



8th – 10th Grade Correlation to Process Standards

	Mathematics Curriculum Framework	Lesson Number	Lesson Title
NUMBER, NUMBER SENSE AND OPERATIONS			
A.	Use scientific notation to express large numbers and numbers less than one.	MPA-021	Converting Between Standard and Scientific Notation
B.	Identify subsets of the real number system.	MPA-124	Classifying Numbers in the Real Number System
C.	Apply properties of operations and the real number system, and justify when they hold for a set of numbers.	HA1-130	Identifying Postulates, Theorems, and Properties
D.	Connect physical, verbal and symbolic representations of integers, rational numbers and irrational numbers.	MPA-043	Reading and Writing Integers
		MPA-045	Comparing and Ordering Integers
		MPA-044	Finding Opposite and Absolute Values of Integers
		MPA-016	Comparing and Ordering Decimals
		MPA-029	Converting Fractions and Decimals
		MPA-124	Classifying Numbers in the Real Number System
		HA1-015	Graphing Real Numbers Using a Number Line
E.	Compare, order and determine equivalent forms of real numbers.	MPA-043	Reading and Writing Integers
		MPA-045	Comparing and Ordering Integers
		MPA-044	Finding Opposite and Absolute Values of Integers
		MPA-016	Comparing and Ordering Decimals
		MPA-029	Converting Fractions and Decimals
		MPA-124	Classifying Numbers in the Real Number System
		HA1-015	Graphing Real Numbers Using a Number Line
F.	Explain the effects of operations on the magnitude of quantities.	HA1-030	Using Opposites and Absolute Values
		HA1-035	Adding Real Numbers Using a Number Line
		HA1-040	The Addition Rule for Real Numbers
		HA1-045	Subtracting Real Numbers
		HA1-050	Multiplying Real Numbers
		HA1-055	Dividing Real Numbers
		HA1-062	Adding, Subtracting, Multiplying, and Dividing Real Numbers
		HA1-860	Using the Laws of Exponents
		HA1-480	Finding the Square Roots of Rational Numbers
G.	Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.	MM1-350	Identifying and Using Scientific Notation to Express Large Numbers
		MPA-078	Expressing Ratios as Fractions and Determining Equivalency
		MPA-079	Unit rates
		MPA-080	Solving Proportions
H.	Find the square root of perfect squares, and approximate the square root of non-perfect squares.	MPA-064	Finding Square Roots of Perfect Squares
		MPA-065	Estimating Square Roots

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I.	Estimate, compute and solve problems involving scientific notation, square roots and numbers with integer exponents.	MPA-021	Converting Between Standard and Scientific Notation
		HA1-235	Writing, Multiplying, and Dividing Numbers Written in Scientific Notation
		HA1-860	Using the Laws of Exponents
		HA1-480	Finding the Square Roots of Rational Numbers
MEASUREMENT			
A.	Solve increasingly complex non-routine measurement problems and check for reasonableness of results.	<i>Throughout</i>	
B.	Use formulas to find surface area and volume for specified three-dimensional objects accurate to a specified level of precision.	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
		HA1-890	Using Models to Derive Formulas for Two-Dimensional Geometric Figures
		HA1-891	Using Models to Derive Formulas for Three-Dimensional Solids
C.	Apply indirect measurement techniques, tools and formulas, as appropriate, to find perimeter, circumference and area of circles, triangles, quadrilaterals and composite shapes, and to find volume of prisms, cylinders, and pyramids.	MPA-066	Solving Problems Using the Pythagorean Theorem
		MPA-121	Identifying Similar and Congruent Polygons Using Proportions
		MM1-635	Calculating Distance, Rate, or Time by Solving Equations
		MM1-475	Using Proportions to Solve for Unknown Lengths of Sides of Similar Figures
		MPA-055	Finding the Perimeter of a Figure
		MPA-070	Finding the Circumference of a Circle
		MPA-067	Finding the Area of Rectangles and Parallelograms
		MPA-069	Finding the Area of Triangles and Trapezoids
		MPA-071	Finding the Area of a Circle
		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
D.	Use proportional reasoning and apply indirect measurement techniques, including right triangle trigonometry and properties of similar triangles, to solve problems involving measurements and rates.	MM1-475	Using Proportions to Solve for Unknown Lengths of Sides of Similar Figures
		MPA-121	Identifying Similar and Congruent Polygons Using Proportions
		MPA-111	Comparing Perimeters, Areas, and Volumes of Similar Geometric Figures and Solids
		HA1-515	Using the Pythagorean Theorem
		HA1-516	Applications of the Pythagorean Theorem
E.	Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision.	<i>Grade Level Content under Review</i>	
F.	Write and solve real-world, multi-step problems involving money, elapsed time and temperature, and verify reasonableness of solutions.	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
		MM1-555	Determining Elapsed Time from A.M. to P.M. and P.M. to A.M.
GEOMETRY AND SPATIAL SENSE			
A.	Formally define geometric figures.	HA1-890	Using Models to Derive Formulas for Two-Dimensional Geometric Figures
		HA1-891	Using Models to Derive Formulas for Three-Dimensional Solids
B.	Describe and apply the properties of similar and congruent figures; and justify conjectures involving similarity and congruence.	MPA-121	Identifying Similar and Congruent Polygons Using Proportions

