Moscow School District #281
Mastery Learning Map

Principles of Algebra and Geometry I	
1. Competency Statements for **The Number System**	***Use integers, greatest common factors, least common multiples and rational numbers to solve real world problems.***
"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.	I can: 1. Identify integers and their opposites. 2. Compare and order integers. 3. Define and calculate absolute value. 4. Find the greatest common factor of two whole numbers less than or equal to 100. 5. Find the least common multiple of two numbers less than or equal to 12.
National Standards	6.NS.4, 6.NS.5, 6.NS.6, 6.NS.6c, 6.NS.7a, 6.NS.7b, 6.NS.7c

Principles of Algebra and Geometry I	
2. Competency Statements for **The Number System**	***Use operations with fractions and decimals to solve real world problems.***
"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.	I can: 1. Add, subtract, multiply and divide decimals fluently. 2. Divide multi-digit numbers with the traditional algorithm. 3. Divide fractions and mixed numbers. 4. Solve multistep problems with fractions and mixed numbers. 5. Apply all operations with rational numbers.
National Standards	6.NS.1, 6.NS.2, 6.NS.3, 6.NS.4

Principles of Algebra and Geometry I	
3. Competency Statements for **Ratios and Proportional Relationships** ***"Learning Targets"*** *are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	***Use ratios, rates and percent to solve real world problems.***
	I can: 1. Represent situations as ratios in tables, graphs and rates. 2. Use ratios to convert measurements within a system and between systems. 3. Use ratios, rates and proportions to solve problems. 4. Understand percent as percent, fractions and decimals. 5. Use percent proportion to solve problems.
National Standards	6.RP.1, 6.RP.2, 6.RP.3a, 6.RP.3c, 6.RP.3d

Principles of Algebra and Geometry I	
4. Competency Statements for **Expressions and Equations** *"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	***Generate equivalent numerical and algebraic expressions and use them to solve real world problems.***
	I can: 1. Write and evaluate numerical expressions involving whole-number exponents including those for prime factorization. 2. Model and evaluate expressions where letters stand for numbers. 3. Apply the order of operations to generate equivalent expressions. 4. Determine when two expressions are equivalent.
National Standards	6.EE.1, 6.EE.2, 6.EE.3a, 6.EE.3c

Principles of Algebra and Geometry I	
5. Competency Statements for **Equations and Inequalities** *"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	***Use equations and inequalities to model and solve real-world problems in one variable, and model two-variable relationships in real world problems.***
	I can: 1. Write equations and inequalities to model a situation. 2. Use addition, subtraction, multiplication and division to solve one-step equations and check the solution. 3. Write an inequality from a situation and represent the solution as a graph on a number line. 4. Write equations with a dependent an independent variable from tables and graphs. 5. Represent algebraic relationships in tables and graphs on the coordinate plane.
National Standards	6.NS.6c, 6.EE.5, 6.EE.7, 6.EE.8, 6.EE.9

Moscow School District #281
Mastery Learning Map

Principles of Algebra and Geometry I	
6. Competency Statements for **Relationships in Geometry** *"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	***Use area formulas of triangles and rectangles to find the area of irregular polygons given the dimension, or by finding the dimensions on the coordinate plane. Use a model to help solve surface area and volume problems for rectangular prisms.***
	I can: 1. Use and solve area formulas for quadrilaterals and triangles. 2. Find the area of quadrilaterals, triangles and polygons consisting of quadrilaterals and triangles given the dimensions or by finding the dimensions on the coordinate plane. 3. Represent a three-dimensional solid with a net. 4. Use a net to calculate surface area. 5. Given the formula, I can calculate the volume of a rectangular prism.
National Standards	6.G.1, 6.G.2, 6.G.3, 6.G.4, 6.NS.8

Principles of Algebra and Geometry I	
7. Competency Statements for **Measurement and Data** *"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	***Solve real-world problems by displaying, analyzing and summarizing data.***
	I can: 1. I can calculate the measures of center given a data set (mean, median, mode, range). 2. I can calculate the mean absolute deviation of a data set. 3. I can determine the quartiles in a range of data and display the data as a box plot. 4. I can display data as a dot plot and explain how the distribution reflects the measures of center. 5. I can create a histogram from a data set.
National Standards	6.SP.1, 6.SP.2, 6.SP.3, 6.SP.4, 6.SP.5

