# MVS Course Alignment Document

## Pre-Algebra

*Delineates Recommended Content

### STRAND 1: NUMBER AND OPERATIONS

| Solve decimal, percentage and rational number problems | | Unit | Lesson | Resources |
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| N.FL.06.14 | For applied situations, estimate the answers to calculations involving operations with rational numbers | 3 | 3A.1, 3A.2, 3A.3, 3A.4, 3A.5 | **Holt E-text:** Section 3.1, 3.2, 3.3, 3.4, 3.5 |
| N.FL.06.15 | Solve applied problems that use the four operations with appropriate decimal numbers | 3 | 3A.2, 3A.3, 3A.4 | **Holt E-text:** Section 3.2, 3.3, 3.4 |
| **Multiply and Divide Fractions** | | **Unit** | **Lesson** | **Resources** |
| N.MR.05.13 | Divide a fraction by a whole number and a whole number by a fraction, using simple unit fractions. | 3 | 3A.4 | **Holt E-text:** Section 3.4; **GIZMO:** Dividing Fractions |
| N.FL.05.14 | Add and subtract fractions with unlike denominators through 12 and/or 100, using the common denominator that is the product of the denominators of the 2 fractions | 3 | 3A.5 | **Holt E-text:** Section 3.5; **GIZMO:** Fractions with Unlike Denominators |
| N.MR.06.01 | Understand division of fractions as the inverse of multiplication | 3 | 3A.4 | **Holt E-text:** Section 3.4; **GIZMO:** Dividing Fractions |
| N.FL.06.02 | Given an applied situation involving dividing fractions, write a mathematical statement to represent the situation | 3 | 3A.4 | **Holt E-text:** Section 3.4; **GIZMO:** Dividing Fractions |
| N.MR.06.03 | Solve for the unknown in equations | 2 | 2A.4 | **Holt E-text:** Section 2.4 |
| N.FL.06.04 | Multiply and divide any two fractions, including mixed numbers, fluently | 3 | 3A.3, 3A.4 | **Holt E-text:** Section 3.3, 3.4; **GIZMO:** Dividing Fractions |
| **Understand rational numbers** | | **Unit** | **Lesson** | **Resources** |
| N.ME.06.05 | Order rational numbers and place them on the number line | 3 | 3B.1 | **Holt E-text**: Section 8.1; **GIZMO:** Ordering Percent, Fractions, and Decimals; |
| N.ME.06.17 | Locate negative rational numbers (including integers) on the number line; know that numbers and their negatives add to 0, and are on opposite sides and at equal distance from 0 on a number line | 3 | 3A.2 | **Holt E-text:** Section 3.2 |
| N.MR.06.08 | Understand integer subtraction as the inverse of integer addition | 2 | 2A.1, 2A.2 | **Holt E-text:** Section 2.1, 2.2; **GIZMO:** Adding and Subtracting Integers |
| N.FL.06.09 | Add and multiply integers between -10 and 10; subtract and divide integers using the related facts. Use the number line and chip models for addition and subtraction. | 2 | 2A.1, 2A.2, 2A.3 | **Holt E-text:** Section 2.1, 2.2, 2.3; **GIZMO:** Adding and Subtracting Integers |
| N.FL.06.10 | Add, subtract, multiply and divide positive rational numbers fluently | 2 | 2A.1, 2A.2, 2A.3 | **Holt E-text:** Section 2.1, 2.2, 2.3; **GIZMO:** Adding and Subtracting Integers |
| N.ME.06.06 | Represent rational numbers as fractions or terminating decimals when possible, and translate between these representations. | 3 | 3A.1 | **Holt E-text:** Section 3.1 |
| N.ME.08.03 | Understand that in decimal form, rational numbers either terminate or eventually repeat, and that calculators truncate or round repeating decimals; locate rational numbers on the number line; know fraction forms of common repeating decimals | 3 | 3A.1 | **Holt E-text:** Section 3.1 |
| **Recognize irrational numbers** | | **Unit** | **Lesson** | **Resources** |
| N.MR.07.06 | Understand the concept of square root and cube root, and estimate using calculators | 2 | 2B.4, 2B..5 | **Holt E-text:** Section 3.8, 3.9; **GIZMO:** Square Roots |
| N.ME.08.04 | Understand that irrational numbers are those that cannot be expressed as the quotient of two integers, and cannot be represented by terminating or repeating decimals; approximate the position of familiar irrational numbers on the number line | 2 | 2B.6 | **Holt E-text:** Section 3.10 |
| N.ME.08.01 | Understand the meaning of a square root of a number and its connection to the square whose area is the number; understand the meaning ofa cube root and its connection to the volume of a cube | 2 | 2B.4, 2B..5 | **Holt E-text:** Section 3.8, 3.9; **GIZMO:** Square Roots |
| N.ME.08.02 | Understand meanings for zero and negtive integer exponents | 2 | 2B.1, 2B.2, 2B.3 | **Holt E-text:** Section 2.6, 2.7, 2.8; |

