Math 10 Correlation Guide

Standard Number	Math 10 IAS Adopted in 2017	Correlation to Other IAS 2014 Standards	Correlation to Common Core Standards
Linear Equations and Inequalities			
MA10.EI.1	Solve linear equations with rational number coefficients fluently, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. Represent real-world problems using linear equations and inequalities in one variable and solve such problems. Explain and justify each step in solving an equation, starting from the assumption that the original equation has a solution. Justify the choice of a solution method.	**AI.L.1**: Understand that the steps taken when solving linear equations create new equations that have the same solution as the original. Solve fluently linear equations and inequalities in one variable with integers, fractions, and decimals as coefficients. Explain and justify each step in solving an equation, starting from the assumption that the original equation has a solution. Justify the choice of a solution method. **8.AF.1**: Solve linear equations with rational number coefficients fluently, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. Represent real-world problems using linear equations and inequalities in one variable and solve such problems.	**HSA.REI.B.3**: Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. **HSA.CED.A.3**: Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods. **8.EE.C.7:** Solve linear equations in one variable. **8.EE.C.7.B:** Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. **7.EE.B.4:** Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

MA10.EI.2	Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by transforming a given equation into simpler forms, until an equivalent equation of the form *x = a, a = a*, or *a = b* results (where *a* and *b* are different numbers).	**8.AF.2**: Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by transforming a given equation into simpler forms, until an equivalent equation of the form *x = a, a = a, or a = b* results (where *a* and *b* are different numbers).	**8.EE.C.7.A:** Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case given into simpler forms, until an equivalent equation of the form *x=a, a=a,* or *a=b* results (where *a* and *b* are different numbers).
MA10.EI.3	Represent real-world problems using linear equations and inequalities in one variable and solve such problems. Interpret the solution and determine whether it is reasonable.	**AI.L.2**: Represent real-world problems using linear equations and inequalities in one variable and solve such problems. Interpret the solution and determine whether it is reasonable.	**HSA.CED.A.3:** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.
MA.10.EI.4	Represent real-world and other mathematical problems using an algebraic proportion that leads to a linear equation and solve such problems.	**AI.L.3**: Represent real-world and other mathematical problems using an algebraic proportion that leads to a linear equation and solve such problems.	**HSF.IF.C.7.A:** Graph functions expressed symbolically and show key features of the graph, by hand in sample cases, and using technology for more complicated cases. Graph linear and quadratic functions and show intercepts, maxima, and minima.
MA10.EI.5	Represent real-world problems using linear inequalities in two variables and solve such problems; interpret the solution set and determine whether it is reasonable. Solve other linear inequalities in two variables by graphing.	**AI.L.7**: Represent real-world problems using linear inequalities in two variables and solve such problems; interpret the solution set and determine whether it is reasonable. Solve other	**HSA.REI.D.12:** Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the

		linear inequalities in two variables by graphing.	intersection of the corresponding half-planes. **HSA.CED.A.4:** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.
MA10.EI.6	Solve compound linear inequalities in one variable, and represent and interpret the solution on a number line. Write a compound linear inequality given its number line representation.	**AI.L.8**: Solve compound linear inequalities in one variable, and represent and interpret the solution on a number line. Write a compound linear inequality given its number line representation.	
MA10.EI.7	Solve equations and formulas for a specified variable, including equations with coefficients represented by variables.	**AI.L.11**: Solve equations and formulas for a specified variable, including equations with coefficients represented by variables.	
MA10.E1.8	Solve absolute value linear equations in one variable.	**AI.L.9**: Solve absolute value linear equations in one variable.	
MA10.EI.9	Graph absolute value linear equations in two variables.	**AI.L.10**: Graph absolute value linear equations in two variables.	**HSF.IF.C.7.B:** Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Graph square root, cube root, and piecewise-defined

			functions, including step functions and absolute value functions.
Functions			
MA10.F.1	Interpret the equation *y = mx + b* as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. Describe similarities and differences between linear and nonlinear functions from tables, graphs, verbal descriptions, and equations.	**8.AF.5**: Interpret the equation *y = mx + b* as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. Describe similarities and differences between linear and nonlinear functions from tables, graphs, verbal descriptions, and equations.	**8.F.A.3:** Interpret the equation *y=mx+b* as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.
MA10.F.2	Construct a function to model a linear relationship between two quantities given a verbal description, table of values, or graph. Recognize in *y = mx + b* that m is the slope (rate of change) and b is the *y*-intercept of the graph, and describe the meaning of each in the context of a problem.	**8.AF.6**: Construct a function to model a linear relationship between two quantities given a verbal description, table of values, or graph. Recognize in *y = mx + b* that m is the slope (rate of change) and b is the *y*-intercept of the graph, and describe the meaning of each in the context of a problem.	**8.F.B.4:** Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two *(x,y)* values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
MA10.F.3	Represent linear functions as graphs from equations (with and without technology), equations from graphs, and equations from tables and other given information (e.g., from a given point on a line and the slope of the line).	**AI.L.4**: Represent linear functions as graphs from equations (with and without technology), equations from graphs, and equations from tables and other given information (e.g., from a given point on a line and the slope of the line).	

