



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

|                              | Mathematics Curriculum Framework   | Lesson Number | Lesson Title  |
|------------------------------|--|---------------|---|
| <b>NUMBER AND OPERATIONS</b> |  |               |   |
| NO.1.7.1                     | Relate, with and without models and pictures, concepts of ratio, proportion, and percent, including percents less than 1 and greater than 100                      | MM1-360       | Expressing Percent as a Ratio   |
|                              |  | 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                                 |
|                              |  | MPA-078       | Expressing Ratios as Fractions and Determining Equivalency                    |
|                              |  | MPA-080       | Solving Proportions   |
|                              |  | MPA-081       | Converting Fractions, Decimals, and Percents I                                |
|                              |  | MPA-082       | Converting Fractions, Decimals, and Percents II                               |
|                              |  | MPA-110       | Solving Problems Using Proportions, Scale Drawings, Models, and Maps          |
| NO.1.7.2                     | Demonstrate, with and without appropriate technology, an understanding of place value using powers of 10 and write numbers greater than one in scientific notation | MPA-015       | Identifying the Place Value of Decimals Through Thousandths                   |
|                              |  | MPA-020       | Multiplying Decimals by Powers of Ten   |
|                              |  | MPA-021       | Converting Between Standard and Scientific Notation                           |
| NO.1.7.3                     | Convert between scientific notation and standard notation using numbers greater than one.  | MPA-021       | Converting Between Standard and Scientific Notation                           |
| NO.1.7.4                     | Find decimal and percent equivalents for mixed numbers and explain why they represent the same value   | MPA-081       | Converting Fractions, Decimals, and Percents I                                |
|                              |  | MPA-082       | Converting Fractions, Decimals, and Percents II                               |
| NO.1.7.5                     | Compare and represent integers, fractions, decimals and mixed numbers and find their approximate location on a number line   | MPA-016       | Comparing and Ordering Decimals   |
|                              |  | MPA-031       | Comparing and Ordering Fractions and Decimals                                 |
|                              |  | MPA-045       | Comparing and Ordering Integers   |
| NO.1.7.6                     | Recognize subsets of the real number system (natural, whole, integers, rational, and irrational numbers)   | MPA-124       | Classifying Numbers in the Real Number System                                 |
| NO.2.7.1                     | Apply the distributive property of multiplication over addition or subtraction to simplify computations with integers, fractions and decimals                      | MPA-002       | Adding, Subtracting, Multiplying, and Dividing Whole Numbers                  |
|                              |  | HA1-076       | Basic Distributive Property   |
| NO.2.7.2                     | Apply the addition, subtraction, multiplication and division properties of equality to one-step equations with integers, fractions, and decimals                   | MPA-010       | Solving One-Step Equations of Whole Numbers Using Addition and Subtraction    |
|                              |  | MPA-011       | Solving One-Step Equations of Whole Numbers Using Multiplication and Division |
|                              |  | MPA-012       | Solving One-Step Equations of Whole Numbers Using All Operations              |
|                              |  | MPA-038       | Solving One-Step Equations with Fractions Using Addition and Subtraction      |
|                              |  | MPA-039       | Solving One-Step Equations with Fractions Using Multiplication and Division   |

