Key Mathematics Standards by Grade/Course

When reviewing the scopes and sequences for the 2019-20 school year, districts will need to assess which standards may not have been taught or may not have been mastered. Below you will find critical standards for each grade level. These standards lay the foundation for mastery of on-grade level expectations as well as provide foundational concepts for the following grades. As districts complete the learning loss guide, the department recommends that they prioritize the following standards when re-developing on-grade level scope and sequences for the 2020-21 school year.

Grade 1	
Standard Code	Key Standards
1.OA.A.1	Add and subtract within 20 to solve contextual problems, with unknowns in all positions, involving situations of *add to*, *take from*, *put together/take apart*, and *compare*. Use objects, drawings, and equations with a symbol for the unknown number to represent the problem.
1.OA.A.2	Add three whole numbers whose sum is within 20 to solve contextual problems using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
1.OA.C.5	Add and subtract within 20 using strategies such as counting on, counting back, making 10, using fact families and related known facts, and composing/ decomposing numbers with an emphasis on making ten.
1.OA.D.7	Understand the meaning of the equal sign (e.g., 6 = 6; 5 + 2 = 4 + 3; 7 = 8 - 1). Determine if equations involving addition and subtraction are true or false.
NBT (1.NBT.A.1 through 1.NBT.C.6)	***Note***: all NBT standards are critical for this grade level

Grade 2	
Standard Code	Key Standards
2.OA.A.1	Add and subtract within 100 to solve one- and two-step contextual problems, with unknowns in all positions, involving situations of add to, take from, put together/take apart, and compare. Use objects, drawings, and equations with a symbol for the unknown number to represent the problem.
2.MD.B.5	Add and subtract within 100 to solve contextual problems involving lengths that are given in the same units by using drawings and equations with a symbol for the unknown to represent the problem.

2.MD.B.6	Represent whole numbers as lengths from 0 on a number line and know that the points corresponding to the numbers on the number line are equally spaced. Use a number line to represent whole number sums and differences of lengths within 100.
NBT (2.NBT.A.1 through 2.NBT.B.9)	***Note***: all NBT standards are critical for this grade level

Grade 3	
Standard Code	Key Standards
3.OA.A.3	Multiply and divide within 100 to solve contextual problems, with unknowns in all positions, in situations involving equal groups, arrays, and measurement quantities using strategies based on place value, the properties of operations, and the relationship between multiplication and division (e.g., contexts including computations such as 3 x ? = 24, 6 x 16 = ?, ? ÷ 8 = 3, or 96 ÷ 6 = ?) (See Table 2 - Multiplication and Division Situations).
3.OA.C.7	Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 x 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of 3rd grade, know from memory all products of two one-digit numbers and related division facts.
3.OA.D.8	Solve two-step contextual problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding (See Table 1 - Addition and Subtraction Situations and Table 2 - Multiplication and Division Situations).
3.NF.A.2	Understand a fraction as a number on the number line. Represent fractions on a number line. **a.** Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts. Recognize that each part has size $1/b$ and that the endpoint locates the number $1/b$ on the number line. **b.** Represent a fraction a/b on a number line diagram by marking off *a* lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.
3.NF.A.3	Explain equivalence of fractions and compare fractions by reasoning about their size. **a.** Understand two fractions as equivalent (equal) if they are the same size or the same point on a number line. **b.** Recognize and generate simple equivalent fractions and explain why the fractions are equivalent using a visual fraction model. **c.** Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. **d.** Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Use the symbols >, =, or < to show the relationship and justify the conclusions.

3.MD.C.7	Relate area of rectangles to the operations of multiplication and addition. **a.** Find the area of a rectangle with whole-number side lengths by tiling it and show that the area is the same as would be found by multiplying the side lengths. **b.** Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real-world and mathematical problems and represent whole-number products as rectangular areas in mathematical reasoning. **c.** Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths *a* and *b + c* is the sum of *a x b* and *a x c.* Use area models to represent the distributive property in mathematical reasoning. *For example, in a rectangle with dimensions 4 by 6, students can decompose the rectangle into 4 x 3 and 4 x 3 to find the total area of 4 x 6.* (See Table 3 - Properties of Operations) **d.** Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping

