Mathematics

Key for "Province": **Bold type – BC Big Ideas** Regular type – BC content (K-9) * - BC curricular competency/content (HS)

K-9 Curricular Competencies used throughout all topics: reasoning and analyzing, understanding and solving, communicating and representing

Topics	Gr	North American Division	Province:
Numbers and Operations	K	*Numbers:* K.NO.1 Know number names and count up to 100 by ones and tens (K.CC.1,2)	**(K) Numbers represent quantities that can be decomposed into smaller parts:** number concepts to 10, and ways to make 5. **(2) Numbers to 100 represent quantities that can be decomposed into 10s and 1s:** number concepts to 20.
		Numbers, cont: K.NO.2 Read and write numbers 0 to 20 (K.CC.3)	**(K) Numbers represent quantities that can be decomposed into smaller parts:** number concepts to 10. **(1) Numbers to 20 represent quantities that can be decomposed into 10s and 1s:** number concepts to 20.
		Numbers, cont: K.NO.3 Count to tell the number of objects and be able to represent as a written numeral (K.CC.3,4,5)	**(K) Numbers represent quantities that can be decomposed into smaller parts:** number concepts to 10.
		Numbers, cont: K.NO.4 Compare number of objects between groups; compare written numerals between 1 and 10 (K.CC.6,7)	**(K) Numbers represent quantities that can be decomposed into smaller parts:** number concepts to 10, ways to make 5, change in quantity to 10, and using concrete materials. **(1) Numbers to 20 represent quantities that can be decomposed into 10s and 1s:** change in quantity to 20, concretely and verbally.
		Place Value: K.NO.5 Begin to organize objects up to 19 into groups of tens and ones (K.NBT.1)	**(K) Numbers represent quantities that can be decomposed into smaller parts:** number concepts to 10, and ways to make 5.
Numbers and Operations	1	*Numbers:* 1.NO.1 Count, read, write, and understand numbers up to 120 (1.NBT.1)	**(1) Numbers to 20 represent quantities that can be decomposed into 10s and 1s:** number concepts to 20. **(2) Numbers to 100 represent quantities that can be decomposed into 10s and 1s:** number concepts to 100.
		Numbers, cont: 1.NO.2 Count by twos, fives, and twenty-fives up to 100	**(1) Numbers to 20 represent quantities that can be decomposed into 10s and 1s:** ways to make 10. **(2) Numbers to 100 represent quantities that can be decomposed into 10s and 1s:** benchmarks of 25, 50, and 100 and personal referents.
		Place Value: 1.NO.3 Understand and compare two-digit numbers organized as groups of tens and ones (1.NBT.2,3)	**(1) Numbers to 20 represent quantities that can be decomposed into 10s and 1s:** ways to make 10.
		Place Value, cont: 1.NO.4 Understand and mentally find ten more or ten less than a given two-digit number (1.NBT.5)	**(1) Numbers to 20 represent quantities that can be decomposed into 10s and 1s:** ways to make 10.
		Place Value, cont: 1.NO.5 Add and subtract multiples of ten within 100 using models or drawings (1.NBT.4,6)	**(1) Addition and subtraction with numbers to 10 can be modelled concretely, pictorially, and symbolically to develop computational fluency.**

			(2) Development of computational fluency in addition and subtraction with numbers to 100 requires an understanding of place value.
Numbers and Operations	2	*Numbers:* 2.NO.1 Read, write, and understand numbers up to 1000 using standard, number name, and expanded forms (2.NBT.3)	**(2) Numbers to 100 represent quantities that can be decomposed into 10s and 1s:** number concepts to 100: number concepts to 100.
		Numbers, cont: 2.NO.2 Count by ones, fives, tens, and hundreds up to 1000 (2.NBT.2)	**(2) Numbers to 100 represent quantities that can be decomposed into 10s and 1s:** benchmarks of 25, 50, and 100 and personal referents.
		Place Value: 2.NO.3 Understand and compare three-digit numbers organized as groups of hundreds, tens, and ones; use place value to understand addition and subtraction (2.NBT.1,4,9)	**(2) Numbers to 100 represent quantities that can be decomposed into 10s and 1s:** benchmarks of 25, 50, and 100 and personal referents. **(2) Development of computational fluency in addition and subtraction with numbers to 100 requires an understanding of place value:** addition and subtraction to 100.