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C.	Recognize and apply angle relationships in situations involving intersecting lines, perpendicular lines and parallel lines.	MPA-057	Identifying and Applying Supplementary and Complementary Angles
		MPA-105	Determining the Measure of Angles Made by Parallel Lines and a Transversal
D.	Use coordinate geometry to represent and examine the properties of geometric figures.	<i>Future Release</i>	<i>Geometry Lessons: HGM-240 Exploring Properties of Rectangles; HGM-245 Exploring Properties of Rhombi; HGM-250 Exploring Properties of Squares HGM-255 Exploring Properties of Trapezoids(using Coordinate Geometry)</i>
E.	Draw and construct representations of two- and three-dimensional geometric objects using a variety of tools, such as straightedge, compass and technology.	<i>Grade Level Content under Review</i>	
F.	Represent and model transformations in a coordinate plane and describe the results.	MPA-108	Graphing Translations and Reflections on the Coordinate Plane
		MPA-120	Applying Dilations in the Coordinate Plane
G.	Prove or disprove conjectures and solve problems involving two- and three-dimensional objects represented within a coordinate system.	<i>Grade Level Content under Review</i>	
H.	Establish the validity of conjectures about geometric objects, their properties and relationships by counter-example, inductive and deductive reasoning, and critiquing arguments made by others.	<i>Future Release</i>	<i>Geometry Lesson: HGM-027 Identifying Counterexamples and Using Proof by Contradiction</i>
I.	Use right triangle trigonometric relationships to determine lengths and angle measures.	<i>Future Release</i>	<i>Geometry Lesson: HGM-340 Exploring Trigonometric Ratios; HGM-345 Applying Trigonometric Ratios</i>
PATTERNS, FUNCTIONS AND ALGEBRA			
A.	Generalize and explain patterns and sequences in order to find the next term and the nth term.	HA1-447	Identifying Number Patterns
		HA1-448	Finding the nth Term of a Pattern
B.	Identify and classify functions as linear or nonlinear, and contrast their properties using tables, graphs or equations.	HA1-955	Analyzing Linear Functions
C.	Translate information from one representation (words, table, graph or equation) to another representation of a relation or function.	HA1-104	Translating Word Statements into Equations
		HA1-105	Translating Word Statements into Inequalities
		HA1-436	Identifying Relations
		HA1-437	Identifying Relations as Functions
D.	Use algebraic representations, such as tables, graphs, expressions, functions and inequalities, to model and solve problem situations.	HA1-104	Translating Word Statements into Equations
		HA1-105	Translating Word Statements into Inequalities
		HA1-436	Identifying Relations
		HA1-437	Identifying Relations as Functions
E.	Analyze and compare functions and their graphs using attributes, such as rates of change, intercepts and zeros.	HA1-955	Analyzing Linear Functions
		HA1-291	Factoring Quadratic Equations Using the Graphing Calculator
F.	Solve and graph linear equations and inequalities.	HA1-382	Solving Linear Equations Using the Graphing Calculator
		HA1-380	Graphing Linear Equations
		HA1-398	Graphing Linear Equations Using Slope and y-Intercept or Slope and a Point
		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
		HA1-415	Graphing Linear Inequalities with Two Variables
		HA1-416	Graphing Linear Inequalities with Two Variables Using the Graphing Calculator
G.	Solve quadratic equations with real roots by graphing, formula and factoring.	HA1-291	Factoring Quadratic Equations Using the Graphing Calculator
		HA1-270	Factoring the Greatest Common Monomial Factor from a Polynomial
		HA1-275	Factoring the Difference Between Two Squares and Perfect Trinomial Squares
		HA1-280	Factoring $x^2 + bx + c$ When c is Greater Than Zero
		HA1-285	Factoring $x^2 + bx + c$ When c is Less Than Zero