MA10.F.4	Represent real-world problems that can be modeled with a linear function using equations, graphs, and tables; translate fluently among these representations, and interpret the slope and intercepts.	**AI.L.5**: Represent real-world problems that can be modeled with a linear function using equations, graphs, and tables; translate fluently among these representations, and interpret the slope and intercepts.	**HSS.ID.C.7:** Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.
MA10.F.5	Translate among equivalent forms of equations for linear functions, including slope-intercept, point-slope, and standard. Recognize that different forms reveal more or less information about a given situation.	**AI.L.6**: Translate among equivalent forms of equations for linear functions, including slope-intercept, point-slope, and standard. Recognize that different forms reveal more or less information about a given situation.	
MA10.F.6	Compare properties of two linear functions given in different forms, such as a table of values, equation, verbal description, and graph (e.g., compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed).	**8.AF.7**: Compare properties of two linear functions given in different forms, such as a table of values, equation, verbal description, and graph (e.g., compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed).	**8.F.A.2:** Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).
MA10.F.7	Understand that a function from one set (called the domain or independent variable) to another set (called the range or dependent variable) assigns to each element of the domain exactly one element of the range. 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 *x*. Understand the graph of *f* is the graph of the equation *y = f(x).*	**AI.F.1**: Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. 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 *x*.	**HSF.IF.A.1:** Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. 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 *x*. The graph of *f* is the graph of the equation *y=f(x).*

		Understand the graph of *f* is the graph of the equation *y = f(x).* **8.AF.3**: Understand that a function assigns to each x-value (independent variable) exactly one y-value (dependent variable), and that the graph of a function is the set of ordered pairs *(x,y).*	**8.F.A.1:** Understand that a function is a rule that assigns to each input exactly one output. The graph of a functions is the set of ordered pairs consisting of an input and the corresponding output.
MA10.F.8	Identify the domain and range of relations represented in tables, graphs, verbal descriptions, and equations.	**AI.F.3**: Identify the domain and range of relations represented in tables, graphs, verbal descriptions, and equations.	**HSF.IF.B.5:** Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function *h(n)* gives the number of person-hours it takes to assemble *n* engines in a factory, then the positive integers would be an appropriate domain for the function.
MA10.F.9	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear, has a maximum or minimum value). Sketch a graph that exhibits the qualitative features of a function that has been verbally described. Identify independent and dependent variables and make predictions about the relationship.	**AI.F.2**: Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear, has a maximum or minimum value). Sketch a graph that exhibits the qualitative features of a function that has been verbally described. Identify independent and dependent variables and make predictions about the relationship. **8.AF.4**: Describe qualitatively the functional relationship between two quantities	**HSS.ID.B.6.B:** Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. Informally assess the fit of a function by plotting and analyzing residuals. **8.F.B.5:** Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g. where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

		by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear, has a maximum or minimum value). Sketch a graph that exhibits the qualitative features of a function that has been verbally described.	
MA10.F.10	Understand and interpret statements that use function notation in terms of a context; relate the domain of the function to its graph and to the quantitative relationship it describes.	**AI.F.4**: Understand and interpret statements that use function notation in terms of a context; relate the domain of the function to its graph and to the quantitative relationship it describes.	**HSF.IF.A.2:** Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
Data Analysis, Statistics, and Probability			
MA10.DASP.1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantitative variables. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	**AI.DS.2**: Graph bivariate data on a scatter plot and describe the relationship between the variables. **8.DSP.1**: Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantitative variables. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	**HSS.ID.B.6.C:** Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. Fit a linear function for a scatter plot that suggests a linear association. **8.SP.A.1:** Construct and interpret scatter plots for bivariate measurement data to investigate patters of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
MA10.DASP.2	Represent sample spaces and find probabilities of compound events (independent and dependent) using	**8.DSP.5**: Represent sample spaces and find probabilities of compound events (independent and dependent) using	**7.SP.C.8:** Find probabilities of compound event using organized lists, tables, tree diagrams, and simulation.