Moscow School District #281
Mastery Learning Map

Principles of Algebra and Geometry II	
1. Competency Statements for **The Number System**	***Solve real world problems that require addition, subtraction, multiplication and division of all rational numbers (whole numbers, integers, rational numbers).***
"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.	I can: 1. Add and subtract integers with the same and with different signs. 2. Represent addition and subtraction of integers on a vertical or horizontal number line. 3. Multiply and divide integers with the same and with different signs. 4. Convert fractions to decimals using long division. 5. Apply the properties of operations to add, subtract, multiply and divide rational numbers.
National Standards	7.NS.1a, 7.NS.1b, 7.NS.1c, 7.NS.1d, 7.NS.2a, 7.NS.2b, 7.NS.2c, 7.NS.2c, 7.NS.2d, 7.NS.3

Principles of Algebra and Geometry II	
2. Competency Statements for **Ratios and Proportional Relationships** ***"Learning Targets"*** *are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	***Use the different proportional relationships (rates, unit rates, percent) to solve real-world problems.***
	I can: 1. Determine if a relationship is proportional using a variety of strategies including tables, equations and graphs. 2. Calculate a unit rate and determine the constant of proportionality from a table or graph. 3. Represent proportional relationships with an equation using the constant of proportionality. 4. Use percent to solve multi-step problems such as mark-up, discount, tax and percent of change. 5. Rewrite expressions in equivalent; go between percent proportion and percent equation.
National Standards	7.RP1, 7.RP.2a, 7.RP.2b, 7.RP.2c, 7.RP.2c, 7.RP.2d, 7.RP.3, 7.EE.2, 7.EE.3

Principles of Algebra and Geometry II	
3. Competency Statements for **Expressions and Equations** **"Learning Targets"** *are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	***Given a situation, model the situation using one- or two-step equations or inequalities, and solve after using addition, subtraction, factoring and multiplying to simplify expressions; be able to describe solutions sets graphically.***
	I can: 1. Create equivalent algebraic expressions by combining like terms, including using the distributive property to multiply and factor. 2. Solve one-step equations and inequalities and graph the solution sets on a number line. 3. Solve two-step equations and inequalities and graph the solution sets on a number line. 4. Explain the difference between solving a problem arithmetically and solving algebraically. 5. Interpret solutions to equations and inequalities to make sense in real life; bounded solutions.
National Standards	7.EE.1, 7.EE.2, 7.EE.3, 7.EE.4a, 7.EE.4b

Principles of Algebra and Geometry II	
4. Competency Statements for **Geometry**	***Describe the characteristics of 2-dimensional shapes using constructions, area formulas and angle relationships. Describe the characteristics of 3-dimensional figures using cross sections, surface area and volume formulas.***
"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.	I can: 1. Create scale drawings given scale and the original drawing. 2. Construct lines and triangles given constraints and conditions. 3. Describe angle relationships and use them to determine angle measures in a 2-dimensional figure. 4. Use area formulas for quadrilaterals, triangles and circles to determine the area of a composite shape, including the nets of 3-dimensional objects. 5. Use volume formulas to determine the volume of cubes and prisms. 6. Find the volume of composite figures constructed with cubes and prisms.
National Standards	7.G.1., 7.G.2, 7.G.3, 7.G.4, 7.G.5, 7.G.6

Principles of Algebra and Geometry II	
5. Competency Statements for **Statistics**	*Use knowledge of sampling and populations to examine data sets including comparing using graphs and statistical measures.*
"Learning Targets" *are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	I can: 1. Draw conclusions about the validity of a data set based on the question asked and the sampling method. 2. Use data from random samples in a population to draw conclusions about a data set. 3. Compare two data sets by the amount they overlap and draw conclusions about the relationships between the data sets. 4. Display data sets using line plots and box plots. 5. Compare two data sets by using the measures of central tendency and quartiles and their graphical presentation.
National Standards	7.SP.1, 7.SP.2, 7.SP.3, 7.SP.4

Principles of Algebra and Geometry II	
6. Competency Statements for **Probability**	***Examine chance events and use probability models to describe the likelihood of an event occurring.***
"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.	I can: 1. Model single and compound probabilities using fractions, and describe an event as likely, equally likely or unlikely based on the value of the fraction. 2. Determine the theoretical probability of single and compound events using lists, area models, tree diagrams and the counting principle. 3. Choose the correct way to model outcomes based on the situation. 4. Determine the experimental probability of single and compound events given a data set or through simulation. 5. Make predictions and compare outcomes using theoretical and experimental probabilities.
National Standards	7.SP.5, 7.SP.6, 7.SP.7a, 7.SP.7b, 7.SP.8a, 7.SP.8b, 7.SP.8c