Grade 4	
Standard Code	Key Standards
4.OA.A.3	Solve multi-step contextual problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
4.NBT.B.5	Multiply a whole number of up to four digits by a one-digit whole number and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
4.NBT.B.6	Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
4.NF.A.2	Compare two fractions with different numerators and different denominators by creating common denominators or common numerators or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Use the symbols >, =, or < to show the relationship and justify the conclusions.
4.NF.B.3	Understand a fraction a/b with a > 1 as a sum of fractions $1/b$. **a.** Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. **b.** Decompose a fraction into a sum of fractions with the same denominator in more than one way recording each decomposition by an equation. Justify decompositions by using a visual fraction model. **c.** Add and subtract mixed numbers with like denominators by replacing each mixed number with an equivalent fraction and/or by using properties of operations and the relationship between addition and subtraction. **d.** Solve contextual problems involving addition and subtraction of fractions referring to the same whole and having like denominators

Key Mathematics Standards by Grade/Course

4.NF.B.4	Apply and extend previous understandings of multiplication as repeated addition to multiply a whole number by a fraction. **a.** Understand a fraction a/b as a multiple of $1/b$. **b.** Understand a multiple of a/b as a multiple of $1/b$ and use this understanding to multiply a whole number by a fraction. **c.** Solve contextual problems involving multiplication of a whole number by a fraction (e.g., by using visual fraction models and equations to represent the problem).

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Key Mathematics Standards by Grade/Course

Grade 5	
Standard Code	Key Standards
5.NBT.B.6	Find whole-number quotients and remainders of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
5.NBT.B.7	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between operations; assess the reasonableness of answers using estimation strategies. (Limit division problems so that either the dividend or the divisor is a whole number.)
5.NF.A.1	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.
5.NF.B.4	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number or a fraction by a fraction. **a.** Interpret the product a/b x q as a x (q ÷ b) (partition the quantity q into b equal parts and then multiply by a). Interpret the product a/b x q as (a x q) ÷ b (multiply a times the quantity q and then partition the product into b equal parts). **b.** Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles and represent fraction products as rectangular areas.
5.NF.B.7	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. **a.** Interpret division of a unit fraction by a non-zero whole number and compute such quotients. **b.** Interpret division of a whole number by a unit fraction and compute such quotients. **c.** Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3 cup servings are in 2 cups of raisins?*
5.MD.C.5	Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume of right rectangular prisms. **a.** Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent whole-number products of three factors as volumes *(e.g., to represent the associative property of multiplication).* **b.** Know and apply the formulas $V = l$ x w x h and $V = B$ x h (where B represents the area of the base) for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real-world and mathematical problems. **c.** Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of

	the non-overlapping parts, applying this technique to solve real-world problems.

Grade 6	
Standard Code	Key Standards
6.NS.A.1	Interpret and compute quotients of fractions, and solve contextual problems involving division of fractions by fractions (e.g., using visual fraction models and equations to represent the problem is suggested).
6.RP.A.2	Understand the concept of a unit rate *a/b* associated with a ratio *a:b* with $b \neq 0$. Use rate language in the context of a ratio relationship. *For example, this recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar. Also, we paid $75 for 15 hamburgers, which is a rate of $5 per hamburger.* (Expectations for unit rates in 6th grade are limited to non-complex fractions).
6.RP.A.3	Use ratio and rate reasoning to solve real-world and mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations). **a**. Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios. **b**. Solve unit rate problems including those involving unit pricing and constant speed. *For example, if a runner ran 10 miles in 90 minutes, running at that speed, how long will it take him to run 6 miles? How fast is he running in miles per hour?* **c.** Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. **d**. Use ratio reasoning to convert customary and metric measurement units (within the same system); manipulate and transform units appropriately when multiplying or dividing quantities.
6.EE.A.2	Write, read, and evaluate expressions in which variables stand for numbers. **a.** Write expressions that record operations with numbers and with variables. *For example, express the calculation "Subtract y from 5" as 5 - y.* **b.** Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms.* **c.** Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
6.EE.B.7	Solve real-world and mathematical problems by writing and solving one step equations of the form $x + p = q$ and $px = q$ for cases in which p, q, and x are all nonnegative rational numbers.
6.EE.C.9	Use variables to represent two quantities in a real-world problem that change in relationship to one another. *For example, Susan is putting money in her savings account by depositing a set amount each week (50). Represent her*

	*savings account balance with respect to the number of weekly deposits (*s = 50w*, illustrating the relationship between balance amount* s *and number of weeks* w*).* **a.** Write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. **b.** Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.