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| **N.FL.08.06** | Find square roots of perfect squares and approximate the square roots of non-perfect squares by locating them between consecutive integers | 2 | 2B.4, 2B..5 | **Holt E-text:** Section 3.8, 3.9; **GIZMO:** Square Roots |

## Rates, Ratio, and Proportion

| Understand and solve problems involving rates, ratios, and proportions | | Unit | Lesson | Resources |
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| **N.FL.07.05** | Solve proportion problems using such methods as unit rate, scaling, finding equivalent fractions, and solving the proportion equation a/b = c/d; know how to see patterns about proportional situations in tables | 5 | 5.1, 5.4 | **United Streaming Video:** Proportions & Art Work, Shark & Nautilus; **Holt E-text:** Sections 7.1, 7.4 |
| **N.FL.06.12** | Calculate part of a number given the percentage and the number | 3 | 3B.1, 3B.2, 3B.3, 3B.5 | **Holt E-text:** Section 8.1, 8.2, 8.3 8.5; **GIZMO:** Ordering percents, decimals, and fractions |
| **A.PA.06.01** | Solve applied problems involving rates, including speed | 5 | 5.2 | **United Streaming Video:** Proportions & Art Work; **Holt E-text:** Section 7.2 |
| **N.FL.07.03** | Calculate rates of change including speed | 5 | 5.2 | **United Streaming Video:** Proportions & Art Work; **Holt E-text:** Section 7.2 |
| **N.MR.07.04** | Convert ratio quantities between different systems of units, such as feet per second to miles per hour | 5 | 5.1, 5.2, 5.3 | **United Streaming Video:** Proportions & Art Work, Shark & Nautilus, Conversions & the Colosseum; **Holt E-text:** Section 7.1, 7.2, 7.3 |
| **N.MR.08.07** | Understand percent increase and percent decrease in both sum and product form, e.g., 3% increase of a quantity x is x + .03x = 1.03x | 3 | 3B.4 | **Holt E-text:** Section 8.4 |
| **N.MR.08.08** | Solve problems involving percent increases and decreases | 3 | 3B.4 | **Holt E-text:** Section 8.4 |
| **N.MR.08.10** | Calculate weighted averages such as course grades, consumer price indices, and sports ratings | 3 | 3B.6 | **Holt E-text:** Section 8.6, 8.7 |
| **N.FL.08.09** | Solve problems involving compounded interest or multiple discounts | 3 | 3B.6 | **Holt E-text:** Section 8.6, 8.7, and Chapter 8 Extension |
| **N.FL.08.11** | Solve problems involving ratio units, such as miles per hour, dollars per pound, or persons per square mile | 5 | 5.3 | **United Streaming Video:** Proportions & Art Work, Conversions & the Colosseum; **Holt E-text:** Section 7.3 |

