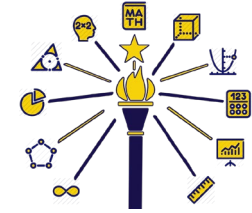


Complex Numbers and Expressions					
Algebra 2 Mathematics Standards		Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead
MA.AII.CNE.1:	<p>Know there is an imaginary number, i, such that $i^2 = -1$, and every complex number can be written in the form $a + bi$, with a and b real. Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.</p>	<p>I can understand the idea of the imaginary number, i, as being the square root of negative one.</p> <p>I can use the relation $i^2 = -1$ to simplify expressions.</p> <p>I can identify the real and the imaginary parts of complex numbers written in the form $a + bi$.</p> <p>I can add, subtract, and multiply complex numbers.</p> <p>I can recognize that the commutative, associative, and distributive properties extend to the set of complex numbers over the operations of addition and multiplication.</p>	<p>Imaginary number</p> <p>Complex number</p>	<p>Understand the hierarchy and relationships of numbers within the real number system. (MA.AI.RNE.1)</p>	<p>Calculate the distance and midpoint between numbers in the complex plane. (MA.PC.PCN.1)</p> <p>Understand and use complex numbers, including real and imaginary numbers. (MA.PC.PCN.2)</p> <p>Understand and use addition, subtraction, multiplication, and conjugation of complex numbers. (MA.PC.PCN.3)</p>
MA.AII.CNE.2:	<p>Translate expressions between radical and exponent form and simplify them using the laws of exponents.</p>	<p>I can translate expressions between radical and exponent form.</p>	<p>Radical expression</p> <p>Exponential expression</p>	<p>Rewrite and evaluate numeric expressions with positive rational exponents using the properties of</p>	



		I can simplify expressions written in exponent form with rational exponents using the laws of exponents.	Product of powers Quotient of powers Power of a power Power of a product Power of a quotient	exponents. (MA.AI.RNE.3)	
MA.AII.CNE.3:	Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide algebraic rational expressions.	I can explore operations with rational expressions to determine whether they are closed under addition, subtraction, multiplication, and division by a nonzero rational expression. I can connect my understanding of rational expressions to my understanding of rational numbers. I can add and subtract rational expressions with common denominators. I can add and subtract rational expressions without common	Rational expression Rational numbers	Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational. (MA.AI.RNE.2) Understand polynomials are closed under the operations of addition, subtraction, and multiplication with integers. (MA.AI.RNE. 7)	



		denominators by finding the common denominator. I can multiply and divide rational expressions.			
MA.AII.CNE.4:	Rewrite algebraic rational expressions in equivalent forms (e.g., using laws of exponents and factoring techniques).	I can rewrite algebraic expressions in equivalent forms using the laws of exponents. I can rewrite algebraic expressions in equivalent forms using factoring techniques.	Rational expression Product of powers Quotient of powers Power of a power Power of a product Power of a quotient Factoring	Simplify algebraic rational expressions, with numerators and denominators containing monomial bases with integer exponents. (MA.AI.RNE.5) Factor common terms from polynomials and factor polynomials completely. Factor the difference of two squares, perfect square trinomials, and other quadratic expressions. (MA.AI.RNE.6)	
MA.AII.CNE.5:	Rewrite rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree	I can rewrite rational expressions using long division. I can identify the degree of a polynomials.	Rational expression Polynomials Degree Synthetic division	Simplify algebraic rational expressions, with numerators and denominators containing monomial bases. (MA.AI.RNE.5)	Know and apply the Remainder Theorem. (MA.PC.QPR.3) Understand the Fundamental Theorem of Algebra; find a polynomial function of lowest



