Mathematics Learning Progressions

Content Code	Eligible Content	Grades									Algebra I		Algebra II		Geometry	
		K	1	2	3	4	5	6	7	8	Module 1 Operations and Linear Functions & Inequalities	Module 2 Linear Functions and Data Organizations	Module 1 Numbers Systems and Data Analysis	Module 2 Non-Linear Expressions and Equations	Module 1 Geometric Properties and Relations	Module 2 Geometrical Reasoning
Numbers and Operations: Number Sense																
CC.2.1.K.B.1	Use place value to compose and decompose numbers within 19.	■														
CC.2.1.1.B.1	Extend the counting sequence to read and write numerals to represent objects.		●													
CC.2.1.1.B.2	Use place value concepts to represent amounts of tens and ones and to compare two digit numbers.		●													
CC.2.1.2.B.2	Use place-value concepts to read, write and skip count to 1000.			●												
M03.A-T.1.1.1	Round two- and three-digit whole numbers to the nearest ten or hundred, respectively.				●											
M03.A-T.1.1.4	Order a set of whole numbers from least to greatest or greatest to least (up through 9,999, and limit sets to no more than four numbers).				●											
M03.A-F.1.1.5	Compare two fractions with the same denominator (limit denominators to 1, 2, 3, 4, 6, and 8), using the symbols >, =, or <, and/or justify the conclusions.				●											
M04.A-T.1.1.4	Round multi-digit whole numbers (through 1,000,000) to any place.					■										
M04.A-T.1.1.1	Demonstrate an understanding that in a multi-digit whole number (through 1,000,000), a digit in one place represents ten times what it represents in the place to its right.					●										
M04.A-T.1.1.3	Compare two multi-digit numbers through 1,000,000 based on meanings of the digits in each place, using >, =, and < symbols.					■										
M04.A-F.1.1.2	Compare two fractions with different numerators and different denominators (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100) using the symbols >, =, or < and justify the conclusions.					●										
M04.A-F.3.1.3	Compare two decimals to hundredths using the symbols >, =, or <, and justify the conclusions.					●										
M05.A-T.1.1.5	Round decimals to any place (limiting rounding to the ones, tenths, hundredths, or thousandths place).						●									
M05.A-T.1.1.1	Demonstrate an understanding that in a multi-digit number, a digit in one place represents 1/10 of what it represents in the place to its left.						●									
M05.A-T.1.1.2	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10 and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.						●									
M05.A-T.1.1.4	Compare two decimals to thousandths based on meanings of the digits in each place using >, =, and < symbols.						●									
M06.A-N.3.2.1	Write, interpret, and explain statements of order for rational numbers in real-world contexts.							●								
M06.A-N.3.2.3	Solve real-world and mathematical problems by plotting points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.							■								
M06.A-N.2.2.1	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12.							■								
A1.1.1.2.1	Find the Greatest Common Factor (GCF) and/or the Least Common Multiple (LCM) for sets of monomials.										■					
M06.A-N.3.1.2	Determine the opposite of a number and recognize that the opposite of the opposite of a number is the number itself (e.g., -(-3) = 3; 0 is its own opposite).							●								
M06.A-N.3.2.2	Interpret the absolute value of a rational number as its distance from 0 on the number line and as a magnitude for a positive or negative quantity in a real-world situation.							●								
M08.A-N.1.1.1	Determine whether a number is rational or irrational. For rational numbers, show that the decimal expansion terminates or repeats (limit repeating decimals to the thousandths).									●						
M08.A-N.1.1.3	Estimate the value of irrational numbers without a calculator (limit whole number radicand to less than 144).									■						
M08.A-N.1.1.4	Use rational approximations of irrational numbers to compare and order irrational numbers.									●						
A1.1.1.1.1	Compare and/or order any real numbers. Note: Rational and irrational may be mixed.										■					
A1.1.1.4.1	Use estimation to solve problems.										■					
Numbers and Operations: Number Representations and Relationships																
CC.2.1.2.B.1	Use place-value concepts to represent amounts of tens and ones and to compare three digit numbers.			●												