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|----------|---|-------------------|---|
|          |   | MPA-040           | Solving One-Step Equations with Decimals Using All Four Operations          |
|          |   | MPA-042           | Solving Problems Using an Equation  |
|          |   | MPA-054           | Solving One-Step Equations with Integers Using all Four Operations          |
| NO.2.7.3 | Apply rules (conventions) for order of operations to integers and positive rational numbers including parentheses, brackets or exponents  | MPA-008           | Order of Operations   |
| NO.2.7.4 | Model and develop addition, subtraction, multiplication and division of integers  | MM1-580           | Adding Integers with Like and Unlike Signs                                  |
|          |   | MM1-585           | Subtracting Integers with Like and Unlike Signs                             |
|          |   | MPA-048           | Adding Integers with Unlike Signs   |
|          |   | MPA-117           | Modeling Integer Arithmetic Using Cups and Counters                         |
| NO.3.7.1 | Compute, with and without appropriate technology, with integers and positive rational numbers using real world situations to solve problems   | MPA-018           | Adding and Subtracting Decimals   |
|          |   | MPA-019           | Multiplying Decimals  |
|          |   | MPA-022           | Dividing Decimals   |
|          |   | MPA-023           | Rounding Quotients Involving 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                     |
|          |   | <i>Throughout</i> |   |
| NO.3.7.2 | Solve with and without appropriate technology, multi-step problems using a variety of methods and tools (i.e., objects, mental computation, paper and pencil)                                       | MPA-003           | Using Four-Step Plan for Problem Solving                                    |
|          |   | MPA-004           | Using Rounding to Estimate  |
|          |   | MPA-005           | Estimating Products and Quotients Using Patterns                            |
|          |   | MPA-007           | Solving Problems Using Logical Reasoning Skills                             |
|          |   | MPA-116           | Solving Real-Life Problems by Using Guess-and-Check and Working Backwards   |
|          |   | <i>Throughout</i> |   |
| NO.3.7.3 | Determine when an estimate is sufficient and use estimation to decide whether answers are reasonable in problems including fractions and decimals   | MPA-006           | Determining Reasonableness of Answers and Appropriate Method of Computation |
|          |   | MPA-017           | Rounding Decimals and Estimating Computations Using Decimals                |
|          |   | MPA-023           | Rounding Quotients Involving Decimals                                       |
|          |   | MPA-033           | Estimating Computations with Fractions and Mixed Numbers                    |
|          |   | <i>Throughout</i> |   |
| NO.3.7.4 | Apply factorization, LCM, and GCF to solve problems using more than two numbers and explain the solution  | MPA-026           | Using Prime Factorization   |
|          |   | MPA-027           | Finding the Greatest Common Factor  |
|          |   | MPA-028           | Reducing Fractions to Lowest Terms/Simplest Form                            |
|          |   | MPA-030           | Finding Least Common Multiple of Two or More Numbers                        |
| NO.3.7.5 | Represent and solve problem situations that can be modeled by and solved using concepts of absolute value, exponents and square roots (for perfect squares) with and without appropriate technology | MPA-013           | Using Powers and Exponents in Expressions                                   |
|          |   | MPA-044           | Finding Opposite and Absolute Values of Integers                            |

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|----------------|--|---------------|---|
|                |  | MPA-050       | Subtracting Integers with Unlike Signs  |
|                |  | MPA-064       | Finding Square Roots of Perfect Squares                                       |
|                |  | MPA-066       | Solving Problems Using the Pythagorean Theorem                                |
| NO.3.7.6       | Solve, with and without technology, real world percent problems, EX. I = PRT   | 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                         |
| <b>ALGEBRA</b> |  |               |   |
| A.4.7.1        | Create and complete a function table (input/output) using a given rule with two operations   | HA1-438       | Finding the Domain and Range of Functions                                     |
| A.4.7.2        | Identify and extend patterns in real world situations  | MPA-104       | Recognizing Patterns  |
|                |  | HA1-447       | Identifying Number Patterns   |
| A.4.7.3        | Interpret and write a rule for a two operation function table, ex. multiply by 2, add 1  |               |   |
| A.5.7.1        | Solve and graph one-step linear equations and inequalities using a variety of methods (i.e., hands-on, inverse operations, symbolic) with real world application with and without technology             | MPA-010       | Solving One-Step Equations of Whole Numbers Using Addition and Subtraction    |
|                |  | MPA-011       | Solving One-Step Equations of Whole Numbers Using Multiplication and Division |
|                |  | MPA-012       | Solving One-Step Equations of Whole Numbers Using All Operations              |
|                |  | MPA-038       | Solving One-Step Equations with Fractions Using Addition and Subtraction      |
|                |  | MPA-039       | Solving One-Step Equations with Fractions Using Multiplication and Division   |
|                |  | MPA-040       | Solving One-Step Equations with Decimals Using All Four Operations            |
|                |  | MPA-054       | Solving One-Step Equations with Integers Using all Four Operations            |
|                |  | MPA-109       | Solving and Graphing Linear Inequalities on a Number Line                     |
| A.5.7.2        | Solve simple linear equations using integers and graph on a coordinate plane, Ex. use a T chart  | MPA-102       | Graphing Equations by Plotting Points   |
| A.5.7.3        | Translate phrases and sentences into algebraic expressions and equations including parentheses and positive and rational numbers and simplify algebraic expressions by combining like terms              | MPA-041       | Writing Simple Algebraic Expressions from Phrases                             |
|                |  | HA1-075       | Simplifying Algebraic Expressions by Combining Like Terms                     |
|                |  | HA1-095       | Translating Word Phrases into Algebraic Expressions                           |
|                |  | HA1-104       | Translating Word Statements into Equations                                    |
| A.5.7.4        | Write and evaluate algebraic expressions using positive rational numbers   | MPA-014       | Evaluating Expressions for Given Variables                                    |
|                |  | HA1-005       | Evaluating Algebraic Expressions  |
|                |  | HA1-060       | Evaluating Expressions Using the Order of Operations                          |
|                |  | HA1-065       | Evaluating Expressions Containing Exponents                                   |
|                |  | HA1-080       | Simplifying and Evaluating Algebraic Expressions Containing Grouping Symbols  |
|                |  | HA1-095       | Translating Word Phrases into Algebraic Expressions                           |
| A.6.7.1        | Use tables and graphs to represent linear equations by plotting, with and without appropriate technology, points in a coordinate plane   | MPA-046       | Graphing Points on a Coordinate Plane   |
|                |  | MPA-102       | Graphing Equations by Plotting Points   |
| A.6.7.2        | Represent, with and without appropriate technology, linear equations by plotting and graphing points in the coordinate plane using all four quadrants given data in a table from a real world situation, | MPA-102       | Graphing Equations by Plotting Points   |
|                |  | HA1-375       | Identifying Solutions of Equations in Two Variables                           |

