Algebra A
Mathematics Curriculum

DOMAIN DESCRIPTION	CLUSTER DESCRIPTION	MLS CODE	MLS DESCRIPTION	DOK	Instructional Activities	Assessments
Number and Quantity	Use units to solve problems.	A1.NQ.B.3 *a, b, c*	Use units of measure as a way to understand and solve problems involving quantities. *- Identify, label and use appropriate units of measure within a problem.* *- Convert units and rates.* *- Use units within problems.*	2	Choose and interpret units in the context of multi--step problems and formulas.	Include work problems where quantities are given in different units, which must be converted.
	Use units to solve problems.	A1.NQ.B.3d	Use units of measure as a way to understand and solve problems involving quantities. *- Choose and interpret the scale and the origin in graphs and data displays.*	2	choose and interpret the scale and origin in graphs and data displays	Graphs must include lines, circles, scatterplots and second order equations
	Use units to solve problems.	A1.NQ.B.4	Define and use appropriate quantities for representing a given context or problem.	2	Identify the variables or quantities of significance from the data provided. Identify or choose the appropriate unit of measure for each variable or quantity.	What type of measurements would one use to determine revenue and profit for one month? How could one express the number of births in Missouri?
	Use units to solve problems.	A1.NQ.B.5	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	2	Upon completion of a problem, the student will be able to judge the reasonableness of their answer.	Students will estimate the solution to a problem before beginning or compare the actual solution with the estimate or include the solution is a complete sentence to check for understanding.

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Seeing Structure in Expressions	Interpret and use structure.	A1.SSE.A.1	Interpret the contextual meaning of individual terms or factors from a given problem that utilizes formulas or expressions.	3	Interpret parts of an expression, such as terms, factors, and coefficients.	Students should be able to recognize and interpret the parts that make up the algebraic expression.
Creating Equations	Create equations that describe linear, quadratic and exponential relationships.	A1.CED.A.1	Create equations and inequalities in one variable and use them to model and/or solve problems.	2	Create equations and inequalities representing real world scenarios. Compare linear equations.	Create equations and inequalities that arise when comparing the values of two different functions including linear.
	Create equations that describe linear, quadratic and exponential relationships.	A1.CED.A.2	Create and graph linear, quadratic and exponential equations in two variables.	2	Formulate and graph equations involving two variables on a coordinate axes, labeling appropriately.	George joined a gym and paid $25 to enroll. He pays $15 monthly. How much would he pay for one year?
	Create equations that describe linear, quadratic and exponential relationships.	A1.CED.A.3	Represent constraints by equations or inequalities and by systems of equations or inequalities, and interpret the data points as a solution or non-solution in a modeling context.	2	Determine if a given number is a solution to an equation, inequality, or system of equations or inequalities.	Determine if $x = -3$ is a solution to $3x + 1 < 3x + 1$.
	Create equations that describe linear, quadratic and exponential relationships.	A1.CED.A.4	Solve literal equations and formulas for a specified variable that highlights a quantity of interest.	2	Rearrange formulas to highlight a quantity of interest using the same reasoning as solving equations.	Rearrange Ohm's Law $V = IR$ to highlight the resistance R.

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Reasoning with Equations and Inequalities	Understand solving equations as a process, and solve equations and inequalities in one variable.	A1.REI.A.1	Explain how each step taken when solving an equation or inequality in one variable creates an equivalent equation or inequality that has the same solution(s) as the original.	3	Using algebraic properties and the properties of real numbers, justify the steps of a simple one solution equation.	Students should justify their own steps or if given two or more steps of an equations, explain the progression from one step to the next using properties.
	Solve systems of equations.	A1.REI.B.3	Solve a system of linear equations algebraically and/or graphically.	3	The system solution methods can include graphing, elimination or substitution.	Which is the better value? You can rent a car for $300/day with unlimited mileage or you can rent a car for $50/day and pay 55 cents per mile. You need to travel 1 day and 400 miles.
	Solve systems of equations.	A1.REI.B.5	Justify that the technique of linear combination produces an equivalent system of equations.	3	Apply the substitution and elimination methods to find an exact solution to the original system of equations.	y=2x+1 2x+3y=11 Solve by the method of your choice.
	Represent and solve linear and exponential equations and inequalities graphically	A1.REI.C.6	Explain that the graph of an equation in two variables is the set of all its solutions plotted in the Cartesian coordinate plane.	2	Interpret a graph as a collection of infinite solutions (x,y). Understand that graphical solution methods may produce approximate solutions, while algebraic solution methods use precise solutions.	Given 2x+3y=6 is the point (1,4) a solution? y=5 y=x^2 Find an exact solution.