		Place Value, cont: 2.NO.4 Mentally add and subtract multiples of ten and multiples of a hundred within 1000 (2.NBT.8)	**(2) Development of computational fluency in addition and subtraction with numbers to 100 requires an understanding of place value:** addition and subtraction to 100.
		Place Value, cont: 2.NO.5 Add and subtract within 1000 with regrouping using models or drawings (2.NBT.7)	**(2) Development of computational fluency in addition and subtraction with numbers to 100 requires an understanding of place value:** addition and subtraction to 100.
Numbers and Operations	3	*Place Value:* 3.NO.1 Use place value understanding of up to five-digit whole numbers to round to the nearest 10, 100, and 1,000 (3.NBT.1)	**(3) Fractions are a type of number that can represent quantities:** number concepts to 1000.
		Addition/Subtraction: 3.NO.2 Add and subtract up to four digits with and without regrouping (3.NBT.2)	**(3) Development of computational fluency in addition, subtraction, multiplication, and division of whole numbers requires flexible decomposing and composing:** addition and subtraction facts to 20.
		Fractions: 3.NO.3 Understand, express, and order fractions between zero and one, simple mixed numbers, and whole numbers as fractions (3.NF.1,2)	**(3) Fractions are a type of number that can represent quantities:** number concepts to 1000, and fraction concepts.
		Fractions, cont: 3.NO.4 Understand and create equivalent fractions with denominators 2,3,4,6,8 using fraction models (3.NF.3)	**(3) Fractions are a type of number that can represent quantities:** number concepts to 1000, and fraction concepts.
Numbers and Operations	4	*Place Value:* 4.NO.1 Use place value understanding of multi-digit whole numbers to round to any place up to millions (4.NBT.1,3)	**(4) Fractions and decimals are types of numbers that can represent quantities:** number concepts to 10,000.
		Place Value, cont: 4.NO.2 Read, write, compare, and understand whole numbers using standard, number name, and expanded forms (4.NBT.2)	**(4) Fractions and decimals are types of numbers that can represent quantities:** number concepts to 10,000.
		Basic Operations: 4.NO.3 Add and subtract multi-digit whole numbers; multiply up to 4 digits X 1 digit and 2 digits X 2 digits; divide using a one-digit divisor and up to a four-digit dividend with and without a remainder (4.NBT.4,5,6)	**(4) Development of computational fluency and multiplicative thinking requires analysis of patterns and relations in multiplication and division:** addition and subtraction to 10,000, and multiplication and division of two- or three- digit numbers by one-digit numbers.

		Fractions/Decimals: 4.NO.4 Understand, express, and order fractions with different numerators and denominators; numerically express equivalent fractions (4.NF.1,2)	**(4) Fractions and decimals are types of numbers that can represent quantities:** number concepts to 10,000, decimals to hundredths, and ordering and comparing fractions.
		Fractions/Decimals, cont: 4.NO.5 Add and subtract fractions and mixed numbers with common denominators; multiply fractions by whole numbers (4.NF.3,4)	**(4) Fractions and decimals are types of numbers that can represent quantities:** number concepts to 10,000, decimals to hundredths, and ordering and comparing fractions.
		Fractions/Decimals, cont: 4.NO.6 Understand, compare, and use decimal notation for fractions with denominators of 10 or 100 (4.NF.5,6,7)	**(4) Fractions and decimals are types of numbers that can represent quantities:** number concepts to 10,000, decimals to hundredths, and ordering and comparing fractions.
Numbers and Operations	5	*Place Value:* 5.NO.1 Read, write, and compare decimals to the thousandths place using standard, number name, and expanded forms; round decimals to any place (5.NBT.3,4)	**(5) Numbers describe quantities that can be represented by equivalent fractions:** number concepts to 1,000,000, and decimals to thousandths. **(6) Computational fluency and flexibility with numbers extend to whole numbers and decimals:** small to large numbers.