	of $b(x)$, using long division and synthetic division.	<p>I can rewrite rational expressions using synthetic division.</p> <p>I can identify the divisor to use in order to perform synthetic division.</p>	Polynomial long division		degree with real coefficients when given its roots. (MA.PC.QPR.4)
MA.AII.CNE.6:	Find partial sums of arithmetic and geometric series and represent them using sigma notation.	<p>I can find partial sums of arithmetic series.</p> <p>I can find partial sums of geometric series.</p> <p>I can represent partial sums of arithmetic and geometric series using sigma notation.</p> <p>I can understand the parts of a series written in sigma notation.</p>	<p>Partial sum</p> <p>Arithmetic series</p> <p>Geometric series</p> <p>Sigma notation</p>	<p>Represent linear functions as graphs from equations (with and without technology), equations from graphs, and equations from tables and other given information. (MA.AI.L.4)</p> <p>Represent real-world problems that can be modeled with a linear function. (MA.AI.L.5)</p> <p>Distinguish between situations that can be modeled with linear functions and with exponential functions. Understand that linear functions grow by equal differences over equal intervals,</p>	<p>Model and solve real-world problems involving applications of sequences and series and interpret the solutions. (MA.PC.F.8)</p> <p>Recognize an infinite series as the limit of a sequence of partial sums. (MA.PC.F.10)</p>



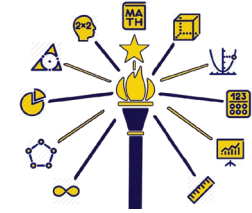
				<p>and that exponential functions grow by equal factors over equal intervals. (MA.AI.QE.1)</p> <p>Represent real-world and other mathematical problems that can be modeled with exponential functions using tables, graphs, and equations. (MA.AI.QE.2)</p>	
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Functions

Algebra 2 Mathematics Standards		Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead
MA.AII.F.1:	Determine whether a relation represented by a table, graph, or equation is a function.	<p>I can determine whether a relation is a function given a table.</p> <p>I can determine whether a relation is a function given a graph.</p> <p>I can determine whether a relation is a function given an equation.</p>	<p>Relation</p> <p>Function</p>	<p>Understand that a function from one set to another set assigns to each element of the domain exactly one element of the range. (MA.AI.F.1)</p>	



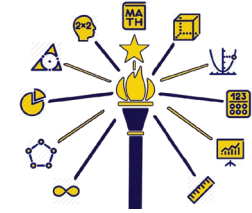
MA.AII.F.2:	Understand composition of functions and combine functions by composition.	<p>I can combine functions by substituting one function in for the other.</p> <p>I can understand and explain the process of composing functions.</p>	Composition of functions	Solve pairs of linear equations in two variables using substitution. (MA.AI.SEI.2)	
MA.AII.F.3:	Understand that an inverse function can be obtained by expressing the dependent variable of one function as the independent variable of another, as f and g are inverse functions if and only if $f(x)=y$ and $g(y)=x$, for all values of x in the domain of f and all values of y in the domain of g . Find the inverse of a function that has an inverse.	<p>I can understand that the inverse of a function is obtained by switching the dependent and independent variables then isolating the dependent variable.</p> <p>I can understand the idea that the inverse of a function “undoes” anything the original function does.</p> <p>I can determine whether a function has an inverse.</p> <p>I can determine if a function is one-to-one.</p> <p>I can use the horizontal line test to determine whether the graph of a function has an inverse.</p>	<p>Inverse function</p> <p>Dependent variable</p> <p>Independent variable</p> <p>Domain</p> <p>Horizontal line test</p> <p>One-to-one</p>	<p>Understand that if f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input of x. (MA.AI.F.1)</p> <p>Solve equation and formulas for a specified variable. (MA.AI.L.11)</p>	<p>Determine if a graph or table has an inverse, and justify if the inverse is a function, relation, or neither. (MA.PC.F.4)</p> <p>Produce an invertible function from a non-invertible function by restricting the domain. (MA.PC.F.5)</p>