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| A.6.7.3            | Create and complete a function table (input/output) using a given rule with two operations in real world situations  | HA1-380<br>HA1-438 | Graphing Linear Equations<br>Finding the Domain and Range of Functions                        |
|                    |  | HA1-439            | Using Function Notation   |
| A.7.7.1            | Use, with and without appropriate technology, tables and graphs to compare and identify situations with constant or varying rates of change  |                    |   |
| <b>GEOMETRY</b>    |  |                    |   |
| G.8.7.1            | Identify, draw, classify and compare geometric figures using models and real world examples  | MPA-058            | Identifying Polygons  |
|                    |  | MPA-059            | Classifying Triangles and Quadrilaterals  |
|                    |  | MPA-072            | Identifying 3-D Figures   |
|                    |  | MPA-106            | Identifying a Solid Figure From a Net   |
|                    |  | MPA-107            | Constructing Three-Dimensional Figures and Examining Their Dimensions                         |
|                    |  | MPA-121            | Identifying Similar and Congruent Polygons Using Proportions                                  |
| G.8.7.2            | Investigate geometric properties and their relationships in one-, two-, and three-dimensional models, including convex and concave polygons  | MPA-111            | Comparing Perimeters, Areas, and Volumes of Similar Geometric Figures and Solids              |
| G.8.7.3            | Recognize the pairs of angles formed and the relationship between the angles including two intersecting lines and parallel lines cut by a transversal (vertical, supplementary, complementary, corresponding, alternate interior, alternate exterior angles and linear pair) | MPA-056            | Classifying Angles  |
|                    |  | MPA-057            | Identifying and Applying Supplementary and Complementary Angles                               |
|                    |  | MPA-105            | Determining the Measure of Angles Made by Parallel Lines and a Transversal                    |
| G.8.7.4            | Use paper or physical models to determine the sum of the measures of interior angles of triangles and quadrilaterals   | MPA-060            | Determining Which Figures Tessellate  |
|                    |  | MPA-105            | Determining the Measure of Angles Made by Parallel Lines and a Transversal                    |
| G.8.7.5            | Model and develop the concept that pi ( $\pi$ ) is the ratio of the circumference to the diameter of any circle  | MM1-515            | Defining a Circle   |
|                    |  | MPA-070            | Finding the Circumference of a Circle   |
| G.8.7.6            | Develop the properties of similar figures (ratio of sides and congruent angles)  | MPA-111            | Comparing Perimeters, Areas, and Volumes of Similar Geometric Figures and Solids              |
|                    |  | MPA-121            | Identifying Similar and Congruent Polygons Using Proportions                                  |
| G.9.7.1            | Examine the congruence, similarity, and line or rotational symmetry of objects using transformations   | MM1-500            | Using Translations, Rotations and Reflections to Transform Shapes                             |
| G.9.7.2            | Perform translations and reflections of two-dimensional figures using a variety of methods (paper folding, tracing, graph paper)   | MPA-108            | Graphing Translations and Reflections on the Coordinate Plane                                 |
| G.10.7.1           | Plot points in the coordinate plane  | MPA-046            | Graphing Points on a Coordinate Plane   |
| G.10.7.2           | Plot points that form the vertices of a geometric figure and draw, identify and classify the figure.   | MPA-108            | Graphing Translations and Reflections on the Coordinate Plane                                 |
|                    |  | MPA-120            | Applying Dilations in the Coordinate Plane  |
| G.11.7.1           | Build three-dimensional solids from two-dimensional patterns (nets)  | MPA-106            | Identifying a Solid Figure From a Net   |
|                    |  | MPA-107            | Constructing Three-Dimensional Figures and Examining Their Dimensions                         |
| G.11.7.2           | Construct a building out of cubes from a set of views (front, top, side)   | HA1-893            | Constructing Solids from Different Perspectives   |
| <b>MEASUREMENT</b> |  |                    |   |
| M.12.7.1           | Understand, select and use the appropriate units and tools (metric and customary) to measure length, weight, mass and volume to the required degree of accuracy for real world problems  | MPA-130            | Developing a Sense of Relative Sizes of Measures  |
|                    |  | <i>Throughout</i>  |   |
| M.12.7.2           | Understand relationships among units within the same system  | MPA-061<br>MPA-062 | Converting Metric Units of Length, Capacity, and Mass<br>Converting Units in Customary System |
| M.12.7.3           | Find different areas for a given perimeter and find a different perimeter for a given area   | MPA-111            | Comparing Perimeters, Areas, and Volumes of Similar Geometric Figures and Solids              |