## STRAND 2: GEOMETRY

| Understand the concept of similar polygons, and solve related problems | | Unit | Lesson | Resources |
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| **G.TR.07.03** | Understand that in similar polygons, corresponding angles are congruent and the ratios of corresponding sides are equal; understand the concepts of similar figures and scale factor | 5 | 5.6 | Similarity & Transformation Video; **Holt E-text:** Section 7.6; **GIZMO:** Similar Figures Activity A |
| **G.TR.07.04** | Solve problems about similar figures and scale drawings | 5 | 5.6, 5.7, 5.8, 5.9 | **United Streaming Video:** Scale Drawings & California; Similarity & Transformation Video; **Holt E-text:** Section 7.6, 7.7, 7.8, 7.9; **GIZMO:** Similar Figures Activity A |
| **Understand and apply concepts of transformation and symmetry** | | **Unit** | **Lesson** | **Resources** |
| **G.TR.08.09** | Understand the definiton of a dilation from a point in the plane, and relate it to the definition of similar polygons | 5 | 5.5 | **Holt E-text:** Section 7.5; **GIZMO:** Dilations |
| **G.TR.08.10** | Understand and use reflective and rotational symmetries of two-dimensional shapes and relate them to transformations to solve problems | 4 | 4.11 | **Holt E-text:** Section 5.8 |
| **Solve problems about geometric figures** | | **Unit** | **Lesson** | **Resources** |
| **G.SR.08.04** | Find area and perimeter of complex figures by sub-dividing them into basic shapes (quadrilaterals, triangles, circles) | 4 | 4.1, 4.2 | **United Streaming Video:** Solar Panels Video, Sails and Buildings; **Holt E-text:** Sections 6.1, 6.2; |
| **G.SR.08.05** | Solve applied problems involving areas of triangles, quadrilaterals, and circles. | 4 | 4.1, 4.2. 4.4 | **United Streaming Video:** Solar Panels Video, Sails and Buildings, and Pools and Circles; **Holt E-text:** Sections 6.1, 6.2, 6.4; |
| **G.SR.08.03** | Understand the definition of a circle; know and use the formulas for circumference and area of a circle to solve problems. | 4 | 4.4 | **United Streaming Video:** Pools and Circles; **Holt E-text:** Sections 6.4; |
| **Understand and use the Pythagorean Theorem** | | **Unit** | **Lesson** | **Resources** |
| **G.GS.08.01** | Understand at least one proof of the Pythagorean Theorem; use the Pythagorean Theorem and its converse to solve applied problems including perimeter, area, and volume problems | 4 | 4.3 | **Holt E-text:** Section 6.3 |

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| **G.LO.08.02** | Find the distance between two points on the coordinate plane using the distance formula; recoginze that the distance formula is an application of the Pythagorean Theorem | 4 | 4.3 | **Holt E-text:** Section 6.3 |
| **Relationships between two-dimensional and three-dimensional representations** | | **Unit** | **Lesson** | **Resources** |
| **G.SR.08.08** | Sketch a variety of two-dimensional representations of three-dimensional solids including orthogonal views (top, front, and side), picture views (projective or isometric), and nets; use such two-dimensional representations to help solve problems | 4 | 4.5, 4.11 | **Holt E-text:** Section 6.5, Chapter 6 Extension |
| **G.SR.08.06** | Know the volume formulas for generalized cylinders, generalized cones and pyramids, and spheres, and apply them to solve problems | 4 | 4.6, 4.7, 4.10 | **Holt E-text:** Sections 6.6, 6.7, 6.10 |
| **G.SR.08.07** | Understand the concept of surface area and find the surface area of prisms, cones, spheres, pyramids, and cylinders | 4 | 4.8, 4.9, 4.10 | **United Streaming Video:** Prisms & Cylinders, Pyramids & Cones; **Holt E-text:** Sections 6.8, 6.9, 6.10 |