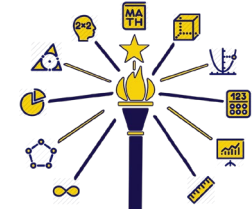
MA.AII.F.4:	Understand that if the graph of a function contains a point (a, b) , then the graph of the inverse relation of the function contains the point (b, a) ; the inverse is a reflection over the line $y = x$.	<p>I can understand the domain of a function is the range of the inverse, and vice versa.</p> <p>I can graph a function and its inverse to show that the inverse is a reflection of the function over the line $y = x$.</p>	<p>Reflection</p> <p>Inverse relationship</p>	Identify the domain and range of relations in tables and graphs. (MA.AI.F.3)	Identify the values of an inverse function/relation from a graph or table. (MA.PC.F.4)
MA.AII.F.5:	Describe the effect on the graph of $f(x)$ by replacing $f(x)$ with $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative) with and without technology. Find the value of k given the graph of $f(x)$ and the graph of $f(x) + k$, $k f(x)$, $f(kx)$, or $f(x + k)$.	<p>I can identify the transformations of a function on a graph.</p> <p>I can describe the effects of transformations on parent functions.</p> <p>I can determine the value corresponding to various transformations of functions.</p>	<p>Parent function</p> <p>Transformation</p>	Describe qualitatively the functional relationship between two quantities by analyzing a graph. (MA.AI.F.2)	<p>Describe the effect on the graph of $f(x)$ by replacing $f(x)$ with $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k. (MA.PC.F.6)</p> <p>Determine how the graph of a parabola changes if a, b, and c changes in the equation $y = a(x-b)^2 + c$. (MA.TR.CO.1)</p>

Systems of Equations

Algebra 2 Mathematics Standards	Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead
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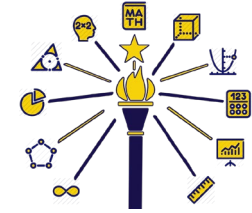


MA.AII.SE.1:	Solve a system of equations consisting of a linear equation and a quadratic equation in two variables algebraically and graphically with and without technology (e.g., find the points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$).	I can solve a system of equations consisting of linear and quadratic equations in two variables algebraically. I can solve a system of equations consisting of linear and quadratic equations in two variables graphically by finding the point(s) of intersection with and without technology.	System of equations Linear equation Quadratic equation Point of intersection	Solve pairs of linear equations in two variables using substitution and elimination. (MA.AI.SEI.2)	
MA.AII.SE.2:	Solve systems of two or three linear equations in two or three variables algebraically and using technology.	I can solve a system of two or three linear equations in two or three variables algebraically. I can solve a system of two or three linear equations in two or three variables using technology.	System of equations Composition Elimination method Substitution method	Solve pairs of linear equations in two variables using substitution and elimination. (MA.AI.SEI.2) Solve systems of two linear equations in two variables with and without technology. (MA.AI.SEI.3)	
MA.AII.SE.3:	Represent real-world problems using a system of linear equations in three variables and solve such problems with and without technology. Interpret the solution and	I can represent real-world problems using a system of linear equation in three variables. I can solve real-world problems using a system of	System of equations Inverse function Dependent variable Independent variable	Represent and solve real-world problems using a system of two linear equation in two variables; interpret the solution and determine whether it is	



	determine whether it is reasonable.	linear equations in three variables. I can interpret the solution to a system of linear equations in three variables and determine whether it is reasonable.	Domain	reasonable. (MA.AI.SEI.3)	
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Quadratic Equations and Functions					
Algebra 2 Mathematics Standards		Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead
MA.AII.Q.1:	Represent real-world problems that can be modeled with quadratic functions using tables, graphs, and equations; translate fluently among these representations. Solve such problems with and without technology. Interpret the solutions and determine whether they are reasonable.	<p>I can represent and solve real-world problems that can be modeled with quadratic functions using a table.</p> <p>I can represent and solve real-world problems that can be modeled with quadratic functions using a graph.</p> <p>I can represent and solve real-world problems that can be modeled with quadratic functions using an equation.</p>	Quadratic function	Represent real-world problems using quadratic equations in one or two variables and solve with and without technology; interpret the solution and determine whether it is reasonable. (MA.AI.QE.5)	



