



## 9<sup>th</sup>-12<sup>th</sup> Grade Core Learning Goals Correlation

|                              | Core Learning Goals   | Lesson Number | Lesson Title   |
|------------------------------|---|---------------|--|
| <b>FUNCTIONS AND ALGEBRA</b> |   |               |  |
| 1.1.1.                       | The student will recognize, describe, and/or extend patterns and functional relationships that are expressed numerically, algebraically, and/or geometrically.  | MPA-104       | Recognizing Patterns   |
|                              |   | HA1-447       | Identifying Number Patterns  |
|                              |   | HA1-448       | Finding the <i>n</i> th Term of a Pattern                                    |
| 1.1.2.                       | The student will represent patterns and/or functional relationships in a table, as a graph, and/or by mathematical expression.  | MPA-104       | Recognizing Patterns   |
|                              |   | HA1-380       | Graphing Linear Equations  |
|                              |   | HA1-447       | Identifying Number Patterns  |
|                              |   | HA1-448       | Finding the <i>n</i> th Term of a Pattern                                    |
| 1.1.3.                       | The student will apply addition, subtraction, multiplication, and/or division of algebraic expressions to mathematical and real-world problems.   | HA1-005       | Evaluating Algebraic Expressions   |
|                              |   | HA1-065       | Evaluating algebraic expressions containing exponents                        |
|                              |   | 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 Negative One                   |
|                              |   | HA1-095       | Translating Word Phrases into Algebraic Expressions                          |
|                              |   | HA1-104       | Translating Word Statements into Equations                                   |
| 1.1.4.                       | The student will describe the graph of a non-linear function and discuss its appearance in terms of the basic concepts of maxima and minima, zeros (roots), rate of change, domain and range, and continuity. | HA1-437       | Identifying Relations as Functions   |
|                              |   | HA1-438       | Finding the Domain and Range of Functions                                    |
|                              |   | HA1-935       | Analyzing Graphs of Quadratic Functions                                      |
|                              |   | HA1-945       | Real-World Applications of Quadratic Functions                               |
| 1.2.1.                       | The student will determine the equation for a line, solve linear equations, and/or describe the solutions using numbers, symbols, and/or graphs.  | HA1-100       | Finding Solution Sets of Open Sentences from Given Replacement Sets          |
|                              |   | HA1-104       | Translating Word Statements into Equations                                   |
|                              |   | 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                                   |

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|  |   | HA1-155                           | Writing an Equation to Solve Consecutive Integer Problems   |
|  |   | HA1-160                           | Writing an Equation to Solve Distance, Rate, and Time Problems  |
|  |   | HA1-165                           | Using Equations to Solve Percent Problems   |
|  |   | HA1-170                           | Solving Percent of Change Problems  |
|  |   | HA1-180                           | Graphing Equations and Inequalities on the Number Line  |
|  |   | HA1-375                           | Identifying Solutions of Equations in Two Variables   |
|  |   | HA1-380                           | Graphing Linear Equations   |
|  |   | HA1-382                           | Solving Linear Equations Using the Graphing Calculator  |
|  |   | 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  |
|  |   | HA1-405                           | 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   |
| 1.2.2.                                     | The student will solve linear inequalities and describe the solutions using numbers, symbols, and/or graphs.                          | HA1-105                           | Translating Word Statements into Inequalities   |
|  |   | 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   |
|  |   | HA1-415                           | Graphing Linear Inequalities with Two Variables   |
|  |   | HA1-416                           | Graphing Linear Inequalities with Two Variables Using the Graphing Calculator   |
| 1.2.3.                                     | The student will solve and describe using numbers, symbols, and/or graphs if and where two straight lines intersect.                  | HA1-455                           | Solving Systems of 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  |
|  |   | HA1-475                           | Graphing the Solution Set of a System of Linear Inequalities  |
|  |   | HA1-805                           | Applying Algebra Concepts   |
|  |   | HA1-806                           | Solving Systems of Linear Equations Using the Graphing Calculator   |
|  |   | HA1-870                           | Solving Problems with Systems of Linear Equations and Inequalities  |
| 1.2.4.                                     | The student will describe how the graphical model of a non-linear function represents a given problem and will estimate the solution. | HA1-887                           | Applications of Absolute Value, Step, and Constant Functions  |
|  |   | HA1-945                           | Real-World Applications of Quadratic Functions  |
| 1.2.5.                                     | The student will apply formulas and/or use matrices (arrays of numbers) to solve real-world problems.                                 | HA1-070                           | Evaluating formulas for given values of the variable  |
|  |   | HA1-135                           | Evaluating formulas   |
|  |   | HA1-850                           | Identifying Matrices and Dimensions of a Matrix   |
|  |   | HA1-851                           | Performing Row Operations on Matrices   |
|  |   | <i>New Lessons in Development</i> | <i>Use matrices to display and interpret data. (Fall 2006)</i>  |
|  |   | <i>New Lessons in Development</i> | <i>Add, subtract and use scalar multiplication of matrices with data from business, industrial and consumer situations. (Fall 2006)</i> |
| <b>GEOMETRY, MEASUREMENT AND REASONING</b> |   |                                   |   |
| 2.1.1.                                     | The student will analyze the properties of geometric figures.   | MPA-056                           | Classifying Angles  |
|  |   | MPA-057                           | Identifying and Applying Supplementary and Complementary Angles   |
|  |   | MPA-058                           | Identifying Polygons  |
|  |   | MPA-059                           | Classifying Triangles and Quadrilaterals  |
|  |   | 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   |
| 2.1.2.                                     | The student will identify and/or verify properties of geometric figures using the coordinate plane and concepts from algebra.         | MPA-108                           | Graphing Translations and Reflections on the Coordinate Plane   |