M03.A-F.1.1.1	Demonstrate that when a whole or set is partitioned into y equal parts, the fraction 1/y represents 1 part of the whole and/or the fraction x/y represents x equal parts of the whole (limit denominators to 2, 3, 4, 6, and 8; limit numerators to whole numbers less than the denominator; and no simplification necessary).				●												
M03.A-F.1.1.2	Represent fractions on a number line (limit denominators to 2, 3, 4 , 5, and 8; limit numerators to whole numbers less than the denominator; and no simplification necessary).																
M03.A-F.1.1.3	Recognize and generate simple equivalent fractions (limit the denominators to 1, 2, 3, 4, 6, and 8 and limit numerators to whole numbers less than the denominator).				●												
M03.A-F.1.1.4	Express whole numbers as fractions, and/or generate fractions that are equivalent to whole numbers (limit denominators to 1, 2, 3, 4, 6, and 8).				●												
M04.A-F.1.1.1	Recognize and generate equivalent fractions.					●											
M04.A-F.2.1.2	Decompose a fraction or a mixed number into a sum of fractions with the same denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100), recording the decomposition by an equation. Justify decompositions (e.g., by using a visual fraction model).					●											
M04.A-F.3.1.2	Use decimal notation for fractions with denominators 10 or 100.					●											
M04.A-T.1.1.2	Read and write whole numbers in expanded, standard, and word form through 1,000,000.																
M05.A-T.1.1.3	Read and write decimals to thousandths using base-ten numerals, word form, and expanded form.						●										
M06.A-N.3.1.1	Represent quantities in real-world contexts using positive and negative numbers, explaining the meaning of 0 in each situation (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge).							●									
M06.A-N.3.1.3	Locate and plot integers and other rational numbers on a horizontal and vertical number line; locate and plot pairs of integers and other rational numbers on a coordinate plane.							●									
M07.A-N.1.1.2	Represent addition and subtraction on a horizontal or vertical number line.								●								
M06.A-R.1.1.1	Use ratio language and notation (such as 3 to 4, 3:4, ¾) to describe a ratio relationship between two quantities.							●									
M06.A-R.1.1.3	Construct tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and/or plot the pairs of values on the coordinate plane. Use tables to compare ratios.																
M07.A-R.1.1.2	Determine whether two quantities are proportionally related (e.g., by testing for equivalent ratios in a table, graphing on a coordinate plane and observing whether the graph is a straight line through the origin).								●								
M07.A-R.1.1.3	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.								●								
M07.A-R.1.1.4	Represent proportional relationships by equations.								●								
M07.A-R.1.1.5	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.								●								
M08.A-N.1.1.2	Convert a terminating or repeating decimal to a rational number (limit repeating decimals to thousandths).									●							
M08.A-N.1.1.5	Locate/identify rational and irrational numbers at their approximate locations on a number line.									●							
Numbers and Operations: Operational Fluency																	
CC.2.1.1.B.3	Use **place value** concepts and properties of operations to add and subtract within 100.		●														
CC.2.1.2.B.3	Use **place-value** understanding and properties of operations to add and subtract within 1000.			●													
M03.A-T.1.1.2	Add two- and three-digit whole numbers (limit sums from 100 through 1,000) and/or subtract two- and three-digit numbers from three-digit whole numbers.				●												
M03.A-T.1.1.3	Multiply one-digit whole numbers by two-digit multiples of 10 (from 10 through 90).																
M04.A-T.2.1.1	Add and subtract multi-digit whole numbers (limit sums and subtrahends up to and including 1,000,000).																
M04.A-T.2.1.2	Multiply a whole number of up to four digits by a one-digit whole number and multiply 2 two-digit numbers.					●											
M04.A-T.2.1.3	Divide up to four-digit dividends by one-digit divisors with answers written as whole-number quotients and remainders.					●											
M04.A-T.2.1.4	Estimate the answer to addition, subtraction, and multiplication problems using whole numbers through six digits (for multiplication, no more than 2 digits × 1 digit, excluding powers of 10).					●											
M04.A-F.2.1.1	Add and subtract fractions with a common denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100; answers do not need to be simplified; and no improper fractions as the final answer).					●											
M04.A-F.2.1.3	Add and subtract mixed numbers with a common denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100; no regrouping with subtraction; fractions do not need to be simplified and no improper fractions in final answers).																
M04.A-F.2.1.4	Solve word problems involving addition and subtraction of fractions referring to the same whole or set and having like denominators (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100).					●											

M04.A-F.3.1.1	Add two fractions with respective denominators 10 and 100.																
M04.A-F.2.1.5	Multiply a whole number by a unit fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100 and final answers do not need to be simplified or written as a mixed number).																
M04.A-F.2.1.6	Multiply a whole number by a non-unit fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100 and final answers do not need to be simplified or written as a mixed number).																
M04.A-F.2.1.7	Solve word problems involving multiplication of a whole number by a fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100).																
M05.A-T.2.1.1	Multiply multi-digit whole numbers (not to exceed three-digit by three-digit).																
M05.A-T.2.1.2	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.																
M05.A-F.1.1.1	Add and subtract fractions (including mixed numbers) with unlike denominators. (May include multiple methods and representations.)																
M05.A-T.2.1.3	Add, subtract, multiply, and divide decimals to hundredths (no divisors with decimals).																
M05.A-F.2.1.1	Solve word problems involving division of whole numbers leading to answers in the form of fractions (including mixed numbers).																
M05.A-F.2.1.2	Multiply a fraction (including mixed numbers) by a fraction.																
M05.A-F.2.1.3	Demonstrate an understanding of multiplication as scaling (resizing).																
M05.A-F.2.1.4	Divide unit fractions by whole numbers and whole numbers by unit fractions.																
M06.A-N.1.1.1	Interpret and compute quotients of fractions (including mixed numbers), and solve word problems involving division of fractions by fractions.																
M06.A-N.2.1.1	Solve problems involving operations (+, −, ×, and ÷) with whole numbers, decimals (through thousandths), straight computation, or word problems.																
M06.A-N.2.2.2	Apply the distributive property to express a sum of two whole numbers, 1 through 100, with a common factor as a multiple of a sum of two whole numbers with no common factor.																
M07.A-N.1.1.1	Apply properties of operations to add and subtract rational numbers, including real-world contexts.																
M07.A-N.1.1.3	Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats.																
M06.A-R.1.1.2	Find the unit rate a/b associated with a ratio a:b (with b ≠ 0) and use rate language in the context of a ratio relationship.																
M06.A-R.1.1.4	Solve unit rate problems including those involving unit pricing and constant speed.																
M06.A-R.1.1.5	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 percentage.																
M07.A-R.1.1.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units.																
M07.A-R.1.1.6	Use proportional relationships to solve multi-step ratio and percent problems.																
A1.1.1.1.2	Simplify square roots (e.g., √24 = 2√6).																
A2.1.1.1.1	Simplify/write square roots in terms of i (e.g., √-24 = 2i√6).																
A2.1.1.1.2	Simplify/evaluate expressions involving powers of i (e.g., $i^6 + i^3 = -1 - i$).																