Grade 7	
Standard Code	Key Standards
7.NS.A.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. **a.** Describe situations in which opposite quantities combine to make 0. **b.** Understand $p + q$ as the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real world contexts. **c.** Understand subtraction of rational numbers as adding the additive inverse, $p – q = p + (–q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. **d.** Apply properties of operations as strategies to add and subtract rational numbers.
7.NS.A.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. **a.** Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. **b.** Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $–(p/q) = (–p)/q = p/(–q)$. Interpret quotients of rational numbers by describing real-world contexts. **c.** Apply properties of operations as strategies to multiply and divide rational numbers. **d.** Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.
7.RP.A.2	Recognize and represent proportional relationships between quantities. **a**. Decide whether two quantities are in a proportional relationship **b**. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. **c**. Represent proportional relationships by equations. **d.** Explain what a point *(x, y)* on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, *r)* where *r* is the unit rate.
7.RP.A.3	Use proportional relationships to solve multi-step ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*
7.EE.B.3	Solve multi-step real-world and mathematical problems posed with positive and negative rational numbers presented in any form (whole numbers, fractions, and decimals).

Key Mathematics Standards by Grade/Course

	a. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate. **b.** Assess the reasonableness of answers using mental computation and estimation strategies.
7.SP.D.8	Summarize numerical data sets in relation to their context. **a.** Give quantitative measures of center (median and/or mean) and variability (range and/or interquartile range), as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. **b.** Know and relate the choice of measures of center (median and/or mean)and variability (range and/or interquartile range) to the shape of the data distribution and the context in which the data were gathered.

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Key Mathematics Standards by Grade/Course

Grade 8	
Standard Code	Key Standards
8.EE.B.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*
8.EE.C.7	Solve linear equations in one variable. **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 by successively transforming the 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). **b.** Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.
8.F.A.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and another linear function represented by an algebraic expression, determine which function has the greater rate of change.*
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.
8.G.B.5	Know and apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.
8.SP.A.1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

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Key Mathematics Standards by Grade/Course

Algebra I		
Standard Code	Key Standards	Scope and Clarifications
A1.A.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations with two variables on coordinate axes with labels and scales.	*There are no assessment limits for this standard. The entire standard is assessed in this course.*
A1.A.REI.D.6	Explain why the *x*-coordinates of the points where the graphs of the equations *y = f(x)* and *y = g(x)* intersect are the solutions of the equation *f(x) = g(x)*; find the approximate solutions using technology. ★	*Include cases where f(x) and/or g(x) are linear, quadratic, absolute value, and exponential functions. For example, f(x) = 3x + 5 and g(x) = x2 + 1.* *Exponential functions are limited to domains in the integers.*
A1.F.IF.B.3	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. ★	*Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; and end behavior.* *i) Tasks have a real-world context.* *ii) Tasks are limited to linear functions, quadratic functions, absolute value functions, and exponential functions with domains in the integers.*
A1.F.IF.C.8	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	*i) Tasks have a real-world context.* *ii) Tasks are limited to linear functions, quadratic functions, piecewise-defined functions (including step functions and absolute value functions), and exponential functions with domains in the integers.*
A1.S.ID.B.4	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. b. Fit a linear function for a scatter plot that suggests a linear association.	*Emphasize linear models, quadratic models, and exponential models with domains in the integers.* *For A1.S.ID.B.4a:* *i) Tasks have a real-world context.* *ii) Exponential functions are limited to those with domains in the integers.*

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Algebra II		
Standard Code	Key Standards	Scope and Clarifications
A2.A.CED.A.1	Create equations and inequalities in one variable and use them to solve problems.	*Include equations arising from linear and quadratic functions, and rational and exponential functions.* *Tasks have a real-world context.*
A2.A.REI.D.6	Explain why the *x*-coordinates of the points where the graphs of the equations *y = f(x)* and *y = g(x)* intersect are the solutions of the equation *f(x) = g(x)*; find the approximate solutions using technology. ★	*Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.* *Tasks may involve any of the function types mentioned in the standard.*
A2.F.IF.A.1	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. ★	*Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; and end behavior.* *i) Tasks have a real-world context.* *ii) Tasks may involve square root, cube root, polynomial, exponential, and logarithmic functions.*
A2.F.IF.B.5	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	*Tasks may involve polynomial, exponential, and logarithmic functions.*
A2.S.ID.B.2a	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data.	*Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.* *i) Tasks have a real-world context.* *ii) Tasks are limited to exponential functions with domains not in the integers.*

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Geometry		
Standard Code	Key Standards	Scope and Clarifications
G.MG.A.2	Apply geometric methods to solve real-world problems.★	*Geometric methods may include but are not limited to using geometric shapes, the probability of a shaded region, density, and design problems.* *There are no assessment limits for this standard. The entire standard is assessed in this course.*
G.GPE.B.5	Know and use coordinates to compute perimeters of polygons and areas of triangles and rectangles.★	*For example, use the distance formula.* *There are no assessment limits for this standard. The entire standard is assessed in this course.*
G.SRT.C.8a	Solve triangles. ★ a. Know and use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	*Ambiguous cases will not be included in assessment.*
G.GMD.A.2	Know and use volume and surface area formulas for cylinders, cones, prisms, pyramids, and spheres to solve problems.★	*There are no assessment limits for this standard. The entire standard is assessed in this course.*