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		HA1-290	Factoring $ax^2 + bx + c$
		HA1-305	Solving Polynomial Equations by Factoring
		HA1-310	The Practical Use of Polynomial Equations
H.	Solve systems of linear equations involving two variables graphically and symbolically.	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
I.	Model and solve problem situations involving direct and inverse variation.	HA1-450	Solving Problems Involving Direct Variation
		HA1-453	Solving Problems Involving Inverse Variation
J.	Describe and interpret rates of change from graphical and numerical data.	HA1-955	Analyzing Linear Functions
		HA1-960	Real-World Applications of Linear Functions
DATA ANALYSIS AND PROBABILITY			
A.	Create, interpret and use graphical displays and statistical measures to describe data; e.g., box-and-whisker plots, histograms, scatter plots, measures of center and variability.	MPA-097	Constructing Box-and-Whisker Plots
		MPA-131	Interpreting and Creating Histograms
		MPA-132	Interpreting and Creating Scatter 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
B.	Evaluate different graphical representations of the same data to determine which is the most appropriate representation for an identified purpose.	MPA-092	Reading and Interpreting Bar, Line, and Circle Graphs
		MPA-098	Making Predictions from Graphs and Choosing the Correct Graph
C.	Compare the characteristics of the mean, median and mode for a given set of data, and explain which measure of center best represents the data.	HA1-541	Analyzing Data Using the Measures of Central Tendency and the Range
D.	Find, use and interpret measures of center and spread, such as mean and quartiles, and use those measures to compare and draw conclusions about sets of data.	HA1-541	Analyzing Data Using the Measures of Central Tendency and the Range
		MPA-097	Constructing Box-and-Whisker Plots
E.	Evaluate the validity of claims and predictions that are based on data by examining the appropriateness of the data collection and analysis.		
F.	Construct convincing arguments based on analysis of data and interpretation of graphs.		
G.	Describe sampling methods and analyze the effects of method chosen on how well the resulting sample represents the population.		
H.	Use counting techniques, such as permutations and combinations, to determine the total number of options and possible outcomes.	HA1-879	Applying Counting Techniques to Permutations and Combinations
		HA1-560	Determining Probability of an Event and Complementary Event from a Random Experiment
I.	Design an experiment to test a theoretical probability, and record and explain results.	HA1-565	Solving Problems Involving Independent, Dependent, and Mutually Exclusive and Inclusive Events
J.	Compute probabilities of compound events, independent events, and simple dependent events.	HA1-565	Solving Problems Involving Independent, Dependent, and Mutually Exclusive and Inclusive Events
K.	Make predictions based on theoretical probabilities and experimental results.	HA1-565	Solving Problems Involving Independent, Dependent, and Mutually Exclusive and Inclusive Events
MATHEMATICAL PROCESSES			
A.	Formulate a problem or mathematical model in response to a specific	Grade Level	

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	need or situation, determine information required to solve the problem, choose method for obtaining this information, and set limits for acceptable solution.	<i>Content under Review</i>	
B.	Apply mathematical knowledge and skills routinely in other content areas and practical situations.	<i>Throughout</i>	
C.	Recognize and use connections between equivalent representations and related procedures for a mathematical concept; e.g., zero of a function and the x-intercept of the graph of the function, apply proportional thinking when measuring, describing functions, and comparing probabilities.	<i>Throughout</i>	
D.	Apply reasoning processes and skills to construct logical verifications or counter-examples to test conjectures and to justify and defend algorithms and solutions.	MPA--007	Solving Problems Using Logical Reasoning Skills
		HA1-886	Unions and Intersections of Sets Using Venn Diagrams
		HA1-881	Completing and Validating Algebraic Proofs
E.	Use a variety of mathematical representations flexibly and appropriately to organize, record and communicate mathematical ideas.	<i>Throughout</i>	
F.	Use precise mathematical language and notations to represent problem situations and mathematical ideas.	<i>Throughout</i>	
G.	Write clearly and coherently about mathematical thinking and ideas.	<i>Throughout</i>	
H.	Locate and interpret mathematical information accurately, and communicate ideas, processes and solutions in a complete and easily understood manner.	<i>Throughout</i>	

MM1-Fundamentals of Mathematics

MPA- Pre-Algebra

HA1-Algebra 1

Note: Standards were taken from the Ohio K-12 Benchmark and Indicators by Grade Level document adopted by the Ohio State Board of Education in December, 2001.