When students are expected to demonstrate the knowledge, skills, and abilities described by an eligible content or standard—**No VMC is currently available**.

When students are expected to demonstrate the knowledge, skills, and abilities described by an eligible content or standard—**VMC is currently available**.

When grade appropriate instruction pertaining to an eligible content or standard should begin.

Content Code	Eligible Content	Grades									Algebra I		Algebra II		Geometry	
		K	1	2	3	4	5	6	7	8	**Module 1** Operations and Linear Functions & Inequalities	**Module 2** Linear Functions and Data Organizations	**Module 1** Numbers Systems and Data Analysis	**Module 2** Non-Linear Expressions and Equations	**Module 1** Geometric Properties and Relations	**Module 2** Geometrical Reasoning
Algebraic Concepts: Functional Representations																
M03.B-O.3.1.5	Identify arithmetic patterns (including patterns in the addition table or multiplication table) and/or explain them using properties of operations.															
M04.B-O.3.1.1	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.					●										
M04.B-O.3.1.2	Determine the missing elements in a function table (limit to +, –, or × and to whole numbers or money).					●										
M04.B-O.3.1.3	Determine the rule for a function given a table (limit to +, –, or × and to whole numbers).					●										
M05.B-O.2.1.1	Generate two numerical patterns using two given rules.															
M05.B-O.2.1.2	Identify apparent relationships between corresponding terms of two patterns with the same starting numbers that follow different rules.															
M06.B-E.3.1.2	Analyze the relationship between the dependent and independent variables using graphs and tables and/or relate these to an equation.															
M08.B-E.2.1.1	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.									●						
M08.B-E.2.1.2	Use similar right triangles to show and explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane.															
M08.B-E.2.1.3	Derive the equation *y = mx* for a line through the origin and the equation *y = mx + b* for a line intercepting the vertical axis at *b*.									●						
M08.B-F.1.1.1	Determine whether a relation is a function.									●						
M08.B-F.1.1.2	Compare properties of two functions, each represented in a different way (i.e., algebraically, graphically, numerically in tables, or by verbal descriptions).									●						
M08.B-F.1.1.3	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.									●						
M08.B-F.2.1.1	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.									●						
A1.2.1.2.1	Create, interpret, and/or use the equation, graph, or table of a linear function.											●				
A1.2.1.2.2	Translate from one representation of a linear function to another (i.e., graph, table, and equation).											●				
A1.2.2.1.1	Identify, describe, and/or use constant rates of change.											●				
A1.2.2.1.2	Apply the concept of linear rate of change (slope) to solve problems.											●				
A1.2.2.1.3	Write or identify a linear equation when given • the graph of the line, • two points on the line, or • the slope and a point on the line. Note: Linear equation may be in point-slope, standard, and/or slope-intercept form.											●				
A1.2.2.1.4	Determine the slope and/or *y*-intercept represented by a linear equation or graph.											●				
M08.B-F.2.1.2	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch or determine a graph that exhibits the qualitative features of a function that has been described verbally.									●						
A1.2.1.1.1	Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.											●				
A1.2.1.1.2	Determine whether a relation is a function, given a set of points or a graph.											●				
A1.2.1.1.3	Identify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table).															
A2.1.3.2.1	Determine how a change in one variable relates to a change in a second variable (e.g., *y* = 4/*x*; if *x* doubles, what happens to *y*?).															
A2.2.1.1.1	Analyze a set of data for the existence of a pattern, and represent the pattern with a rule algebraically and/or graphically.													●		
A2.2.1.1.2	Identify and/or extend a pattern as either an arithmetic or geometric sequence (e.g., given a geometric sequence, find the 20th term).															
A2.2.1.1.3	Determine the domain, range, or inverse of a relation.													●		
A2.2.1.1.4	Identify and/or determine the characteristics of an exponential, quadratic, or polynomial function (e.g., intervals of increase/decrease, intercepts, zeros, and asymptotes).															