	methods, such as organized lists, tables, and tree diagrams.	methods, such as organized lists, tables, and tree diagrams.	**7.SP.C.8.B:** Represent sample spaces for compound evens using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g. "rolling double sixes"), identify the outcomes in the sample space which compose the event.
MA10.DASP.3	For events with a large number of outcomes, understand the use of the multiplication counting principle. Develop the multiplication counting principle and apply it to situations with a large number of outcomes.	**8.DSP.6**: For events with a large number of outcomes, understand the use of the multiplication counting principle. Develop the multiplication counting principle and apply it to situations with a large number of outcomes.	
MA10.DASP.4	Distinguish between random and non-random sampling methods, identify possible sources of bias in sampling, describe how such bias can be controlled and reduced, evaluate the characteristics of a good survey and well-designed experiment, design simple experiments or investigations to collect data to answer questions of interest, and make inferences from sample results.	**AI.DS.1**: Distinguish between random and non-random sampling methods, identify possible sources of bias in sampling, describe how such bias can be controlled and reduced, evaluate the characteristics of a good survey and well-designed experiment, design simple experiments or investigations to collect data to answer questions of interest, and make inferences from sample results.	
MA10.DASP.5	Understand that statistics and data are non-neutral and designed to serve a particular interest. Analyze the possibilities for whose interest might be served and how the representations might be misleading.	**AI.DS.6**: Understand that statistics and data are non-neutral and designed to serve a particular interest. Analyze the possibilities for whose interest	

		might be served and how the representations might be misleading.	
MA10.DASP.6	Find a linear function that models a relationship (with and without technology) for a bivariate data set to make predictions; interpret the slope and y-intercept, and compute (with and without technology) and interpret the correlation coefficient.	**AI.DS.3**: Use technology to find a linear function that models a relationship for a bivariate data set to make predictions; interpret the slope and y-intercept, and compute (using technology) and interpret the correlation coefficient. **8.DSP.3**: Write and use equations that model linear relationships to make predictions, including interpolation and extrapolation, in real-world situations involving bivariate measurement data; interpret the slope and y-intercept.	**HSS.ID.B.6.C:** Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. Fit a linear function for a scatter plot that suggests a linear association. **HSS.ID.C.7:** Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. **HSS.ID.C.8:** Compute (using technology) and interpret the correlation coefficient of a linear fit. **8.SP.A.3:** Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.
MA10.DASP.7	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns (including joint, marginal, and conditional relative frequencies) to describe possible associations and trends in the data.	**AI.DS.5**: Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns (including joint, marginal,	**8.SP.A.4:** Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.

		and conditional relative frequencies) to describe possible associations and trends in the data.	**HSS.ID.B.5:** Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.
MA10.DASP.8	Distinguish between correlation and causation.	**AI.DS.4**: Distinguish between correlation and causation.	**HSS.ID.C.9:** Distinguish between correlation and causation.
Number Sense, Expressions, and Computation			
MA10.NSEC.1	Give examples of rational and irrational numbers and explain the difference between them. Understand that every number has a decimal expansion; for rational numbers, show that the decimal expansion terminates or repeats, and convert a decimal expansion that repeats into a rational number.	**8.NS.1**: Give examples of rational and irrational numbers and explain the difference between them. Understand that every number has a decimal expansion; for rational numbers, show that the decimal expansion terminates or repeats, and convert a decimal expansion that repeats into a rational number.	**8.NS.A.1:** Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats into a rational number.
MA10.NSEC.2	Use rational approximations of irrational numbers to compare the size of irrational numbers, plot them approximately on a number line, and estimate the value of expressions involving irrational numbers.	**8.NS.2**: Use rational approximations of irrational numbers to compare the size of irrational numbers, plot them approximately on a number line, and estimate the value of expressions involving irrational numbers.	**8.NS.A.2:** Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g. π^2).