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|                                      |   | MPA-120       | Applying Dilations in the Coordinate Plane                                      |
|                                      |   | 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           |
| 2.1.3.                               | The student will use transformations to move figures, create designs, and/or demonstrate geometric properties.  | MPA-108       | Graphing Translations and Reflections on the Coordinate Plane                   |
|                                      |   | MPA-111       | Comparing Perimeters, Areas and Volumes of Similar Geometric Figures and Solids |
|                                      |   | MPA-120       | Applying Dilations in the Coordinate Plane                                      |
| 2.1.4.                               | The student will construct and/or draw and/or validate properties of geometric figures using appropriate tools and technology.  | MPA-057       | Identifying and Applying Supplementary and Complementary Angles                 |
|                                      |   | MPA-107       | Constructing Three-Dimensional Figures and Examining Their Dimensions           |
|                                      |   | 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           |
|                                      |   | 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                                 |
| 2.2.1.                               | The student will identify and/or verify congruent and similar figures and/or apply equality or proportionality of their corresponding parts.  | MPA-058       | Identifying Polygons  |
|                                      |   | MPA-059       | Classifying Triangles and Quadrilaterals  |
|                                      |   | MPA-111       | Comparing Perimeters, Areas and Volumes of Similar Geometric Figures and Solids |
|                                      |   | MPA-121       | Comparing Similar and Congruent Polygons  |
| 2.2.2.                               | The student will solve problems using two-dimensional figures and/or right triangle trigonometry.   | HA1-515       | Using the Pythagorean Theorem   |
|                                      |   | HA1-516       | Applications of the Pythagorean Theorem   |
| 2.2.3                                | The student will use inductive or deductive reasoning.  | MPA-006       | Determining Reasonableness of Answers and Appropriate Method of Computation     |
|                                      |   | MPA-007       | Solving Problems Using Logical Reasoning Skills                                 |
| 2.3.1.                               | The student will use algebraic and/or geometric properties to measure indirectly.   | MPA-066       | Solving Problems Using the Pythagorean Theorem                                  |
|                                      |   | MPA-110       | Solving Problems Using Proportions, Scale Drawings, Models, and Maps            |
|                                      |   | MPA-121       | Comparing Similar and Congruent Polygons  |
|                                      |   | HA1-515       | Using the Pythagorean Theorem   |
|                                      |   | HA1-516       | Applications of the Pythagorean Theorem   |
| 2.3.2.                               | The student will use techniques of measurement and will estimate, calculate, and/or compare perimeter, circumference, area, volume, and/or surface area of two-and three-dimensional figures and their parts. | MPA-055       | Finding the Perimeter of a Figure   |
|                                      |   | 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 Circles  |
|                                      |   | MPA-071       | Finding the Area of Circles   |
|                                      |   | 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-111       | Comparing Perimeters, Areas and Volumes of Similar Geometric Figures and Solids |
|                                      |   | 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                    |
| <b>DATA ANALYSIS AND PROBABILITY</b> |   |               |   |
| 3.1.1.                               | The student will design and/or conduct an investigation that uses statistical methods to analyze data and communicate results.  | MM1-385       | Collecting Data   |
|                                      |   | HA1-540       | Finding the Mean, Median, and Mode From Data and Frequency Distribution Tables  |

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|        |  | HA1-541            | Analyzing Data Using the Measures of Central Tendency and the Range                                    |
|        |  | HA1-545            | Making a Frequency Distribution Table  |
|        |  | HA1-555            | Computing the Range, Variance, and Standard Deviation of a Set of Data                                 |
|        |  | HA1-560            | Determining the Probability of a Simple Event and its Complement From a Random Experiment              |
| 3.1.2. | The student will use the measures of central tendency and/or variability to make informed conclusions.   | HA1-877<br>MPA-097 | Drawing Inferences and Making Predictions From Tables and Graphs<br>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                                 |
| 3.1.3. | The student will calculate theoretical probability or use simulations or statistical inferences from data to estimate the probability of an event. | HA1-560            | Determining the Probability of a Simple Event and its Complement From a Random Experiment              |
|        |  | HA1-565            | Solving Problems Involving Independent, Dependent, and Mutually Exclusive and Inclusive Events         |
| 3.2.1. | The student will make informed decisions and predictions based upon the results of simulations and data from research.                             | MM1-385            | Collecting Data  |
|        |  | MPA-099            | Recognizing Misleading Statistics and Graphs   |
|        |  | HA1-877            | Drawing Inferences and Making Predictions From Tables and Graphs                                       |
| 3.2.2. | The student will interpret data and/or make predictions by finding and using a line of best fit and by using a given curve of best fit.            | HA1-965            | Determining the Best-Fitting Line  |
| 3.2.3. | The student will communicate the use and misuse of statistics.   | MPA-099            | Recognizing Misleading Statistics and Graphs   |

*MM1-Fundamentals of Mathematics*

*MPA- Pre-Algebra*

*HA1-Algebra 1*

*Note: Standards were taken from the Maryland High School Core Learning Goals - Mathematics document adopted by the Maryland State Board of Education in 2001.*