		Place Value, cont:: 5.NO.2 Explain patterns in relation to the powers of 10 (5.NBT.1,2)	**(5) Numbers describe quantities that can be represented by equivalent fractions:** number concepts to 1,000,000, and decimals to thousandths. **(5) Identified regularities in number patterns can be expressed in tables:** rules for increasing and decreasing patterns with words, numbers, symbols, and variables.
		Basic Operations: 5.NO.3 Multiply multi-digit whole numbers; divide using a two-digit divisor and up to a four-digit dividend; add, subtract, multiply, and divide decimals up to the hundredths place (5.NBT.5,6,7)	**(5) Computational fluency and flexibility with numbers extend to operations with lager numbers:** Addition and subtraction of whole numbers to 1,000,000, multiplication and division to three digits including division with remainders, and addition and subtraction of decimals to thousandths.
		Fractions: 5.NO.4 Add and subtract fractions and mixed numbers with unlike denominators; multiply a fraction or a whole number by a fraction; divide fractions by whole numbers (5.NF.1,2,3,4,5,6,7)	**(5) Numbers describe quantities that can be represented by equivalent fractions.** **(5) Computational fluency and flexibility with numbers extend to operations with larger numbers.**
		Fractions, cont: 5.NO.5 Simplify fractions to lowest terms	**(5) Numbers describe quantities that can be represented by equivalent fractions:** equivalent fractions; and whole-number, fraction, and decimal benchmarks.
Numbers and Operations	6	*Rational Numbers:* 6.NO.1 Add, subtract, multiply, and divide multi-digit whole numbers and decimals (6.NS.2,3)	**(6) Computational fluency and flexibility with numbers extend to operations with whole numbers and decimals:** multiplication and division of decimals. **(5) addition and subtraction of decimals to thousandths.** **(7) Computational fluency and flexibility with numbers extend to operations with decimals:** operations with decimals.
		Rational Numbers, cont: 6.NO.2 Find common factors and multiples (6.NS.4); understand and apply prime factorization and exponents (6.EE.1)	**(6) Mixed numbers and decimal numbers represent quantities that can be decomposed into parts and wholes:** factors and multiples, and improper fractions.
		Rational Numbers, cont: 6.NO.3 Understand, compare, and order integers; apply integer principles within the four basic	**(6) Mixed numbers and decimal numbers represent quantities that can be decomposed into parts and**

		operations; graph ordered pairs on a coordinate plane (6.NS.5,6,7,8)	**wholes:** factors and multiples, improper fractions, and introduction to ratios. **(7) Computational fluency and flexibility with numbers extend to operations with integers and decimals:** operations with integers.
		Rational Numbers, cont: 6.NO.4 Divide fractions by fractions; express a remainder as a fraction or decimal; convert within fractions, decimals, and percents; convert fractions to terminating, repeating, or rounded decimals (6.NS.1)	**(6) Mixed numbers and decimal numbers represent quantities that can be decomposed into parts and wholes:** improper fractions and mixed numbers. **(6) Computational fluency and flexibility with numbers extend to operations with whole numbers and decimals.**
		Ratios/Proportions/Percentages 6.NO.5 Understand and apply ratio concepts and use ratio reasoning to solve problems (6.RP.1,2,3)	**(6) Mixed numbers and decimal numbers represent quantities that can be decomposed into parts and wholes: introduction of ratios.**
Numbers and Operations	7	*Rational Numbers:* 7.NO.1 Apply and extend the four basic operations to rational numbers (7.NS.1,2,3)	**(7) Computational fluency and flexibility with numbers extend to operations with integers and decimals:** operations with integers and decimals.
		Rational Numbers, cont: 7.NO.2 Understand and apply properties of operations (7.NS.2)	**(7) Computational fluency and flexibility with numbers extend to operations with integers and decimals:** operations with integers and decimals.
		Rational Numbers, cont: 7.NO.3 Perform operations with numbers expressed in scientific notation, exponents, and square root	**(7) Computational fluency and flexibility with numbers extend to operations with integers and decimals:** operations with integers and decimals. **(8) Computational fluency and flexibility with numbers extend to operations with fractions:** perfect squares and cubes, square and cube roots.