## STRAND 3: ALGEBRA

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| **Understand and represent linear functions** | | **Unit** | **Lesson** | **Resources** |
| **A.PA.07.06** | Calculate the slope from the graph of a linear function as the ratio of "rise/run" for a pair of points on the graph, and express the answer as a fraction and a decimal; understand that linear functions have slope that is a constant rate of change | 7 | 7.2 | **Holt E-text:** Section 11.2; Graphing in the Coordinated Plane Video; **GIZMO:** Slope Activity A |
| **A.PA.07.01** | Recognize when information given in a table, graph, or formula suggests a directly proportional or linear relationship | 1, 7 | 1.9, 7.1, 7.5 | **Holt E-text :**Section 1.9, 11.1, 11.5**; GIZMO:** Direct Variation |
| **A.PA.07.07** | Represent linear functions in the form y = x + b, y = mx, and y = mx + b, and graph, interpreting slope and y-intercept | 7 | 7.3, 7.4 | **Holt E-text:** Section 11.3, 11.4; **GIZMO:** Slope-Intercept Form of Line Activity A, Point Slope Form |
| **AI.FO.07.08** | Find and interpret the x and/or y intercepts of a linear equation or function. Know that the solution to a linear equation of the form ax + b = 0 corresponds to the point at which the graph of y = ax + b crosses the x-axis | 7 | 7.3, 7.4 | **Holt E-text:** Section 11.3, 11.4; **GIZMO:** Slope-Intercept Form of Line Activity A, Point Slope Form |
| **A.PA.07.05** | Recognize and use directly proportional relationships of the form y = mx, and distinguish from linear relationships of the form y = mx + b, b non-zero; understand that in a directly proportional relationship between two quantities one quantity is a constant multiple of the other quantity | 7 | 7.5 | **Holt E-text :**Section 11.5**; GIZMO:** Direct Variation |
| **A.PA.07.03** | Given a directly proportional or other linear situation, graph, and interpret the slope and intercept(s) in terms of the original situation; evaluate y = mx + b for specific x values, e.g., weight vs. volume of water, base cost plus cost per unit. | 7 | 7.5 | **Holt E-text :**Section 11.5**; GIZMO:** Direct Variation |
| **A.PA.07.04** | For directly proportional of linear situations, solve applied problems using graphs and equations | 7 | 7.5 | **Holt E-text :**Section 11.5**; GIZMO:** Direct Variation |
| **Solve equations** | | **Unit** | **Lesson** | **Resources** |
| **A.FO.06.11** | Relate simple linear equations with integer coefficients | 2 | 2A.4 | **Holt E-text:** Section 2.4 |
| **A.FO.06.12** | Understand that adding or subtracting the same number to both sides of an equation creates a new equation that has the same solution | 6 | 6.1 | **Holt E-text :**Section 10.1 |
| **A.FO.06.13** | Understand that multiplying or dividing both sides of an equation by the same non-zero number creates a new equation that has the same solutions | 6 | 6.1 | **Holt E-text** :Section 10.1 |
| **A.FO.06.14** | Solve equations of the form ax + b = c, e.g., 3x + 8 = 15 by hand for positive integer coefficients less that 20, use calculators otherwise, and interpret the results. | 6 | 6.1, 6.2, 6.3, 6.5 | **Holt E-text :**Sections 10.1, 10.2, 10.3, 10.5 |
| **Understand solutions and solve equations, simultaneous equations, and linear** | | **Unit** | **Lesson** | **Resources** |
| **A.FO.08.12** | Solve linear inequalities in one and two variables, and graph the solution sets | 6 | 6.4 | **Holt E-text:** Section 10.4 |