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Reasoning with Equations and Inequalities	Represent and solve linear and exponential equations and inequalities graphically	A1.REI.C.7	Graph the solution to a linear inequality in two variables.	2	Solve linear inequalities exactly and approximately, focusing on pairs of linear inequalities in <u>two</u> variables.	Graph the solution to y<3 and y>x+1.
	Represent and solve linear and exponential equations and inequalities graphically	A1.REI.C.8	Solve problems involving a system of linear inequalities.	2	Graph the solution to a linear inquality in two variables.	Graph the solution to y<2x + 1 and y>x+1.
Interpreting Functions	Understand the concept of a function and use function notation.	A1.IF.A.1a	Understand that a function from one set (domain) to another set (range) assigns to each element of the domain exactly one element of the range. *- Represent a function using function notation.*	3	Write a function in function notation.	Students will be able to write y = 2x + 3 in function notation f(x) = 2x + 3
	Understand the concept of a function and use function notation.	A1.IF.A.1b	Understand that a function from one set (domain) to another set (range) assigns to each element of the domain exactly one element of the range. *- Understand that the graph of a function labeled is the set of all ordered pairs (x, y) that satisfy the equation =f( ).*	3	Given a variety of graphs, identify the domain and range of each function.	Apply the vertical line test to determine if a relation is a function.
	Understand the concept of a function and use function notation.	A1.IF.A.2	Use function notation to evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	3	Use substitution to evaluate a function for a given value of x.	If P(t) is the population of Cape Girardeau t years after 1990, interpret the statements P(0)=32,000 and P(25)=40,000.

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Linear, Quadratic and Exponential Models	Construct and compare linear, quadratic and exponential models and sole problems.	A1.LQE.A.1a	Distinguish between situations that can be modeled with linear or exponential functions. *- Determine that linear functions change by equal differences over equal intervals.*	2	Given a t-chart, show that the slope between each pair of points is the same for a linear function. Given a t-chart, show that the growth from one y-coordinate to the next is the same factor.	Given the equation y=2x+4, students will create a t-chart and show that the slope between consecutive pairs is constant. Given the equation $y=2^x$ students will create a t-chart and show that the growth/decay from one y-coordinate to the next is the same factor.
	Use arithmetic and geometric sequences.	A1.LQE.B.4	Write arithmetic and geometric sequences in recursive and explicit forms, and use them to model situations and translate between the two forms.	3	Create a function that describes a given explicit or recursively stated situation. (only arithmetic explicit forms)	Given $a_0=4$ and $a_n=a_{n-1}+3$, write the explicit formula.
	Use arithmetic and geometric sequences.	A1.LQE.B.6	Find the terms of sequences given an explicit or recursive formula.		Find a specified term of a sequence arithmetic only.	If the first term is $a_1 = 4$, the common difference is -5 find the 25th term.

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Data and Statistical Analysis	Summarize, represent and interpret data.	A1.DS.A.5 *a-b*	Construct a scatter plot of bivariate quantitative data describing how the variables are related; determine and use a function that models the relationship. *- Construct a linear function to model bivariate data represented on a scatter plot that minimizes residuals.* *- Construct an exponential function to model bivariate data represented on a scatter plot that minimizes residuals.*	2	Provide data that will produce linear functions. Graph the data from above and compare to your basic graph of linear functions. Create a linear function of best fit from a scatterplot.	Given a linear data set, create a scatter plot.
	Summarize, represent and interpret data.	A1.DS.A.6	Interpret the slope (rate of change) and the y-intercept (constant term) of a linear model in the context of the data.	3	Given data draw a line of best fit to determine the slope and y-intercept for the linear function.	Given a set of data, draw a line of best fit and write the equation of the line.
	Summarize, represent and interpret data.	A1.DS.A.7	Determine and interpret the correlation coefficient for a linear association.	3	Using a graphing calculator find the correlation coefficient of a linear fit.	Using a graphing calculator with the data from standard 6 compute the correlation coefficient of a linear fit.
	Summarize, represent and interpret data.	A1.DS.A.8	Distinguish between correlation and causation.	3	Reason the difference between correlation and causation.	Compare and contrast the ideas of correlation and causation using data from standards 6 and 7.