		<p>I can translate fluently among tables, graphs, and equations of quadratic functions.</p> <p>I can interpret my solution to a quadratic function and determine its reasonableness.</p>			
MA.AII.Q.2:	<p>Use completing the square to rewrite quadratic functions into the form $y = a(x + h)^2 + k$, and graph these functions with and without technology. Identify intercepts, zeros, domain and range, and lines of symmetry. Understand the relationship between completing the square and the quadratic formula.</p>	<p>I can use the technique of completing the square to rewrite quadratic functions into the form $y = a(x + h)^2 + k$.</p> <p>I can graph quadratic functions in the form $y = a(x + h)^2 + k$ with and without technology.</p> <p>I can identify important features of quadratic function, including intercepts, zeros, domain and range, and line of symmetry.</p> <p>I can understand the relationship between completing the square and the quadratic formula.</p>	<p>Completing the square</p> <p>Quadratic function</p> <p>Vertex form of a quadratic equation</p> <p>Intercepts</p> <p>Zeros</p> <p>Domain</p> <p>Range</p> <p>Line of symmetry</p> <p>Quadratic formula</p>	<p>Solve quadratic equations in one variable using the quadratic formula. (MA.AI.QE.4)</p> <p>Use the process of factoring to determine zeros, lines of symmetry and extreme values. (MA.AI.QE.6)</p> <p>Describe the relationship among solutions of a quadratic, the zeros, the x-intercepts, and the factors. (MA.AI.AE.7)</p>	<p>Use the method of completing the square to transform any quadratic equation of the form $(x - p)^2 = q$; derive the quadratic formula from this form. (MA.PC.QPR.1)</p> <p>Complete the square to find the center and radius of a circle given by an equation. (MA.TR.CO.3)</p>
MA.AII.Q.3:	<p>Use the discriminant to determine the number and type of solutions of a quadratic equation in one</p>	<p>I can identify the discriminant within the quadratic formula.</p>	<p>Discriminant</p> <p>Quadratic formula</p>	<p>Solve quadratic equations in one variable using the quadratic formula. (MA.AI.QE.4)</p>	



	<p>variable with real coefficients; find all solutions and write complex solutions in the form of $a \pm bi$ for real numbers a and b.</p>	<p>I can use the discriminant to determine the number and type of solutions to a quadratic function.</p> <p>I can find all solutions to a quadratic function.</p> <p>I can write complex solutions in the form $a \pm bi$.</p>	<p>Quadratic equation</p> <p>Complex solutions</p>	<p>Describe the relationship among solutions of a quadratic, the zeros, the x-intercepts, and the factors. (MA.AI.AE.7)</p>	
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Exponential & Logarithmic Equations and Functions				
Algebra 2 Mathematics Standards	Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead
<p>MA.AII.EL.1:</p>	<p>Write arithmetic and geometric sequences both recursively and with an explicit formula; use them to model situations and translate between the two forms.</p>	<p>I can write an arithmetic sequences both recursively and explicitly.</p> <p>I can write a geometric sequence both recursively and explicitly.</p> <p>I can use arithmetic and geometric sequences to model situations.</p>	<p>Arithmetic sequence</p> <p>Geometric sequence</p> <p>Recursive formula</p> <p>Explicit formula</p>	<p>Understand that linear functions grow by equal differences over equal intervals and the exponential functions grow by equal factors over equal intervals. (MA.AI.QE.1)</p> <p>Recognize that sequences are functions, sometimes defined recursively. (MA.PC.F.3)</p> <p>Define arithmetic and geometric sequences recursively; model and solve real-world problems involving applications of sequences and</p>



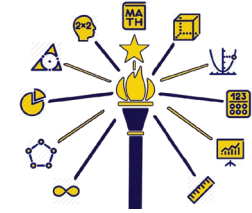
		I can translate between recursive formulas and explicit formulas.			series and interpret the solutions. (MA.PC.F.8) Decide whether simple sequences converge or diverge. (MA.PC.F.10)
MA.AII.EL.2:	Graph exponential functions with and without technology. Identify and describe features, such as intercepts, zeros, domain and range, and asymptotic and end behavior.	I can graph exponential functions with and without technology. I can identify and describe important features of exponential functions such as intercepts, zeros, domain and range, and asymptotic and end behavior.	Exponential function Asymptote End behavior Intercepts Zeros Domain Range Initial value	Graph exponential equations in two variables with and without technology. (MA.QE.3) Describe qualitatively the functional relationship between two quantities by analyzing a graph. (MA.AI.F.2)	Graph rational functions with and without technology; identify and describe features, such as intercepts, domain and range, and asymptotic and end behavior. (MA.PC.QPR.2)
MA.AII.EL.3:	Identify the percent rate of change in exponential functions written as equations, such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, and classify them as	I can identify the percent rate of change in an exponential function. I can classify an exponential function as representing growth or decay based upon the percent rate of change.	Percent rate of change Exponential growth Exponential decay	Represent real-world and other mathematical problems that can be modeled with exponential functions using tables, graphs, and equations. (MA.AI.QE.2)	