		Ratios/Proportions/Percentages: 7.NO.4 Analyze and apply proportional relationships (7.RP.1,2,3)	**(7) Financial Literacy:** financial percentage **(8) Number represents, describes, and compares the quantities of ratios, rates, and percents:** percents less than 1 and greater than 100, and numerical proportional reasoning. **(8) Financial Literacy:** best buys
Numbers and Operations	8	*Rational/Irrational Numbers:* 8.NO.1 Informally understand and use number sense for irrational numbers (8.NS.1,2)	**(8) Number represents, describes, and compares the quantities of ratios, rates, and percents:** numerical proportional reasoning. **(8) Computational fluency and flexibility extend to operations with fractions:** operations with fractions.
Numbers and Operations	9	AI.4 Be able to understand concepts involving real numbers.	**(9) The principals and processes underlying operations with numbers apply equally to algebraic situations and can be described and analyzed:** operations and exponents.
		AI.4.1 Simplify expressions using the order of operations, including properties of exponents, square roots, and absolute value.	**(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials.
		PA.4.2 Identify numbers (natural, whole, integers, rational, irrational, real) and operations of numbers (addition, subtraction, multiplication, division) including scientific notation.	**(9) The principles and processes underlying operations with numbers apply equally to algebraic situations and can be described and analyzed:** operations and exponents.
		AI.4.2 Identify numbers (i.e. real, rational, irrational).	**(9) The principles and processes underlying operations with numbers apply equally to algebraic situations and can be described and analyzed:** operations and exponents.
		AI.4.3 Identify relationships and operations among numbers (i.e. properties, equations, inequalities,	**(9) The principles and processes underlying operations with numbers apply equally to algebraic**

		ratios, proportions, dimensional analysis, real vs. imaginary). N-RN.3, A-REI.1	**situations and can be described and analyzed:** operations and exponents.
Numbers and Operations	10	AII.4 Be able to understand concepts involving real and complex numbers.	**(10) Algebra allows us to generalize relationships through abstract thinking.** **(10) The meanings of, and connections between, each operation extend to powers and polynomials.** *Develop, demonstrate, and apply conceptual understanding of mathematical ideas through play, story, inquiry, and problem solving.
		AII.4.1 Identify numbers and relationships among numbers (i.e. properties, equations, inequalities). N-CN.3	**(10) Algebra allows us to generalize relationships through abstract thinking:** **(10) The meanings of, and connections between, each operation extend to powers and polynomials.** *Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number. *Connect mathematical concepts with each other, with other areas, and with personal interests.
Numbers and Operations	11	None	None
Numbers and Operations	12	None	None
Operations and Algebraic Thinking	K	*Addition:* K.OAT.1 Understand addition as putting together and adding to (K.OA.1,2)	**(K) One-to-one correspondence and a sense of 5 and 10 are essential for fluency with numbers:** ways to make 5, number concepts to 10. **(1) Addition and subtraction with numbers to 10 can be modelled concretely, pictorially, and symbolically to develop computational fluency.**
		Addition, cont: K.OAT.2 Represent and solve addition word problems within 10; fluently add within 5 (K.OA.3,4,5)	**(K) One-to-one correspondence and a sense of 5 and 10 are essential for fluency with numbers:** ways to make 5, number concepts to 10. **(1) Addition and subtraction with numbers to 10 can be modelled concretely, pictorially, and symbolically to develop computational fluency.**
		Subtraction: K.OAT.3 Understand subtraction as taking apart and taking from (K.OA.1,2)	**(K) One-to-one correspondence and a sense of 5 and 10 are essential for fluency with numbers:** ways to make 5, number concepts to 10. **(1) Addition and subtraction with numbers to 10 can be modelled concretely, pictorially, and symbolically to develop computational fluency.**
		Subtraction, cont: K.OAT.4 Represent and solve subtraction word problems within 10; fluently subtract within 5 (K.OA.3,4,5)	**(K) One-to-one correspondence and a sense of 5 and 10 are essential for fluency with numbers:** decomposition of numbers to 10. **(1) Addition and subtraction with numbers to 10 can be modelled concretely, pictorially, and symbolically to develop computational fluency.**
Operations and Algebraic Thinking	1	*Addition/Subtraction:* 1.OAT.1 Understand, represent, compare, and apply addition and subtraction properties to word problems within 20; fluently add and subtract within 10 (1.OA.1,2,3,4,5,6); add up to three whole numbers within 20 (1.OA.2); add two-digit and one-digit numbers with regrouping within 100 using models or drawings (1.NBT.4)	**(1) Addition and subtraction with numbers to 10 can be modelled concretely, pictorially, and symbolically to develop computational fluency:** ways to make 10, change in quantity to 220, concretely and verbally. **(2) Development of computational fluency in addition and subtraction with numbers to 100 requires an understanding of place value:** change in quantity, using pictorial & symbolic representation.