A2.2.2.1.1	Create, interpret, and/or use the equation, graph, or table of a polynomial function (including quadratics).													●			
A2.2.2.1.2	Create, interpret, and/or use the equation, graph, or table of an exponential or logarithmic function (including common and natural logarithms).													●			
A2.2.2.1.3	Determine, use, and/or interpret minimum and maximum values over a specified interval of a graph of a polynomial, exponential, or logarithmic function.													●			
A2.2.2.1.4	Translate a polynomial, exponential, or logarithmic function from one representation of a function to another (graph, table, and equation).													●			
A2.2.2.2.1	Identify or describe the effect of changing parameters within a family of functions (e.g., $y = x^2$ and $y = x^2 + 3$, or $y = x^2$ and $y = 3x^2$).													●			
Algebraic Concepts: Properties of Operations and Expressions																	
CC.2.2.K.A.1	Extend the concepts of putting together and taking apart to add and subtract within 10.	●															
CC.2.2.1.A.1	Represent and solve problems involving addition and subtraction within 20.		●														
CC.2.2.1.A.2	Understand and apply properties of operations and the relationship between addition and subtraction.		●														
CC.2.2.2.A.1	Represent and solve problems involving addition and subtraction within 100.			●													
CC.2.2.2.A.2	Use mental strategies to add and subtract within 20.			●													
CC.2.2.2.A.3	Work with equal groups of objects to gain foundations for multiplication.			●													
M03.B-O.1.1.1	Interpret and/or describe products of whole numbers (up to and including 10 × 10).				●												
M03.B-O.1.1.2	Interpret and/or describe whole-number quotients of whole numbers (limit dividends through 50 and limit divisors and quotients through 10).				●												
M03.B-O.2.1.1	Apply the commutative property of multiplication (not identification or definition of the property).				●												
M03.B-O.2.1.2	Apply the associative property of multiplication (not identification or definition of the property).				●												
M04.B-O.2.1.1	Find all factor pairs for a whole number in the interval 1 through 100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the interval 1 through 100 is a multiple of a given one-digit number. Determine whether a given whole number in the interval 1 through 100 is prime or composite.					●											
M05.B-O.1.1.2	Write simple expressions that model calculations with numbers and interpret numerical expressions without evaluating them.						●										
M05.B-O.1.1.1	Use multiple grouping symbols (parentheses, brackets, or braces) in numerical expressions and evaluate expressions containing these symbols.						●										
M06.B-E.1.1.1	Write and evaluate numerical expressions involving whole-number exponents.							●									
M06.B-E.1.1.2	Write algebraic expressions from verbal descriptions.							●									
M06.B-E.1.1.3	Identify parts of an expression using mathematical terms (e.g., sum, term, product, factor, quotient, coefficient, quantity).							●									
M06.B-E.1.1.4	Evaluate expressions at specific values of their variables, including expressions that arise from formulas used in real-world problems.							●									
M06.B-E.2.1.2	Write algebraic expressions to represent real-world or mathematical problems.							●									
M06.B-E.1.1.5	Apply the properties of operations to generate equivalent expressions.							●									
M07.B-E.1.1.1	Apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients.								●								
M07.B-E.2.1.1	Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate.								●								
M08.B-E.1.1.1	Apply one or more properties of integer exponents to generate equivalent numerical expressions without a calculator (with final answers expressed in exponential form with positive exponents). Properties will be provided.									●							
A2.1.2.1.1	Use exponential expressions to represent rational numbers.																
M08.B-E.1.1.2	Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of perfect squares (up to and including 122) and cube roots of perfect cubes (up to and including 53) without a calculator.									●							
M08.B-E.1.1.3	Estimate very large or very small quantities by using numbers expressed in the form of a single digit times an integer power of 10 and express how many times larger or smaller one number is than another.									●							
M08.B-E.1.1.4	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Express answers in scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology (e.g., interpret 4.7E9 displayed on a calculator as 4.7×10^9).									●							