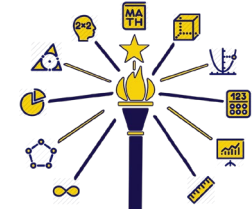
	representing exponential growth or decay.	I can distinguish between the growth or decay rate and the factor by which something grows or decays.			
MA.AII.EL.4:	Use the properties of exponents to transform expressions for exponential functions (e.g., the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%).	<p>I can use the properties of exponents to transform expressions for exponential functions.</p> <p>I can find equivalent monthly interest rate given annual interest rates.</p>	<p>Properties of exponents</p> <p>Exponential function</p>	Rewrite numeric expressions using the properties of exponents. (MA.AI.RNE.3)	
MA.AII.EL.5:	Know that the inverse of an exponential function is a logarithmic function. Represent exponential and logarithmic functions using graphing technology and describe their inverse relationship.	<p>I can identify and justify the logarithmic function as the inverse of an exponential function.</p> <p>I can graph exponential functions using technology.</p> <p>I can graph logarithmic functions using technology.</p> <p>I can describe the inverse relationship of exponential and logarithmic functions.</p>	<p>Inverse</p> <p>Exponential function</p> <p>Logarithmic function</p> <p>Inverse relationship</p>		



<p>MA.AII.EL.6:</p>	<p>Use the laws of exponents to derive the laws of logarithms. Use the laws of logarithms and the inverse relationship between exponential functions and logarithms to evaluate expressions and solve equations in one variable.</p>	<p>I can use the laws of exponents to derive the laws of logarithms.</p> <p>I can use the laws of logarithms to evaluate expressions and solve equations in one variable.</p> <p>I can understand the inverse relationship between exponential functions and logarithms.</p>	<p>Laws of exponents</p> <p>Laws of logarithms</p> <p>Inverse relationship</p> <p>Exponential functions</p> <p>Logarithm</p>		<p>Convert logarithms from one base to another and prove simple laws of logarithms. (MA.PC.EL.1)</p> <p>Use the laws of logarithms to simplify logarithmic expressions and find their approximate values. (MA.PC.EL.2)</p>
<p>MA.AII.EL.7:</p>	<p>Represent real-world problems using exponential equations in one or two variables and solve such problems with and without technology. Interpret the solutions and determine whether they are reasonable.</p>	<p>I can represent and solve real-world problems using exponential equations in one variable.</p> <p>I can represent and solve real-world problems using exponential equations in two variables.</p> <p>I can interpret my solution to an exponential equation and determine the reasonableness of it.</p>	<p>Exponential equation</p>	<p>Represent real-world and other mathematical problems that can be modeled with exponential functions using tables, graphs, and equations. (MA.AI.QE.2)</p>	<p>Graph and solve real-world and other mathematical problems that can be modeled using exponential and logarithmic equations and inequalities. (MA.PC.EL.3)</p>