		Addition/Subtraction, cont:	**(1) Addition and subtraction with numbers to 10 can be modelled concretely, pictorially, and**

		1.OAT.2 Work with addition and subtraction equations including unknowns (1.OA.7,8)	**symbolically to develop computational fluency:** addition and subtraction to 20.
Operations and Algebraic Thinking	2	*Addition/Subtraction:* 2.OAT.1 Understand, represent, compare, and apply addition and subtraction properties within 100 to solve one- and two- step word problems (2.OA.1) (2.NBT.5); add up to four 2-digit numbers (2.NBT.6)	**(2) Development of computational fluency in addition and subtraction with numbers to 100 requires an understanding of place value: addition and subtraction to 100.**
		Addition/Subtraction, cont: 2.OAT.2 Memorize and fluently add and subtract within 20 (2.OA.2)	**(2) Development of computational fluency in addition and subtraction with numbers to 100 requires an understanding of place value:** addition and subtraction facts to 20.
		Multiplication: 2.OAT.3 Determine if a group of objects within 20 represents an odd or even number (2.OA.3)	**(2) Development of computational fluency in addition and subtraction with numbers to 100 requires an understanding of place value:** addition and subtraction facts to 20.
		Multiplication: 2.OAT.4 Write an equation to represent the total as a sum of equal addends with up to 5 groups of 5 objects (2.OA.3,4)	**(3) Development of computational fluency in addition, subtraction, multiplication, and division of whole numbers requires flexible decomposing and composing:** addition and subtraction to 100.
Operations and Algebraic Thinking	3	*Multiplication/Division:* 3.OAT.1 Understand the meaning and relationship of multiplication and division (3.OA.1,2,6)	**(3) Development of computational fluency in addition, subtraction, multiplication, and division of whole numbers requires flexible decomposing and composing:** multiplication and division concepts.
		Multiplication/Division, cont: 3.OAT.2 Memorize and fluently multiply and divide using the multiplication facts through 10 (3.OA.3,7); mentally multiply by 10 and 100 (3.NBT.3)	**(3) Development of computational fluency in addition, subtraction, multiplication, and division of whole numbers requires flexible decomposing and composing:** multiplication and division concepts.
		Multiplication/Division, cont: 3.OAT.3 Represent and determine the unknown whole number in an equation (3.OA.4)	**(3) Development of computational fluency in addition, subtraction, multiplication, and division of whole numbers requires flexible decomposing and composing:** multiplication and division concepts. **(3) Regular increases and decreases in patterns can be identified and used to make generalizations:** one-step addition and subtraction equations with an unknown number.
		Multiplication/Division, cont: 3.OAT.4 Apply properties of operations (commutative, associative, distributive) to multiply and divide (3.OA.5)	**(3) Development of computational fluency in addition, subtraction, multiplication, and division of whole numbers requires flexible decomposing and composing:** multiplication and division concepts.
		Problem Solving: 3.OAT.5 Solve two-step word problems using the four basic operations and estimate to check (3.OA.8)	**(3) Development of computational fluency in addition, subtraction, multiplication, and division of whole numbers requires flexible decomposing and composing:** addition and subtraction to 1000, and multiplication and division concepts.
		Problem Solving, cont: 3.OAT.6 Begin to understand and apply the standard order of operations (3.OA.8)	**(3) Development of computational fluency in addition, subtraction, multiplication, and division of whole numbers requires flexible decomposing and composing:** computational fluency, addition and subtraction, and multiplication and division concepts.