A1.1.1.3.1	Simplify/evaluate expressions involving properties/laws of exponents, roots, and/or absolute values to solve problems. Note: Exponents should be integers from –10 to 10.										■						
A2.1.2.1.2	Simplify/evaluate expressions involving positive and negative exponents and/or roots (may contain all types of real numbers—exponents should not exceed power of 10).												■				
A2.1.2.1.3	Simplify/evaluate expressions involving multiplying with exponents (e.g., $x^a \bullet x^z = x^{(a)}$), powers of powers (e.g., $(x^a)^z = x^{(a)}$), and powers of products (e.g., $(2x^3)^3 = 8x^9$). Note: Limit to rational exponents.												■				
A1.1.1.5.1	Add, subtract, and/or multiply polynomial expressions (express answers in simplest form). Note: Nothing larger than a binomial multiplied by a trinomial.										■						
A1.1.1.5.2	Factor algebraic expressions, including difference of squares and trinomials. Note: Trinomials are limited to the form $ax^2 + bx + c$ where a is equal to 1 after factoring out all monomial factors.										■						
A2.1.2.2.1	Factor algebraic expressions, including difference of squares and trinomials. Note: Trinomials limited to the form $ax^2 + bx + c$ where a is not equal to 0.												■				
A1.1.1.5.3	Simplify/reduce a rational algebraic expression.										■						
A2.1.2.2.2	Simplify rational algebraic expressions.												●				
A1.1.2.1.2	Use and/or identify an algebraic property to justify any step in an equation-solving process. Note: Linear equations only.										■						
A2.1.1.2.1	Add and subtract complex numbers (e.g., $(7 – 3i) – (2 + i) = 5 – 4i$).												■				
A2.1.1.2.2	Multiply and divide complex numbers (e.g., $(7 – 3i)(2 + i) = 17 + i$).												■				
A2.1.2.1.4	Simplify or evaluate expressions involving logarithms and exponents (e.g., $\log_2 8 = 3$ or $\log_4 2 = ½$).												■				
Algebraic Concepts: Algebraic Equations and Inequalities																	
M03.B-O.1.2.1	Use multiplication (up to and including 10 × 10) and/or division (limit dividends through 50 and limit divisors and quotients through 10) to solve word problems in situations involving equal groups, arrays, and/or measurement quantities.				●												
M03.B-O.1.2.2	Determine the unknown whole number in a multiplication (up to and including 10 × 10) or division (limit dividends through 50 and limit divisors and quotients through 10) equation relating three whole numbers.				●												
M03.B-O.3.1.4	Solve two-step equations using order of operations (equation is explicitly stated with no grouping symbols).				■												
M03.B-O.3.1.1	Solve two-step word problems using the four operations (expressions are not explicitly stated). Limit to problems with whole numbers and having whole-number answers.				■												
M03.B-O.2.2.1	Interpret and/or model division as a multiplication equation with an unknown factor.				■												
M03.B-O.3.1.7	Identify the missing symbol (+, –, ×, ÷, <, >, and =) that makes a number sentence true.				■												
M03.B-O.3.1.6	Create or match a story to a given combination of symbols (+, –, ×, ÷, <, >, and =) and numbers.				●												
M03.B-O.3.1.2	Represent two-step word problems using equations with a symbol standing for the unknown quantity. Limit to problems with whole numbers and having whole-number answers.				■												
M03.B-O.3.1.3	Assess the reasonableness of answers. Limit problems posed with whole numbers and having whole-number answers.				■												
M04.B-O.1.1.1	Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations.					●											
M04.B-O.1.1.2	Multiply or divide to solve word problems involving multiplicative comparison, distinguishing multiplicative comparison from additive comparison.					●											
M04.B-O.1.1.3	Solve multi-step word problems posed with whole numbers using the four operations. Answers will be either whole numbers or have remainders that must be interpreted yielding a final answer that is a whole number. Represent these problems using equations with a symbol or letter standing for the unknown quantity.					■											
M04.B-O.1.1.4	Identify the missing symbol (+, –, ×, ÷, =, <, and >) that makes a number sentence true (single-digit divisor only).					■											
M06.B-E.2.1.1	Use substitution to determine whether a given number in a specified set makes an equation or inequality true.							●									
M06.B-E.2.1.3	Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q, and x are all non-negative rational numbers.							■									
M06.B-E.2.1.4	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem and/or represent solutions of such inequalities on a number line.							■									
M06.B-E.3.1.1	Write an equation to express the relationship between the dependent and independent variables.							■									
M07.B-E.2.2.1	Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers.								●								
M07.B-E.2.2.2	Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers, and graph the solution set of the inequality.								●								
M07.B-E.2.3.1	Determine the reasonableness of answer(s) or interpret the solution(s) in the context of the problem.								●								
A1.1.3.1.1	Write or solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).										■						
A1.1.3.1.2	Identify or graph the solution set to a linear inequality on a number line.									■	■						
A1.1.3.1.3	Interpret solutions to problems in the context of the problem situation. Note: Linear inequalities only.									■	■						
M08.B-E.3.1.1	Write and identify 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).									■							
M08.B-E.3.1.2	Solve linear equations that have rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.								■	■							
A2.1.3.2.2	Use algebraic processes to solve a formula for a given variable (e.g., solve $d = rt$ for r).												■				
A1.1.2.1.1	Write, solve, and/or apply a linear equation (including problem situations).										■						
A1.1.2.1.3	Interpret solutions to problems in the context of the problem situation. Note: Linear equations only.									■	■						

M08.B-E.3.1.3	Interpret solutions to a system of two linear equations in two variables as points of intersection of their graphs because points of intersection satisfy both equations simultaneously.															
M08.B-E.3.1.4	Solve systems of two linear equations in two variables algebraically and estimate solutions by graphing the equations. Solve simple cases by inspection.															
A1.1.2.2.1	Write and/or solve a system of linear equations (including problem situations) using graphing, substitution, and/or elimination. Note: Limit systems to two linear equations.															
M08.B-E.3.1.5	Solve real-world and mathematical problems leading to two linear equations in two variables.															
A1.1.2.2.2	Interpret solutions to problems in the context of the problem situation. Note: Limit systems to two linear equations.															
A1.1.3.2.1	Write and/or solve a system of linear inequalities using graphing. Note: Limit systems to two linear inequalities.															
A1.1.3.2.2	Interpret solutions to problems in the context of the problem situation. Note: Limit systems to two linear inequalities.															
A2.1.3.1.1	Write and/or solve quadratic equations (including factoring and using the Quadratic Formula).															
A2.1.3.1.2	Solve equations involving rational and/or radical expressions (e.g., $10/(x + 3) + 12/(x - 2) = 1$ or $\sqrt{x^2 + 21x} = 14$).															
A2.1.3.1.3	Write and/or solve a simple exponential or logarithmic equation (including common and natural logarithms).															
A2.1.3.1.4	Write, solve, and/or apply linear or exponential growth or decay (including problem situations).															