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| **A.FO.08.10** | Understand that to solve the equation f(x) = g(x) means to find all values of x for which the equation is true, e.g., determine whether a given value or values from a given set, is a solution of an equation | 8 | 8.1, 8.2 | **Holt E-text:** Section 12.4, 12.5; **United Streaming Video:** What are Functions?, Linear Functions and Fireworks |
| **A.FO.08.11** | Solve simultaneous linear equations in two variables by graphing, by substitution, and by linear combination; estimate solutions using graphs; include examples with no solutions and infinitely many solutions. | 6 | 6.6 | **Holt E-text:** Section 10.6 |
| **A.FO.08.13** | Set up and solve applied problems involving simultaneous linear equations and linear inequalities | 6 | 6.4, 6.6 | **Holt E-text:** Section 10.4, 10.6 |
| **Use variables, write expressions and equations, and combine like terms** | | **Unit** | **Lesson** | **Resources** |
| **A.FO.06.03** | Use letters, with units, to represent quantities in a variety of contexts, e.g., y lbs, k minutes, x cookies | 1 | 1.1, 1.2 | **United Streaming Video:** Expressions & Statements; **Holt E-text:** Section 1.1, 1.2 |
| **A.FO.06.05** | Use standard conventions for writing algebraic expressions, e.g., 2x + 1 means "two times x, plus 1" and 2(x + 1) means "two times the quantity (x + 1) | 1 | 1.1, 1.2 | **United Streaming Video:** Expressions & Statements; **Holt E-text:** Section 1.1, 1.2 |
| **A.FO.06.04** | Distinguish between an algebraic expression and an equation | 1 | 1.1, 1.2, 1.3, 1.4 | **United Streaming Video:** Expressions & Statements; **Holt E-text:** Section 1.1, 1.2, 1.3, 1.4 |
| **A.FO.06.06** | Represent information given in words using algebraic expressions and equations | 1 | 1.1, 1.2, 1.3, 1.4 | **United Streaming Video:** Expressions & Statements; **Holt E-text:** Section 1.1, 1.2, 1.3, 1.4 |
| **A.FO.06.07** | Simplify expressions of the first degree by combining like terms, and evaluate using specific values. | 1 | 1.6 | **Holt E-text:** Lesson 1.6 |
| **A.FO.07.12** | Add, subtract, and multiply simple algebraic expressions of the first degree, e.g. (92x + 8y) - 5x + y, or x(x + 2) and justify using properties of real numbers | 1 | 1.6 | **Holt E-text:** Lesson 1.6 |
| **A.FO.07.13** | From applied situations, generate and solve linear equations of the form ax + b = c and ax + b = cx + d, and interpret solutions. | 6 | 6.1, 6.2, 6.3, 6.5 | **Holt E-text :**Sections 10.1, 10.2, 10.3, 10.5 |
| **Recognize, represent, and apply common formulas** | | **Unit** | **Lesson** | **Resources** |
| **A.FO.08.07** | Recognize and apply the common formulas: (a + b)2 = a2 + 2ab + b2; (a - b)2 = a2 - 2ab + b2; (a + b)(a - b) = a2 - b2; represent geometrically | 8 | 8.4 | **Holt E-text:** Section 12.7; **GIZMO:** Quadratic Functions |
| **A.FO.08.08** | Factor simple quadratic expressions with integer coefficients | 8 | 8.4 | **Holt E-text:** Section 12.7; **GIZMO:** Quadratic Functions |
| **A.FO.08.09** | Solve applied problems involving simple quadratic equations | 8 | 8.4 | **Holt E-text:** Section 12.7; **GIZMO:** Quadratic Functions |
| **Understand the concept of non-linear functions using basic examples** | | **Unit** | **Lesson** | **Resources** |
| **A.RP.08.01** | Identify and represent linear functions, quadratic functions, and other simple functions including inversely proportional relationship (y = k/x); cubics (y = ax^3); roots, and exponentials; using tables, graphs, and equations | 8 | 8.2, 8.3, 8.4, 8.5 | **United Streaming Video:** Linear Functions & Fireworks; **Holt E-text:** Section 12.5, 12.6, 12.7, 12.8; **GIZMO:** Quadratic Functions, Exponential Functions - Activity B |
| **A.PA.08.02** | For basic functions, e.g., simple quadratics, direct and indirect variation, and population growth, describe how changes in one variable afftect the others | 8 | 8.4, 8.5 | **Holt E-text:** Section 12.7, 12.8; **GIZMO:** Quadratic Functions |
| **A.PA.08.03** | Recognize basic functions in problem context, e.g., area of a circle, volume of a sphere, and represent them using tables, graphs, and formulas | 8 | 8.1, 8.2 | **Holt E-text:** Section 12.4, 12.5; **United Streaming Video:** What are Functions?, Linear Functions and Fireworks |
| **A.RP.08.04** | Use the vertical line test to determine if a graph represents a function in one variable | 8 | 8.1 | **United Streaming Video:** What are Functions; **Holt E-text:** Section 12.4 |
| **Understand and represent quadratic functions** | | **Unit** | **Lesson** | **Resources** |
| **A.RP.08.05** | Relate quadratic functions in a factored form and vertex form to their graphs, and vice versa; in particular, note that solutions of a quadratic equation are the x-intercepts of the corresponding quadratic function | 8 | 8.4 | **Holt E-text:** Section 12.7; **GIZMO:** Quadratic Functions |
| **A.RP.08.06** | Graph factorable quadratic functions, finding where the graph intersects the x-axis and the coordinates of the vertex, use words "parabola" and "roots"; include functions in vertex form and those with leading coefficient -1 | 8 | 8.4 | **Holt E-text:** Section 12.7; **GIZMO:** Quadratic Functions |