Moscow School District #281
Mastery Learning Map

Principles of Algebra and Geometry III	
1. Competency Statements for **Real Numbers, Exponents, and Scientific Notation** *"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	***Solve real world problems involving real numbers, integer exponents, and scientific notation***
	I can: 1. Convert all real numbers between standard form and scientific notation. 2. Add, subtract, multiply, and divide numbers expressed in scientific notation. 3. Express rational numbers as a decimal and approximate the value or irrational numbers. 4. Describe the order of a set of real numbers arising from mathematical and real-world contexts. 5. Describe the relationship between different sets of real numbers. 6. Apply properties of integer exponents to evaluate expressions.
National Standards	8.NS.1, 8.NS.2, 8.EE.1, 8.EE.2, 8.EE.3, 8.EE.4

Principles of Algebra and Geometry III	
2. Competency Statements for **Proportional and Non-Proportional Relationships and Functions** *"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	*Analyze, model, and solve linear equations and functions.*
	I can: 1. Graph proportional and non-proportional relationships. 2. Interpret unit rate as a slope in a proportional relationship. 3. Write equations of non-proportional relationships in the form $y = mx + b$ when given two points either in a table, graph, or description by identifying slope and y-intercept. 4. Write equations of proportional relationships in the form $y = mx$. 5. Use any two points to create similar triangles proving that the slope m is the same using $\frac{\Delta y}{\Delta x}$. 6. Examine and define a given linear equation in one variable, and determine if it has one solution, no solution, or infinite solutions and give examples. 7. Solve linear equations with rational number coefficients, distributive property, combining like terms, variables on both sides. 8. Understand that a function assigns exactly one output for input and can be graphed by the set of ordered pairs. 9. Compare properties of two functions represented in different ways. 10. Describe features of graphs: where do they increase/decrease or linear/nonlinear.
National Standards	8.EE.5, 8.EE.6, 8.EE.7, 8.F.1, 8.F.2, 8.F.3, 8.F.4, 8.F.5.

Principles of Algebra and Geometry III	
3. Competency Statements for **Solving Equations and Systems of Equations** ***"Learning Targets"*** *are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	***Analyze and solve systems of linear equations***
	I can: 1. Represent and solve real-world situations using a system of two linear equations in two variables algebraically (elimination or substitution). 2. Represent and solve real-world situations using a system of two linear equations in two variables graphically. 3. Understand that the solution to a system of two linear equations is where the lines intersect because the ordered pair will satisfy both equations.
National Standards	8.EE.8

Principles of Algebra and Geometry III	
4. Competency Statements for **Transformational Geometry** *"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	***Describe, verify, and use properties of congruence and similarity in transformations.***
	I can: 1. Identify when a figure is a transformation of another figure and name the transformation. 2. Describe the effects of transformations using coordinates. 3. Represent algebraically the effect of a scale factor applied to two-dimensional figures on a coordinate plane with the origin as its center of dilation. 4. I can identify which transformations would result in a congruent or similar figure and describe the attributes of each.
National Standards	8.G.1, 8.G.2, 8.G.3, 8.G.4

Principles of Algebra and Geometry III	
5. Competency Statements for **Transformational Geometry** *"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	***Apply properties of angle measures to triangles and to parallel lines cut by a transversal to find missing measures.***
	I can: 1. Use informal arguments to show angle relationships created when parallel lines are cut by a transversal (vertical, adjacent, corresponding, alternate interior, alternate exterior, same-side interior, etc.). 2. Use informal arguments to show similarity between triangles using angle-angle criterion. 3. Use properties of parallel lines and transversals to find missing angle measures.
National Standards	8.G.5

Principles of Algebra and Geometry III	
6. Competency Statements for **Measurement Geometry** *"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	***Understand and apply the Pythagorean Theorem***
	I can: 1. Explain a proof of the Pythagorean Theorem and its converse. 2. Apply the Pythagorean Theorem to find unknown lengths of two and three-dimensional right triangles in real-world and mathematical problems. 3. Apply the Pythagorean Theorem to find the distance between two coordinate points.
National Standards	8.G.6, 8.G.7, 8.G.8

Principles of Algebra and Geometry III	
7. Competency Statements for **Statistics**	*Investigate the patterns of association and bivariate data*
"Learning Targets" *are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	I can 1. Represent bivariate data in a scatter plot. 2. Use trend lines on scatter plots to make predictions. 3. Create and analyze two-way frequency tables and relative frequency tables for categorical data. 4. Calculate joint, marginal, and conditional relative frequencies. 5. Construct and analyze scatter plots, and describe patterns and associations seen in a scatter plot.
National Standards	8.SP.1, 8.SP.2, 8.SP.3, 8.SP.4