Polynomial, Rational, and Other Equations and Functions					
Algebra 2 Mathematics Standards		Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead
MA.AII.PR.1:	Solve real-world and other mathematical problems involving polynomial equations with and without technology. Interpret the solutions and determine whether the solutions are reasonable.	<p>I can solve real-world problems involving polynomial equations.</p> <p>I can solve mathematical problems involving polynomial equations.</p> <p>I can interpret the solution to a polynomial equation and determine the reasonableness of it.</p>	Polynomial equation	<p>Factor polynomials completely. (MA.AI.RNE.6)</p> <p>Add, subtract, and multiply polynomials and divide polynomials by monomials. (MA.AI.RNE.7)</p>	
MA.AII.PR.2:	Graph relations and functions including polynomial, square root, and piecewise-defined functions (including step functions and absolute value functions) with and without technology. Identify and describe features, such as intercepts, zeros, domain and range, end behavior, and lines of symmetry.	<p>I can graph polynomial functions.</p> <p>I can graph square root functions.</p> <p>I can graph piece-wise defined functions, including step functions and absolute value functions.</p> <p>I can graph relations and functions and identify and describe important features such as intercepts, zeros,</p>	<p>Relation</p> <p>Function</p> <p>Polynomial function</p> <p>Square-root function</p> <p>Piecewise function</p> <p>Step function</p> <p>Absolute-value function</p>	<p>Graph absolute value linear equation in two variables. (MA.AI.L.10)</p> <p>Graph exponential and quadratic equations in two variables. (MA.AI.QE.3)</p> <p>Describe qualitatively the functional relationship between two quantities by analyzing a graph. (MA.AI.F.2)</p>	Interpret key features of graphs and tables in terms of quantities and sketch showing key features given verbally; key features include intercepts, intervals of increase and decrease, intervals where function is positive and negative, relative maximums/minimum, end behavior, periodicity. (MA.PC.F.1)



		domain and range, end behavior, and lines of symmetry.	<p>Intercepts</p> <p>Zeros</p> <p>Domain</p> <p>Range</p> <p>End behavior</p> <p>Line of symmetry</p> <p>Asymptote</p>		
MA.AII.PR.3:	Solve real-world and other mathematical problems involving rational and radical functions, including direct, inverse, and joint variation. Give examples showing how extraneous solutions may arise.	<p>I can solve real-world problems involving rational functions.</p> <p>I can solve real-world problems involving radical functions.</p> <p>I can solve mathematical problems involving rational functions.</p> <p>I can solve mathematical problems involving radical functions.</p>	<p>Rational function</p> <p>Radical function</p> <p>Direct variation</p> <p>Inverse variation</p> <p>Joint variation</p> <p>Extraneous solution</p>		



		<p>I can solve real-world and mathematical problems involving direct variation functions.</p> <p>I can solve real-world and mathematical problems involving inverse variation functions.</p> <p>I can solve real-world and mathematical problems involving joint variation functions.</p> <p>I can identify and understand extraneous solutions and situations in which they may arise.</p>			
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Data Analysis, Statistics, and Probability					
Algebra 2 Mathematics Standards		Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead
MA.AII.DSP.1 :	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	I can make inferences from sample surveys, experiments, and observational studies.	<p>Inference</p> <p>Sample survey</p> <p>Experiments</p>	Evaluate the characteristics of a good survey and well-designed experiment, design	Identify limitations, strengths, or lack of information in studies, including data collection



	<p>Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.</p>	<p>I can justify my conclusions made from inferences based off of sample surveys, experiments, and observational studies.</p> <p>I can recognize the differences among sample surveys, experiments, and observational studies.</p> <p>I can explain how randomization relates to sample surveys, experiments, and observational studies.</p>	<p>Observational study</p> <p>Randomization</p>	<p>simple experiments or investigations to collect data to answer questions of interest, and make inferences from sample results. (MA.AI.DS.1)</p> <p>Understand that statistics and data are non-neutral and designed to serve a particular interest. (MA.AI.DS.6)</p>	<p>methods (e.g. sampling, experimental, observational) and possible sources of bias. (MA.QR.S.2)</p>
MA.AII.DSP.2	<p>Use technology to find a linear, quadratic, or exponential function that models a relationship for a bivariate data set to make predictions; compute (using technology) and interpret the correlation coefficient.</p>	<p>I can use technology to fit a linear, quadratic, or exponential model to a relationship for a bivariate data set.</p> <p>I can make predictions using an appropriate model for a bivariate data set.</p> <p>I can use technology to compute the correlation coefficient.</p>	<p>Bivariate data</p> <p>Correlation coefficient</p> <p>Linear function</p> <p>Quadratic function</p> <p>Exponential function</p>	<p>Use technology to find a linear function that models a relationship for a bivariate data set to make predictions; compute (using technology) and interpret the correlation coefficient. (MA.AI.DS.3)</p>	<p>Use technology to find a quadratic, exponential, logarithmic, or power function that models a relationship for a bivariate data set to make predictions. (MA.PC.EL.4)</p> <p>Analyze and critique mathematical models and be able to describe their limitations, including distinguishing between correlation</p>