| STRAND 4: DATA AND PROBABILITY | | | | |
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| **Draw, explain, and justify conclusions based on data** | | **Unit** | **Lesson** | **Resources** |
| **D.AN.08.01** | Determine which measure of central tendency (mean, median, mode) best represents a data set, e.g., salaries, home prices, for answering certain questions; justify the chioce made | 10 | 10A.3 | **United Streaming Video:** Surfing; What are Statistics Video; **Holt E-text** Section 4.3 |
| **D.AN.08.02** | Recognize practices of collecting and displaying data that may bias the presentation or analysis | 10 | 10A.1, 10A.4. 10A.5, 10A.6 | What are Statistics Video; **Holt E-text:** Section 4.1, 4.2, 4.5, 4.6; **GIZMO:** Populations & Samples, Estimating Population Size; Organizing Data |
| **Represent and Interpret Data** | | **Unit** | **Lesson** | **Resources** |
| **D.RE.07.01** | Represent and interpret data using circle graphs, stem and leaf plots, histograms, and box-and-whisker plots, and select appropriate representation to address specific questions. | 10 | 10A.2, 10A.5 | **United Streaming Video:** Global Warming; What are Statistics Video; **Holt E-text:** Section 4.4, 4.5, 4.6 |
| **D.AN.07.02** | Create and interpret scatter plots and find line of best fit; use an estimated line of best fit to answer questions about the data | 10 | 10A.7 | What are Statistics Video**; Holt E-text:**Section 4.7; **GIZMO:** Scatterplots |
| **Understand probability concepts for simple and compound events** | | **Unit** | **Lesson** | **Resources** |
| **D.PR.08.05** | Find and/or compare the theoretical probability, the experimental probability, and/or the relative frequency of a given event | 10 | 10B.1, 10B.2, 10B.3 | **United Streaming Video:** What are the chances of that happening, Basketball & Experimental Probabilities, and Baby Gender Video; What is Probability Video; **Holt E-text:** Sections 9.1, 9.2, 9.4; **GIZMOS:** Gometric Probability, Probability Simulations, and Theoretical and Experimental Probability |
| **D.PR.08.06** | Understand the difference between independent and dependent events, and recognize common misconceptions involving probability | 10 | 10B.5 | What is Probability Video; **Holt E-text:** Section 9.7; **GIZMO:** Compound Independent and Dependent Events, and Compound Independent Events |
| **D.PR.08.04** | Apply the Basic Counting Principle to find total number of outcomes possible for independent and dependent events, and calculate the probabilities using organized lists or tree diagrams | 10 | 10B.4 | **Holt E-text:** Section 9.5 |
| **D.PR.08.03** | Compute relative frequencies from a table of experimental results for a repeated event. Interpret the results using relationship of probability to relative frequency. | 10 | 10B.1, 10B.2, 10B.3, 10B.4, 10B.5, 10B.6 | **United Streaming Video:** What are the chances of that happening, Basketball & Experimental Probabilities, and Baby Gender Video; What is Probability Video; **Holt E-text:** Sections 9.1, 9.2, 9.4, 9.5, 9.6, 9.7; **GIZMOS:** Gometric Probability, Probability Simulations, and Theoretical and Experimental Probability, Compound Independent and Dependent Events, and Compound Independent Events |