Content Code	Eligible Content	Grades									Algebra I		Algebra II		Geometry	
		K	1	2	3	4	5	6	7	8	**Module 1** Operations and Linear Functions & Inequalities	**Module 2** Linear Functions and Data Organizations	**Module 1** Numbers Systems and Data Analysis	**Module 2** Non-Linear Expressions and Equations	**Module 1** Geometric Properties and Relations	**Module 2** Geometrical Reasoning
Geometry: Geometrical Figures																
CC.2.3.K.A.1	Identify and describe two- and three-dimensional shapes.	●														
CC.2.3.K.A.2	Analyze, compare, create, and compose two- and three-dimensional shapes.	●														
CC.2.3.1.A.1	Compose and distinguish between two- and three-dimensional shapes based on their attributes.		●													
CC.2.3.2.A.1	Analyze and draw two- and three-dimensional shapes having specified attributes.		●													
M03.C-G.1.1.1	Explain that shapes in different categories may share attributes and that the shared attributes can define a larger category.				●											
M03.C-G.1.1.2	Recognize rhombi, rectangles, and square as examples of quadrilaterals and/or draw examples of quadrilaterals that do not belong to any of these subcategories.				●											
M04.C-G.1.1.1	Draw points, lines, line segments, rays, angles (right, acute, and obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.					●										
M04.C-G.1.1.2	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.					●										
M04.C-G.1.1.3	Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into mirroring parts. Identify line-symmetric figures and draw lines of symmetry (up to two lines of symmetry).					●										
M05.C-G.2.1.1	Classify two-dimensional figures in a hierarchy based on properties.						●									
G.1.2.1.2	Identify and/or use properties of quadrilaterals.															
M06.C-G.1.1.5	Represent three-dimensional figures using nets made of rectangles and triangles.							●								
M07.C-G.1.1.2	Identify or describe the properties of all types of triangles based on angle and side measures.															
M07.C-G.1.1.3	Use and apply the triangle inequality theorem.															
G.1.2.1.1	Identify and/or use properties of triangles.															
G.1.2.1.3	Identify and/or use properties of isosceles and equilateral triangles.															
G.1.2.1.4	Identify and/or use properties of regular polygons.															
M07.C-G.1.1.4	Describe the two-dimensional figures that result from slicing three-dimensional figures.															
M07.C-G.2.1.1	Identify and use properties of supplementary, complementary and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.															
M07.C-G.2.1.2	Identify and use properties of angles formed when two parallel lines are cut by a transversal (e.g., angles may include alternate interior, alternate exterior, vertical, corresponding).															
G.2.2.1.1	Use properties of angles formed by intersecting lines to find the measures of missing angles.															●
G.2.2.1.2	Use properties of angles formed when two parallel lines are cut by a transversal to find the measures of missing angles.															
M07.C-G.1.1.1	Solve problems involving scale drawings of geometric figures, including finding length and area.															
G.1.3.1.1	Identify and/or use properties of congruent and similar polygons or solids.															
G.1.3.1.2	Identify and/or use proportional relationships in similar figures.															
M08.C-G.2.1.1	Apply the converse of the Pythagorean theorem to show a triangle is a right triangle.															
M08.C-G.2.1.2	Apply the Pythagorean theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. (Figures provided for problems in three dimensions will be consistent with Eligible Content in grade 8 and below.)															
G.2.1.1.1	Use the Pythagorean theorem to write and/or solve problems involving right triangles.															
G.1.1.1.1	Identify, determine, and/or use the radius, diameter, segment, and/or tangent of a circle.															

G.1.1.1.2	Identify, determine, and/or use the arcs, semicircles, sectors, and/or angles of a circle.																
G.1.1.1.3	Use chords, tangents, and secants to find missing arc measures or missing segment measures.																
G.1.1.1.4	Identify and/or use the properties of a sphere or cylinder.																
G.1.2.1.5	Identify and/or use properties of pyramids and prisms.																
G.1.3.2.1	Write, analyze, complete, or identify formal proofs (e.g., direct and/or indirect proofs/proofs by contradiction).																
G.2.1.1.2	Use trigonometric ratios to write and/or solve problems involving right triangles.																
Geometry: Area and Volume																	
CC.2.3.1.A.2	Use the understanding of fractions to partition shapes into halves and quarters.																
CC.2.3.2.A.2	Use the understanding of fractions to partitions shapes into halves, quarters, and thirds.																
M03.C-G.1.1.3	Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.																
M06.C-G.1.1.1	Determine the area of triangles and special quadrilaterals (i.e., square, rectangle, parallelogram, rhombus, and trapezoid). Formulas will be provided.																
M06.C-G.1.1.2	Determine the area of irregular or compound polygons.																
M06.C-G.1.1.3	Determine the volume of right rectangular prisms with fractional edge lengths. Formulas will be provided.																
M06.C-G.1.1.6	Determine the surface area of triangular and rectangular prisms (including cubes). Formulas will be provided.																
M07.C-G.2.2.1	Find the area and circumference of a circle. Solve problems involving area and circumference of a circle(s). Formulas will be provided.																
M07.C-G.2.2.2	Solve real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. Formulas will be provided.																
M08.C-G.3.1.1	Apply formulas for the volumes of cones, cylinders, and spheres to solve real-world and mathematical problems. Formulas will be provided.																
G.2.3.1.1	Calculate the surface area of prisms, cylinders, cones, pyramids, and/or spheres. Formulas are provided on a reference sheet.																
G.2.3.1.2	Calculate the volume of prisms, cylinders, cones, pyramids, and/or spheres. Formulas are provided on a reference sheet.																
G.2.3.1.3	Find the measurement of a missing length given the surface area or volume.																
G.2.3.2.1	Describe how a change in the linear dimension of a figure affects its surface area or volume (e.g., How does changing the length of the edge of a cube affect the volume of the cube?).																
G.2.2.2.1	Estimate area, perimeter, or circumference of an irregular figure.																
G.2.2.2.2	Find the measurement of a missing length, given the perimeter, circumference, or area.																
G.2.2.2.3	Find the side lengths of a polygon with a given perimeter to maximize the area of the polygon.																
G.2.2.2.4	Develop and/or use strategies to estimate the area of a compound/composite figure.																
G.2.2.2.5	Find the area of a sector of a circle.																
G.2.2.3.1	Describe how a change in the linear dimension of a figure affects its perimeter, circumference, and area (e.g., How does changing the length of the radius of a circle affect the circumference of the circle?).																
Geometry: Coordinate Geometry																	
M05.C-G.1.1.1	Identify parts of the coordinate plane (*x*-axis, *y*-axis, and the origin) and the ordered pair (*x*-coordinate and *y*-coordinate). Limit the coordinate plane to quadrant I.																
G.2.1.2.3	Use slope, distance, and/or midpoint between two points on a coordinate plane to establish properties of a two-dimensional shape.																
M05.C-G.1.1.2	Represent real-world and mathematical problems by plotting points in quadrant I of the coordinate plane and interpret coordinate values of points in the context of the situation.																
M06.C-G.1.1.4	Given coordinates for the vertices of a polygon in the plane, use the coordinates to find side lengths and area of the polygon (limited to triangles and special quadrilaterals). Formulas will be provided.																