		I can interpret the correlation coefficient of an appropriate model for a bivariate data set.			and causation. (MA.QR.M.1) Choose and create linear, exponential, logistic, or periodic models and curves of best fit for bivariate data sets; use the models to answer questions and draw conclusions or make decisions, addressing limitations and long-term ramifications of chosen models. (MA.QR.M.3)
MA.AII.DSP.3 :	Organize, graph (e.g., line plots and box plots), and compare univariate data of two or more different data sets using measures of center (mean and median) and spread (range, interquartile range, standard deviation, percentiles, and variance). Understand the effects of	I can organize and graph univariate data using line plots and box plots. I can compare univariate data of two or more different data sets using measures of center, including median and mean). I can compare univariate data using measures of spread, including range, interquartile	Box-and -whisker plot Univariate data Interquartile range (IQR) Standard deviation Variance Percentile	Make observations about the degree of visual overlap of two numerical data distributions represented in line plots or box plots. (MA.7.DSP.4) Describe how outliers affect the mean and/or median. (MA.7.DSP.4) Find, use, and interpret measures of	Read, interpret, and make decisions about data summarized numerically using measures of center and spread, in tables, and in graphical displays (line graphs, bar graphs, scatterplots, and histograms). (MA.QR.S.5) Compare center, shape, and spread of



	outliers on the statistical summary of the data.	range, standard deviation, percentiles, and variance. I can identify and understand the effects of outliers on the statistical summary of univariate data.	Outlier Mean Median Range	center and measures of spread for numerical data. (MA.7.DSP.3)	two or more data sets and interpret the differences in context. (MA.QR.S.7)
MA.AII.DSP.4 :	Record multiple observations (or simulated samples) of random events and construct empirical models of the probability distributions. Construct a theoretical model and apply the law of large numbers to show the relationship between the two models.	I can record multiple observations of random events. I can construct empirical models of probability distributions. I can construct a theoretical model. I can apply the law of large numbers. I can explain the relationship between a theoretical model and the empirical model.	Simulation Empirical model Theoretical model Law of large numbers	Develop probability models; compare probabilities from the model to observed frequencies. (MA.7.DSP.7)	Evaluate the validity of claims based on empirical, theoretical, and subjective probabilities. (MA.QR.P.3)
MA.AII.DSP.5 :	Understand dependent and independent events, and conditional probability; apply these	I can distinguish between dependent, independent events and conditional probability.	Conditional probability Dependent event	Understand and use terminology to describe independent and dependent events. (MA.8.DSP.4)	Use data displays and models to determine probabilities (including conditional



	concepts to calculate probabilities.	I can apply properties of dependent events and independent events to calculate probabilities.	Independent event	Find probabilities of compound events (independent and dependent). (MA.8.DSP.5)	probabilities). (MA.QR.P.4)
MA.AII.DSP.6	Understand the multiplication counting principle, permutations, and combinations; apply these concepts to calculate probabilities.	<p>I can understand the multiplication counting principle.</p> <p>I can distinguish between a permutation and a combination.</p> <p>I can apply the properties of permutations and combinations to calculate probabilities.</p> <p>I can understand the necessity for and use of factorial notation.</p> <p>I can use factorial notation when calculating permutations and combinations.</p>	<p>Counting principal</p> <p>Permutation</p> <p>Combination</p> <p>Factorial</p>	For events with a large number of outcomes, understand the use of and apply the multiplication counting principle. (MA.8.DSP.6)	