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|--------------------------------------|--|-------------------------------|--|
| M.13.7.1                             | Solve real world problems involving two or more elapsed times, counting forward and backward (calendar and clock)  | MM1-555                       | Determining Elapsed Time from A.M. to P.M. and P.M. to A.M.  |
|                                      |  | MM1-560                       | Identifying Time Zones and Determining Elapsed Time Between Zones  |
| M.13.7.2                             | Draw and measure distance to the nearest mm and 1/16 inch accurately   | MPA-133                       | Distinguishing Between Exact and Approximate Answers ( <b>future release</b> )   |
| M.13.7.3                             | Develop and use strategies to solve problems involving area of a trapezoid and circumference and area of a circle  | 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   |
| M.13.7.4                             | Derive and use formulas for surface area and volume of prisms and cylinders and justify them using geometric models and common materials   | 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  |
| M.13.7.5                             | Apply properties (scale factors, ratio, and proportion) of congruent or similar triangles to solve problems involving missing lengths and angle measures   | MPA-115<br>HA1-891<br>MPA-111 | Finding the Volumes of Prisms, Cylinders, Pyramids, and Cones Using Models<br>Using Models to Derive Formulas for Three-Dimensional Solids<br>Comparing Perimeters, Areas, and Volumes of Similar Geometric Figures and Solids |
| M.13.7.6                             | Find the distance between two points on a number line and locate the midpoint  | <i>Lesson in Development</i>  | HGM-010 Measuring and Drawing Segments   |
| M.13.7.7                             | Estimate and compute the area of more complex or irregular two-dimensional shapes by dividing them into more basic shapes  | MPA-068                       | Finding the Area of Irregular Figures  |
| <b>DATA ANALYSIS AND PROBABILITY</b> |  |                               |  |
| DAP.14.7.2                           | Explain which types of display are appropriate for various data sets (line graph for change over time, circle graph for part-to-whole comparison, scatter plot for trends)                               | MPA-092                       | Reading and Interpreting Bar, Line, and Circle Graphs  |
|                                      |  | MPA-098                       | Making Predictions from Graphs and Choosing the Correct Graph  |
| DAP.14.7.3                           | Construct and interpret circle graphs, box-and-whisker plots, histograms, scatter plots and double line graphs with and without appropriate technology   | MM1-400                       | Interpreting Double Bar Graphs   |
|                                      |  | MPA-092                       | Reading and Interpreting Bar, Line, and Circle Graphs  |
|                                      |  | 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   |
| DAP.15.7.1                           | Analyze data displays, including ways that they can be misleading  | MPA-098                       | Making Predictions from Graphs and Choosing the Correct Graph  |
|                                      |  | MPA-099                       | Recognizing Misleading Statistics and Graphs   |
| DAP.15.7.2                           | Analyze, with and without appropriate technology, a set of data by using and comparing measures of central tendencies (mean, median, mode) and measures of spread (range, quartile, interquartile range) | MPA-095                       | Find the Mean, Median, and Mode  |
|                                      |  | MPA-097                       | Constructing Box-and-Whisker Plots   |
| DAP.16.7.1                           | Make, with and without appropriate technology, conjectures of possible relationships in a scatter plot and approximate the line of best fit (trend line)   | MPA-132                       | Interpreting and Creating Scatterplots   |
| DAP.17.7.1                           | Understand that <i>probability</i> can take any value between 0 and 1 (events that are not going to occur have <i>probability</i> 0, events certain to occur have <i>probability</i> 1)                  | MPA-090                       | Finding the Probability of Simple Real-Life Events   |
| DAP.17.7.2                           | Design, with and without appropriate <i>technology</i> , an experiment to test a <i>theoretical probability</i> and explain how the results may vary   | MM1-235                       | Finding Experimental Probability   |

*MM1-Fundamentals of Mathematics (Fall 2005)*

*MPA- Pre-Algebra*

*HA1-Algebra 1*

*Note: Standards were taken from the Arkansas K-8 Mathematics Curriculum Framework document adopted by the Arkansas State Board of Education and revised in 2004.*