphs, algebraic manipulation, or technology. Demonstrates conceptual understanding of inequality by solving linear inequalities, comparing values of systems of linear functions, using tables, graphs, algebraic manipulatives, or technology.	HA1-115	Using the Addition and Subtraction Properties for Equations
		HA1-120	Using the Multiplication and Division Properties for Equations
		HA1-125	Solving Equations Using More Than One Property
		HA1-140	Solving Equations by Combining Like Terms
		HA1-145	Solving Equations with Variables on Both Sides
		HA1-150	Writing an Equation to Solve Word Problems
		HA1-155	Writing an Equation to Solve Consecutive Integer Problems
		HA1-160	Writing an Equation to Solve Distance, Rate, and Time Problems
		HA1-180	Graphing Equations and Inequalities on the Number Line
		HA1-185	Solving Inequalities Using the Addition and Subtraction Properties
		HA1-190	Solving Inequalities Using the Multiplication and Division Properties
		HA1-195	Solving Inequalities Using More Than One Property
		HA1-375	Identifying Solutions of Equations in Two Variables
		HA1-380	Graphing Linear Equations
		HA1-382	Solving Linear Equations Using the Graphing Calculator
		HA1-415	Graphing Linear Inequalities with Two Variables

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		HA1-416	Graphing Linear Inequalities with Two Variables Using the Graphing Calculator
		HA1-455	Solving Systems of Linear Equations by Graphing
		HA1-460	Solving Systems of Linear Equations by the Substitution Method
		HA1-465	Solving Systems of Linear Equations by the Addition/Subtraction Method
		HA1-470	Solving Systems of Linear Equations by the Multiply/Add/Subtract Method
		HA1-806	Solving Systems of Linear Equations Using the Graphing Calculator
7.9 DATA, STATISTICS, AND PROBABILITY CONCEPTS			
MHS:23	Interprets a given representation(s) (box-and-whisker or scatter plots, histograms, frequency charts) to make observations, to answer questions or justify conclusions, to make predictions, or to solve problems. (IMPORTANT: Analyzes data consistent with concepts and skills in MHS:24.)	MPA-097	Constructing Box-and-Whisker Plots
		MPA-098	Making Predictions from Graphs and Choosing the Correct Graph
		MPA-131	Interpreting and Creating Histograms
		MPA-132	Interpreting and Creating Scatter Plots
		HA1-545	Making a Frequency Distribution Table
		HA1-885	Histograms and the Normal Distribution
		HA1-877	Drawing Inferences and Making Predictions from Tables and Graphs
		HA1-965	Determining the Best-Fitting Line
MHS:24	Analyzes patterns, trends, or distributions in single variable and two variable data in a variety of contexts by determining or using measures of central tendency (mean, median, or mode), dispersion (range or variation), outliers, quartile values, or regression line or correlation (high, low/positive, negative) to analyze situations, or to solve problems; and evaluates the sample from which the statistics were developed (bias, random, or nonrandom).	MPA-095	Find the Mean, Median, and Mode
		MPA-097	Constructing Box-and-Whisker Plots
		HA1-540	Finding the Mean, Median, and Mode from Data and Frequency Distribution Tables
		HA1-541	Analyzing Data Using the Measures of Central Tendency and the Range
		HA1-555	Computing the Range, Variance, and Standard Deviation of a Set of Data
		HA1-877	Drawing Inferences and Making Predictions from Tables and Graphs
		HA1-885	Histograms and the Normal Distribution
		HA1-892	Data Analysis Using the Graphing Calculator
		HA1-965	Determining the Best-Fitting Line
MHS:25	Organizes and displays data using scatter plots, histograms, or frequency distributions to answer questions related to the data, to analyze the data to formulate or justify conclusions, make predictions, or to solve problems; or identifies representations or elements of representations that best display a given set of data or situation, consistent with the representations required in MHS:23. (IMPORTANT: Analyzes data consistent with concepts and skills in MHS:24.)	MPA-098	Making Predictions from Graphs and Choosing the Correct Graph
		MPA-131	Interpreting and Creating Histograms
		MPA-132	Interpreting and Creating Scatter Plots
		HA1-545	Making a Frequency Distribution Table
		HA1-885	Histograms and the Normal Distribution
		HA1-877	Drawing Inferences and Making Predictions from Tables and Graphs
		HA1-965	Determining the Best-Fitting Line
MHS:26	Uses combinations, arrangements or permutations to solve problems or to determine theoretical probability and experimental probability.	MPA-114	Finding the Odds of Events and Experimental Probability from a Math Model
		HA1-560	Determining Probability of an Event and Complementary Event from a Random Experiment
		HA1-565	Solving Problems Involving Independent, Dependent, and Mutually Exclusive and Inclusive Events
		HA1-879	Applying Counting Techniques to Permutations and Combinations

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MHS:27	For a probability event chooses an appropriate probability model/simulations and uses it to estimate a theoretical probability for a chance event and uses the concept of a probability distribution to determine whether an event is rare or reasonably likely.	HA1-560	Determining Probability of an Event and Complementary Event from a Random Experiment
		HA1-565	Solving Problems Involving Independent, Dependent, and Mutually Exclusive and Inclusive Events
MHS:28	In response to a question, designs investigations, considers how data-collection methods affect the nature of the data set (i.e., sample size, bias, randomization, control group), collects data using observations, surveys and experiments, purposes and justifies conclusions and predictions based on the data.	MM1-385	Collecting Data
		MPA-098	Making Predictions from Graphs and Choosing the Correct Graph
MHS:29	Compares and contrasts theoretical and experimental probabilities of events; and determines and/or interprets the expected outcome of an event.	MPA-114	Finding the Odds of Events and Experimental Probability from a Math Model
		HA1-560	Determining Probability of an Event and Complementary Event from a Random Experiment
		HA1-565	Solving Problems Involving Independent, Dependent, and Mutually Exclusive and Inclusive Events
2.5 MATHEMATICAL DIMENSIONS, 7.10 MATHEMATICAL PROBLEM SOLVING AND REASONING - APPLICATIONS			
MHS:30	Demonstrate understanding of mathematical problem solving and communication by:		
	• Approach and Reasoning—The strategies and skills used to solve the problem, and the reasoning that supports the approach;	Throughout	
	• Execution—The answer and the mathematical work that supports it;	Throughout	
	• Observations and Extensions—Demonstration of observation, connections, application, extensions, and generalizations;	Throughout	
	• Mathematical Communication—The use of mathematical vocabulary and representation to communicate the solution; and	Throughout	
	• Presentation—Effective communication of how the problem was solved, and of the reasoning used.	Throughout	

MM1-Fundamentals of Mathematics

MPA- Pre-Algebra

HA1-Algebra 1

Note: Standards were taken from the Grade Expectations for Vermont's Framework of Standards and Learning Opportunities document adopted by the Vermont State Board of Education in Spring 2004.