		Patterns: 3.OAT.7 Identify arithmetic patterns using properties of operations (3.OA.9)	**(3) Development of computational fluency in addition, subtraction, multiplication, and division of whole numbers requires flexible decomposing and**

			composing: addition and subtraction, and multiplication and division. **(3) Regular increases and decreases in patterns can be identified and used to make generalizations:** one-step addition and subtraction equations with an unknown number.
Operations and Algebraic Thinking	4	*Multiplication:* 4.OAT.1 Memorize and fluently multiply using the multiplication facts through 12	**(4) Development of computational fluency and multiplicative thinking requires analysis of patterns and relations in multiplication and division:** multiplication and division facts to 100.
		Problem Solving: 4.OAT.2 Solve multi-step word problems including remainder interpretation and estimate to check; create equations with a letter for the unknown (4.OA.1,2,3)	**(4) Regular changes in patterns can be identified and represented using tools and tables:** algebraic relationships among quantities, and one-step equations with an unknown number using all operations.
		Factors: 4.OAT.3 Find all factor pairs for a whole number within 100; identify whole numbers as prime or composite (4.OA.4)	**(4) Regular changes in patterns can be identified and represented using tools and tables:** algebraic relationships among quantities.
		Factors, cont: 4.OAT.4 Understand the basic concepts of least common multiple (LCM) and greatest common factor (GCF)	**(4) Regular changes in patterns can be identified and represented using tools and tables:** algebraic relationships among quantities, and one-step equations with an unknown number using all operations.
		Patterns: 4.OAT.5 Generate and analyze number and shape patterns (4.OA.5)	**(4) Regular changes in patterns can be identified and represented using tools and tables:** increasing and decreasing patterns, algebraic relationships among quantities, and one-step equations with an unknown number using all operations.
Operations and Algebraic Thinking	5	*Numerical Expressions:* 5.OAT.1 Write and interpret simple numerical expressions using parentheses, brackets, and braces (5.OA.1,2)	**(5) Identified regularities in number patterns can be expressed in tables:** rules for increasing and decreasing patterns with words, numbers, symbols, and variables. **(5) Numbers describe quantities that can be represented by equivalent fractions:** number concepts to 1,000,000.
		Factors: 5.OAT.2 Determine the least common multiple (LCM) and greatest common factor (GCF) of two numbers	**(6) Mixed numbers and decimal numbers represent quantities that can be decomposed into parts and wholes:** factors and multiples.
		Patterns: 5.OAT.3 Generate, identify the relationship, and graph ordered pairs using numerical patterns with two given rules (5.OA.3)	**(5) Identified regularities in number patterns can be expressed in tables:** rules for increasing and decreasing patterns with words, numbers, symbols, and variables.
Operations and Algebraic Thinking	6	*Expressions and Equations:* 6.OAT.1 Apply basic operations to algebraic expressions; solve and explain one-variable equations and inequalities; identify parts of an expression using mathematical terms (6.EE.1,2,3,4,5,6,7,8)	**(6) Computational fluency and flexibility with numbers extend to operations with whole numbers and decimals:** order of operations, one-step equations with whole-number coefficients and solutions. **(7) Computational fluency and flexibility with numbers extend to operations with integers and decimals:** operations with integers, and operations with decimals, two-step equations with shole-number coefficients, constants and solutions.
		Expressions and Equations, cont:	**(6) Computational fluency and flexibility with numbers extend to operations with whole numbers**

		6.OAT.2 Represent, graph, and analyze quantitative relationships between dependent and independent variables (6.EE.9)	**and decimals:** increasing and decreasing patterns, using expressions, tables, and graphs as functional relationships.
Operations and Algebraic Thinking	7	*Expressions/Equations/Inequalities:* 7.OAT.1 Use properties of operations to generate equivalent expressions (7.EE.1,2)	**(7) Computational fluency and flexibility with numbers extend to operations with integers and decimals:** operations with integers and decimals. **(7) Linear relations can be represented in many connected ways to identify regularities and make generalizations:** discrete linear relations, using expressions; two-step equations with whole-number coefficients, constants and solutions.