MA10.NSEC.3	Given a numeric expression with common rational number bases and integer exponents, apply the properties of exponents to generate equivalent expressions.	**8.NS.3**: Given a numeric expression with common rational number bases and integer exponents, apply the properties of exponents to generate equivalent expressions.	**8.EE.A.1:** Know and apply the properties of integer exponents to generate equivalent numerical expressions.
MA10.NSEC.4	Rewrite and evaluate numeric expressions with positive rational exponents using the properties of exponents.	**AI.RNE.3**: Rewrite and evaluate numeric expressions with positive rational exponents using the properties of exponents.	**HSN.RN.A.1:** Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.
MA10.NSEC.5	Simplify square roots of non-perfect square integers and algebraic monomials.	**AI.RNE.4**: Simplify square roots of non-perfect square integers and algebraic monomials.	
MA10.NSEC.6	Solve real-world problems with rational numbers by using multiple operations.	**8.C.1**: Solve real-world problems with rational numbers by using multiple operations.	
MA10.NSEC.7	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.	**AI.RNE.2**: 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.	**HSN.RN.B.3:** Explain why the sum or product of two rational numbers are 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.
MA10.NSEC.8	Simplify algebraic rational expressions, with numerators and denominators containing monomial bases with integer exponents, to equivalent forms.	**AI.RNE.5**: Simplify algebraic rational expressions, with numerators and denominators containing monomial	**HSA.APR.D.6** Rewrite simple rational expressions in different forms; write $\frac{a(x)}{b(x)}$ in the form

		bases with integer exponents, to equivalent forms.	$q(x) + \frac{r(x)}{b(x)}$, where *a(x), b(x), q(x)* and *r(x)* are polynomials with the degree of *r(x)* less than the degree *b(x),* using inspection, long division, or for the more complicated examples, a computer algebra system.
MA10.NSEC.9	Factor common terms from polynomials and factor polynomials completely. Factor the difference of two squares, perfect square trinomials, and other quadratic expressions.	**AI.RNE.6**: Factor common terms from polynomials and factor polynomials completely. Factor the difference of two squares, perfect square trinomials, and other quadratic expressions.	**HSA.SSE.A.2:** Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of two squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.
MA10.NSEC.10	Understand polynomials are closed under the operations of addition, subtraction, and multiplication with integers; add, subtract, and multiply polynomials and divide polynomials by monomials.	**AI.RNE.7**: Understand polynomials are closed under the operations of addition, subtraction, and multiplication with integers; add, subtract, and multiply polynomials and divide polynomials by monomials.	**HSA.APR.A.1:** Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. **HSA.APR.D.7:** 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 rational expressions.
Systems of Equations and Inequalities			
MA10.SEI.1	Understand the relationship between a solution of a pair of linear equations in two variables and the graphs of the corresponding lines. Solve pairs of linear equations in two variables by graphing; approximate solutions when the coordinates of the solution are non-integer numbers.	**AI.SEI.1**: Understand the relationship between a solution of a pair of linear equations in two variables and the graphs of the corresponding lines.	**8.EE.C.8:** Analyze and solve pairs of simultaneous linear equations. **8.EE.C.8.A:**

		Solve pairs of linear equations in two variables by graphing; approximate solutions when the coordinates of the solution are non-integer numbers. **8.AF.8**: Understand that solutions to a system of two linear equations correspond to points of intersection of their graphs because points of intersection satisfy both equations simultaneously. Approximate the solution of a system of equations by graphing and interpreting the reasonableness of the approximation.	Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. **8.EE.C.8.B:** Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. **8.EE.C.8.C:** Solve real-world and mathematical problems leading to two linear equations in two variables.
MA10.SEI.2	Understand that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions. Solve pairs of linear equations in two variables using substitution and elimination.	**AI.SEI.2**: Understand that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions. Solve pairs of linear equations in two variables using substitution and elimination.	
MA10.SEI.3	Write a system of two linear equations in two variables that represents a real-world problem and solve the problem with and without technology. Interpret the solution and determine whether the solution is reasonable.	**AI.SEI.3**: Write a system of two linear equations in two variables that represents a real-world problem and solve the problem with and without technology. Interpret the solution	**HSA.REI.C.6:** Solve systems of linear equations exactly and approximately (e.g. with graphs), focusing on pairs of linear equations in two variables.

		and determine whether the solution is reasonable.	
MA10.SEI.4	Represent real-world problems using a system of two linear inequalities in two variables and solve such problems; interpret the solution set and determine whether it is reasonable. Solve other pairs of linear inequalities by graphing with and without technology.	**AI.SEI.4**: Represent real-world problems using a system of two linear inequalities in two variables and solve such problems; interpret the solution set and determine whether it is reasonable. Solve other pairs of linear inequalities by graphing with and without technology.	**HSA.CED.A.3:** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.
Quadratic and Exponential Equations and Functions			
MA10.QEEF.1	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, and that exponential functions grow by equal factors over equal intervals. Compare linear functions and exponential functions that model real-world situations using tables, graphs, and equations.	**AI.QE.1**: 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, and that exponential functions grow by equal factors over equal intervals. Compare linear functions and exponential functions that model real-world situations using tables, graphs, and equations.	**HSF.LE.A.1.A:** Distinguish between situations that can be modeled with linear functions and with exponential functions. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. **HSF.LE.A.1.B:** Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. **HSF.LE.A.1.C:** Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize situations