Algebra I	
1. Competency Statements for **Relationships Between Quantities & Reasoning with Equations** *"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	***Understand how to work with quantities and rates, including simple linear expressions and equations both algebraically and graphically.***
	I can: 1. Write and graph equations that represent relationships. 2. Represent constraints with linear equations, inequalities, and systems of equations or inequalities. 3. Determine whether solutions are viable or non-viable options to a linear equation or inequality, given constraints provided in a modeling context. 4. Rearrange multi-variable linear formulas for a given variable. 5. Explain each step in solving simple equations to justify my reasoning.
National Standards	A.SSE.1, A.CED.1, A.CED.2,A.CED.3, A.CED.4, A.REI.1, A.REI.3

Algebra I	
2. Competency Statements for **Linear and Exponential Relationships** *"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	***Learn function notation and develop concepts of domain and range. Explore functions, including sequences, interpret them, and give their limitations.***
	I can: 1. Solve a system of linear equations algebraically (substitution, elimination) and justify my method of choice. 2. Describe and interpret the solution set of a system of equations graphically. 3. Describe and interpret the solutions to a system of linear inequalities graphically. 4. Determine if a relation is a function. 5. Represent a function using a graph, table, and equation and describe the relationship between each form using function notation. 6. Evaluate a function using function notation and interpret the value in context. 7. Write a linear or exponential function from a sequence. 8. Identify and interpret the domain and range of a function. 9. Interpret key elements of the graph including average rate of change, y-intercept, x-intercepts. 10. Sketch a graph showing key features given a particular scenario or context.
National Standards	A.REI.5, A.REI.6, A.REI.10, A.REI.11, A.REI.12, F.IF.1, F.IF.2, F.IF.3,F.IF.4, F.IF.5, F.IF.6,

Algebra I

3. Competency Statements for **Descriptive Statistics** *"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	***Assess how a model fits data. Use graphical representations and knowledge of context to make judgements about the appropriateness of linear models, analyzing residuals to determine the goodness of fit. Use the correlation coefficient and r^2 to distinguish between correlation and causation.*** I can: 1. Interpret the rate of change and the intercept using a line of best fit. 2. Compute (using technology) and interpret the correlation coefficient as a measure of how well the data fit the relationship. 3. Distinguish between correlation and causation.
National Standards	S.ID.7, S.ID.8, S.ID.9

Algebra I	
4. Competency Statements for **Expressions & Equations** *"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	***Extend the laws of exponents to strengthen my ability to see non-linear structure and create quadratic and exponential expressions to explain a problem or table of values.***
	I can: 1. State the parts of a polynomial expression in standard or factored form (term, factor, coefficient, degree, monomial, etc.) 2. Factor a quadratic expression to reveal its zeros. 3. Complete the square of a quadratic expression as a factoring method. 4. Use the properties of zero and 1 to produce an equivalent form of an expression. 5. Use structure to classify expressions as being non-linear. 6. Add, subtract, and multiply polynomials. 7. Write and interpret simple exponential equations and inequalities from a graph. 8. Solve simple exponential equations and inequalities by graphing. 9. Rearrange multi-variable exponential formulas for a given variable. 10. Determine whether the solution of a quadratic equation will be real or complex 11. Find real solutions to quadratic equations in one variable using multiple methods and justify my solution method. 12. Solve a system of equations consisting of a linear equation and quadratic equation algebraically and graphically.
National Standards	A.SSE.1, A.SSE.2, A.SSE.3, A.APR.1, A.CED.1, A.CED.2, A.CED.4, A.REI.4, A.REI.7

Algebra I

5. Competency Statements for **Quadratic Functions & Modeling** *"Learning Targets" are models of what educators may see in performance tasks when students demonstrate their increasing understanding and use of the competencies.*	***Compare key characteristics of quadratic functions to those of linear and exponential functions. Explore more specialized functions – absolute value, step and those that are piecewise-defined.***
	I can: 1. Sketch a reasonable graph of a quadratic function based on a verbal description. 2. Identify the intercepts, intervals for which the function is increasing, decreasing, positive, or negative on a graph or table of a quadratic model. 3. Find the vertex of a quadratic equation in standard form using $\left(\frac{-b}{2a}, f\left(\frac{-b}{2a}\right)\right)$. 4. Find the line of symmetry of a quadratic model. 5. Determine the domain and range of a quadratic function given context. 6. Use a graph to describe how a quadratic function is changing (rate of change) over a given interval. 7. Estimate the rate of change over a given interval from a graph.
National Standards	F.IF.4, F.IF.5, F.IF.6