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Integrated Math I		
Standard Code	Key Standards	Scope and Clarifications
M1.A.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations with two variables on coordinate axes with labels and scales.	*i) Tasks are limited to linear equations* *ii) Tasks have a real-world context.* *iii) Tasks have the hallmarks of modeling as a mathematical practice (less defined tasks, more of the modeling cycle, etc.).*
M1.A.REI.C.4	Explain why the *x*-coordinates of the points where the graphs of the equations *y = f(x)* and *y = g(x)* intersect are the solutions of the equation *f(x) = g(x)*; find the approximate solutions using technology. ★	*Include cases where f(x) and/or g(x) are linear, absolute value, and exponential functions. For example: f(x) = 3x + 5.* *i) Tasks that assess conceptual understanding of the indicated concept may involve any of the function types mentioned in the standard except exponential and logarithmic functions.* *ii) Finding the solutions approximately is limited to cases where f(x) and g(x) are polynomial.* *iii) Tasks are limited to linear and absolute value functions.*
M1.F.IF.B.3	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. ★	*Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; and end behavior.* *i) Tasks have a real-world context.* *ii) Tasks are limited to linear functions, absolute value, and exponential functions with domains in the integers.*
M1.F.IF.C.7	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	*i) Tasks have a real-world context.* *ii) Tasks are limited to linear functions, piecewise-defined functions (including step functions and absolute value functions), and exponential functions with domains in the integers.*
M1.S.ID.B.4	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data.	*i) Tasks have real-world context.* *ii) Tasks are limited to linear functions and exponential functions with domains in the integers.*

	Use given functions or choose a function suggested by the context. b. Fit a linear function for a scatter plot that suggests a linear association.	

Integrated Math II		
Standard Code	Key Standards	Scope and Clarifications
M2.A.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations with two variables on coordinate axes with labels and scales.	*Include equations arising from linear and quadratic functions, and rational and exponential functions.* *Tasks have a real-world context.*
M2.F.IF.A.1	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. ★	*Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; and end behavior.* *i) Tasks have a real-world context.* *ii) Tasks are limited to quadratic, exponential functions with integer exponents, square root, and cube root functions.*
M2.F.IF.B.6	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	*i) Tasks do not have a real-world context.* *ii) Tasks may involve quadratic, square root, cube root, piecewise, and exponential functions.*
M2.S.ID.A.1a	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data.	*Use given functions or choose a function suggested by the context.* *Emphasize linear, quadratic, and exponential models. Exponential functions are limited to those with domains in the integers.* *Tasks have a real-world context.*
M2.G.SRT.C.8a	Solve triangles. ★ a. Know and use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	*Ambiguous cases will not be included in assessment.*

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M2.G.GMD.A.2	Know and use volume and surface area formulas for cylinders, cones, prisms, pyramids, and spheres to solve problems.★	*There are no assessment limits for this standard. The entire standard is assessed in this course.*

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Integrated Math III		
Standard Code	Key Standards	Scope and Clarifications
M3.A.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations with two variables on coordinate axes with labels and scales.	*There are no assessment limits for this standard. The entire standard is assessed in this course.*
M3.A.REI.B.3	Explain why the *x*-coordinates of the points where the graphs of the equations *y = f(x)* and *y = g(x)* intersect are the solutions of the equation *f(x) = g(x)*; find the approximate solutions using technology. ★	*Tasks may include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, or logarithmic functions.*
M3.F.IF.B.4	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	*Tasks may involve polynomial, exponential, and logarithmic functions.*
M3.S.ID.B.2	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. b. Fit a linear function for a scatter plot that suggests a linear association.	*Use given functions or choose a function suggested by the context.* *i) Tasks have a real-world context.* *ii) Tasks are limited to linear, quadratic, and exponential functions with domains not in the integers.*
M3.G.MG.A.2	Apply geometric methods to solve real-world problems.★	*Geometric methods may include but are not limited to using geometric shapes, the probability of a shaded region, density, and design problems.* *There are no assessment limits for this standard. The entire standard is assessed in this course.*
M3.G.GPE.B.5	Know and use coordinates to compute perimeters of polygons and areas of triangles and rectangles.★	*For example, use the distance formula.* *There are no assessment limits for this standard. The entire standard is assessed in this course.*