M08.C-G.1.1.1	Identify and apply properties of rotations, reflections, and translations.															
M08.C-G.1.1.2	Given two congruent figures, describe a sequence of transformations that exhibits the congruence between them.															
M08.C-G.1.1.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.															
M08.C-G.1.1.4	Given two similar two-dimensional figures, describe a sequence of transformations that exhibits the similarity between them.															
M08.C-G.2.1.3	Apply the Pythagorean theorem to find the distance between two points in a coordinate system.															
G.2.1.2.1	Calculate the distance and/or midpoint between two points on a number line or on a coordinate plane.															
G.2.1.2.2	Relate slope to perpendicularity and/or parallelism (limit to linear algebraic equations).															

Content Code	Eligible Content	Grades									Algebra I		Algebra II		Geometry	
		K	1	2	3	4	5	6	7	8	**Module 1** Operations and Linear Functions & Inequalities	**Module 2** Linear Functions and Data Organizations	**Module 1** Numbers Systems and Data Analysis	**Module 2** Non-Linear Expressions and Equations	**Module 1** Geometric Properties and Relations	**Module 2** Geometrical Reasoning
Measurement, Data, and Probability: Units and Tools of Measurement																
CC.2.4.K.A.1	Describe and compare attributes of length, area, weight, and capacity of everyday objects.	●														
CC.2.4.1.A.1	Order lengths and measure them both indirectly and by repeating length units.		●													
CC.2.4.1.A.2	Tell and write time to the nearest half hour using both analog and digital clocks.															
CC.2.4.2.A.1	Measure and estimate lengths in standard units using appropriate tools.			●												
CC.2.4.2.A.2	Tell and write time to the nearest five minutes using both analog and digital clocks.															
M03.D-M.1.1.1	Tell, show, and/or write time (analog) to the nearest minute.				●											
M03.D-M.1.1.2	Calculate elapsed time to the minute in a given situation (total elapsed time limited to 60 minutes or less).				●											
M03.D-M.1.2.1	Measure and estimate liquid volumes and masses of objects using standard units (cups [c], pints [pt], quarts [qt], gallons [gal], ounces [oz.], and pounds [lb]) and metric units (liters [l], grams [g], and kilograms [kg]).															
M03.D-M.1.2.3	Use a ruler to measure lengths to the nearest quarter inch or centimeter.				●											
M03.D-M.1.3.1	Compare total values of combinations of coins (penny, nickel, dime, and quarter) and/or dollar bills less than $5.00.															
M03.D-M.1.3.3	Round amounts of money to the nearest dollar.															
M04.D-M.1.1.1	Know relative sizes of measurement units within one system of units including standard units (in., ft, yd, mi; oz., lb; and c, pt, qt, gal), metric units (cm, m, km; g, kg; and mL, L), and time (sec, min, hr, day, wk, mo, and yr). Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. A table of equivalencies will be provided.					●										
M04.D-M.1.1.4	Identify time (analog or digital) as the amount of minutes before or after the hour.															
M04.D-M.3.1.1	Measure angles in whole-number degrees using a protractor. With the aid of a protractor, sketch angles of a specified measure.															
M05.D-M.1.1.1	Convert between different-sized measurement units within a given measurement system. A table of equivalencies will be provided.						●									
Measurement, Data, and Probability: Measurement Applications																
CC.2.4.2.A.3	Solve problems and make change using coins and paper currency with appropriate symbols.															
CC.2.4.2.A.6	Extend the concepts of addition and subtraction to problems involving length.			●												
M03.D-M.1.2.2	Add, subtract, multiply, and divide to solve one-step word problems involving masses or liquid volumes that are given in the same units.															
M03.D-M.1.3.2	Make change for an amount up to $5.00 with no more than $2.00 change given (penny, nickel, dime, quarter, and dollar).															
M03.D-M.3.1.1	Measure areas by counting unit squares (square cm, square m, square in., square ft, and non-standard square units).				●											
M03.D-M.3.1.2	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.				●											
M03.D-M.4.1.1	Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, exhibiting rectangles with the same perimeter and different areas, and exhibiting rectangles with the same area and different perimeters. Use the same units throughout the problem.				●											
M04.D-M.3.1.2	Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems. (Angles must be adjacent and non-overlapping.)					●										
M04.D-M.1.1.2	Use the four operations to solve word problems involving distances, intervals of time (such as elapsed time), liquid volumes, masses of objects; money, including problems involving simple fractions or decimals; and problems that require expressing measurements given in a larger unit in terms of a smaller unit.					●										
M04.D-M.1.1.3	Apply the area and perimeter formulas for rectangles in real-world and mathematical problems (may include finding a missing side length). Whole numbers only. The formulas will be provided.					●										
M05.D-M.3.1.1	Apply the formulas $V = l \times w \times h$ and $V = B \times h$ 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. Formulas will be provided.						●									
M05.D-M.3.1.2	Find volumes of solid figures composed of two non-overlapping right rectangular prisms.						●									
Measurement, Data, and Probability: Data Displays																