			in which a quantity grows or decays by a constant percent rate per unit interval relative to another.
MA10.QEEF.2	Graph exponential and quadratic equations in two variables with and without technology.	**A1.QE.3**: Graph exponential and quadratic equations in two variables with and without technology.	**HSF.LE.B.5:** Interpret the parameters in a linear, quadratic, or exponential function in terms of a context. **HSF.IF.C.7.A:** Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Graph linear and quadratic functions and show intercepts, maxima, and minima.
MA10.QEEF.3	Solve quadratic equations in one variable by inspection (e.g., for $x^2 = 49$), finding square roots, using the quadratic formula, and factoring, as appropriate to the initial form of the equation.	**AI.QE.4**: Solve quadratic equations in one variable by inspection (e.g., for x^2 = 49), finding square roots, using the quadratic formula, and factoring, as appropriate to the initial form of the equation. **8.NS.4:** Use square root symbols to represent solutions to equations of the form $x^2 = p$, where p is a positive rational number.	**HSA.REI.B.4.B:** Solve quadratic equations in one variable. Solve quadratic equations by inspection (e.g. for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b. **HSF.IF.C.8.A:** Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.

MA10.QEEF.4	Represent real-world problems using quadratic equations in one or two variables and solve such problems with and without technology. Interpret the solution and determine whether it is reasonable.	**AI.QE.5**: Represent real-world problems using quadratic equations in one or two variables and solve such problems with and without technology. Interpret the solution and determine whether it is reasonable.	
MA10.QEEF.5	Use and apply the process of factoring to determine zeros (x-intercepts and solutions), lines of symmetry, and extreme values in real-world and other mathematical problems involving quadratic functions; interpret the results in the real-world contexts.	**AI.QE.6**: Use the process of factoring to determine zeros, lines of symmetry, and extreme values in real-world and other mathematical problems involving quadratic functions; interpret the results in the real-world contexts.	**HSF.IF.C.8.A:** Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.
MA10.QEEF.6	Represent real-world and other mathematical problems that can be modeled with exponential functions using tables, graphs, and equations of the form $y = a(b)^x$ (for integer values of x > 1, rational values of b > 0 and $b \neq 1$); translate fluently among these representations and interpret the values of a and b.	**AI.QE.2**: Represent real-world and other mathematical problems that can be modeled with exponential functions using tables, graphs, and equations of the form $y = ab^x$ (for integer values of x > 1, rational values of b > 0 and b ≠ 1); translate fluently among these representations and interpret the values of a and b.	**HSF.BF.A.1.B:** Write a function that describes a relationship between two quantities. Combine standard function types using arithmetic options. For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.
Geometry and Measurement			
MA10.GM.1	Identify, define and describe attributes of three-dimensional geometric objects (right rectangular prisms, cylinders, cones, spheres, and pyramids). Explore the effects of slicing these objects using appropriate	**8.GM.1**: Identify, define and describe attributes of three-dimensional geometric objects (right rectangular	**7.G.A.3:** Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right

	technology and describe the two-dimensional figure that results.	prisms, cylinders, cones, spheres, and pyramids). Explore the effects of slicing these objects using appropriate technology and describe the two-dimensional figure that results.	rectangular prisms and right rectangular pyramids.
MA10.GM.2	Solve real-world and other mathematical problems involving volume of cones, spheres, and pyramids and surface area of spheres.	**8.GM.2**: Solve real-world and other mathematical problems involving volume of cones, spheres, and pyramids and surface area of spheres.	**8.G.C.9:** Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.
MA10.GM.3	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations. Describe a sequence that exhibits the congruence between two given congruent figures.	**8.GM.4**: Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations. Describe a sequence that exhibits the congruence between two given congruent figures.	**8.G.A.2:** Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.
MA10.GM.4	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	**8.GM.6**: Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	**8.G.A.3:** Describe the effects of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.
MA10.GM.5	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and other mathematical problems in two dimensions.	**8.GM.8**: Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and other mathematical problems in two dimensions.	**8.G.B.7:** Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

MA10.GM.6	Apply the Pythagorean Theorem to find the distance between two points in a coordinate plane.	**8.GM.9**: Apply the Pythagorean Theorem to find the distance between two points in a coordinate plane.	**8.G.B.8:** Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.