CC.2.4.1.A.4	Represent and interpret data using tables and charts.		●														
CC.2.4.2.A.4	Represent and interpret data using line plots, picture graphs, and bar graphs.			●													
M03.D-M.2.1.1	Complete a scaled pictograph and a scaled bar graph to represent a data set with several categories (scales limited to 1, 2, 5, and 10).																
M03.D-M.2.1.2	Solve one- and two-step problems using information to interpret data presented in scaled pictographs and scaled bar graphs (scales limited to 1, 2, 5, and 10).																
M03.D-M.2.1.3	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Display the data by making a line plot, where the horizontal scale is marked in appropriate units – whole numbers, halves, or quarters.																
M03.D-M.2.1.4	Translate information from one type of display to another. Limit to pictographs, tally charts, bar graphs, and tables.																
M04.D-M.2.1.1	Make a line plot to display a data set of measurements in fractions of a unit (e.g., intervals of 1/2, 1/4, or 1/8).																
M04.D-M.2.1.2	Solve problems involving addition and subtraction of fractions by using information presented in line plots (line plots must be labeled with common denominators, such as 1/4, 2/4, 3/4).																
M04.D-M.2.1.3	Translate information from one type of display to another (table, chart, bar graph, or pictograph).																
M05.D-M.2.1.1	Solve problems involving computation of fractions by using information presented in line plots.							●									
M05.D-M.2.1.2	Display and interpret data shown in tallies, tables, charts, pictographs, bar graphs, and line graphs, and use a title, appropriate scale, and labels. A grid will be provided to display data on bar graphs or line graphs.							●									
M06.D-S.1.1.1	Display numerical data in plots on a number line, including line plots, histograms, and box-and-whisker plots.								●								
M07.D-S.2.1.1	Compare two numerical data distributions using measures of center and variability.									●							
M08.D-S.1.1.1	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 correlation, linear association, and nonlinear association.										●						
M08.D-S.1.1.2	For scatter plots that suggest a linear association, identify a line of best fit by judging the closeness of the data points to the line.																
A1.2.2.2.1	Draw, identify, find, and/or write an equation for a line of best fit for a scatter plot.											●					
M08.D-S.1.1.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.										●						
M08.D-S.1.2.1	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 associations between the two variables.										●						
A2.2.3.1.1	Draw, identify, find, interpret, and/or write an equation for a regression model (lines and curves of best fit) for a scatter plot.																
Measurement, Data, and Probability: Data Analysis and Probability																	
CC.2.4.K.A.4	Classify objects and count the number of objects in each category.	●															
M06.D-S.1.1.2	Determine quantitative measures of center (e.g., median, mean, mode) and variability (e.g., range, interquartile range, mean absolute deviation).																
M06.D-S.1.1.3	Describe any overall pattern and any deviations from the overall pattern with reference to the context in which the data were gathered.																
M06.D-S.1.1.4	Relate the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.																
A1.2.3.1.1	Calculate and/or interpret the range, quartiles, and interquartile range of data.																
A1.2.3.2.1	Estimate or calculate to make predictions based on a circle, line, bar graph, measure of central tendency, or other representation.																
A1.2.3.2.2	Analyze data, make predictions, and/or answer questions based on displayed data (box-and-whisker plots, stem-and-leaf plots, scatter plots, measures of central tendency, or other representations).																
A1.2.3.2.3	Make predictions using the equations or graphs of best-fit lines of scatter plots.																
A2.2.3.1.2	Make predictions using the equations or graphs of regression models (lines and curves of best fit) of scatter plots.																
M07.D-S.1.1.1	Determine whether a sample is a random sample given a real-world situation.																
M07.D-S.1.1.2	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest.																
M07.D-S.3.1.1	Predict or determine whether some outcomes are certain, more likely, less likely, equally likely, or impossible (i.e., a probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event).																

M07.D-S.3.2.1	Determine the probability of a chance event given relative frequency. Predict the approximate relative frequency given the probability.							●								
M07.D-S.3.2.2	Find the probability of a simple event, including the probability of a simple event not occurring.							●								
M07.D-S.3.2.3	Find probabilities of independent compound events using organized lists, tables, tree diagrams, and simulation.							●								
A1.2.3.3.1	Find probabilities for compound events (e.g., find probability of red and blue, find probability of red or blue) and represent as a fraction, decimal, or percent.															
G.2.2.4.1	Use area models to find probabilities.															●
A2.2.3.2.1	Use combinations, permutations, and the fundamental counting principle to solve problems involving probability.															
A2.2.3.2.2	Use odds to find probability and/or use probability to find odds.															
A2.2.3.2.3	Use probability for independent, dependent, or compound events to predict outcomes.															