		Expressions/Equations/Inequalities, cont: 7.OAT.2 Solve real-life and mathematical problems using numerical and algebraic expressions and equations (7.EE.3,4)	**(7) Computational fluency and flexibility with numbers extend to operations with integers and decimals:** multiplication and division facts to 100; operations with integers and decimals; and relationships between decimals, fractions, rations, and percents. **(7) Linear relations can be represented in many connected ways to identify regularities and make generalizations:** two-step equations with whole-number coefficients, constants and solutions.
		Expressions/Equations/Inequalities, cont: 7.OAT.3 Represent, graph, analyze, and generalize patterns, ratios, and inequalities using symbolic rules	**(7) Linear relations can be represented in many connected ways to identify regularities and make generalizations:** discrete linear relations, using expressions, tables, and graphs. **(8) Number represents, describes, and compares the quantities of ratios, rates, and percents:** numerical proportional reasoning.
Operations and Algebraic Thinking	8	*Expressions/Equations/Inequalities:* 8.OAT.1 Work with radicals and integer exponents (8.E.E.1,2,3,4)	**(8) Computational fluency and flexibility extend to operations with fractions:** two-step equations with integer coefficients, constants, and solutions.
		Expressions/Equations/Inequalities, cont: 28.OAT.2 Understand and graph the connections between proportional relationships, lines, slope, and linear equations (8.EE.5,6)	**(8) Discrete linear relationships can be represented in many connected ways and used to identify and make generalizations:** discrete linear relations.
		Expressions/Equations/Inequalities, cont: 8.OAT.3 Analyze and solve linear equations and pairs of simultaneous linear equations (8.EE.7,8)	**(8) Discrete linear relationships can be representd in many connected ways and used to identify and make generalizations:** discrete linear relations, two-step equations with integer coefficients, constants, and solutions.
		Functions: 8.OAT.4 Define, evaluate, compare, and use functions to model relationships between quantities (8.F.1,2,3,4,5)	**(8) Discrete linear relationships can be representd in many connected ways and used to identify and make generalizations:** discrete linear relations, expressions, and two-step equations.
Operations and Algebraic Thinking	9	AI.2.1 Understand mathematical concepts (number sense, algebraic and geometric thinking, measurement, data analysis, and probability). MP.7	**(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials. **(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials.
		AI.2.2 Utilize the problem-solving process (explore, plan, solve, verify). MP.1, MP.2	**(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials. **(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials.

		AI.2.3 Develop higher-order thinking skills (analyze, evaluate, reason, classify, predict, generalize, solve, decide, relate, interpret, simplify, model, synthesize).MP.2, MP.3, MP.4	**(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials. **(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials.
		AI.2.4 Attend to precision. MP.6	**(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials. **(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials.
		AI.3.1 Use a variety of strategies in the problem-solving process (i.e. patterns, tables, diagrams). MP.7, MP.8	**(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials.
		AI.3.2 Conduct research (locate, observe/gather, analyze, conclude).	**(9) Analyzing the validity, reliability, and representation of data enables us to compare and interpret:** statistics in society.
		AI.3.3 Perform calculations with and without technology in life situations. MP.5	**(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials, financial literacy.
		AI.3.4 Read critically and communicate proficiently with mathematical vocabulary.	**(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials. **(9) Analyzing the validity, reliability, and representation of data enables us to compare and interpret:** statistics in society.
		AI.5 Be able to represent mathematical situations using algebraic symbols and models.	**(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials.
		AI.5.1 Use and evaluate expressions involving variables. A-SSE.1	**(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials.
		AI.5.2 Write equations, systems of equations, and inequalities from written and oral expression, recognizing equivalent forms. A-SSE.2, A-CED.1,2, F-LE.2,3, G-GPE.5	**(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials.
		PA.5.3 Identify, graph, and interpret functions.	**(9) Continuous linear relationships can be identified and represented in many connected ways to identify regularities and make generalizations:** two-variable linear relations, and multi-step one-variable linear equations.
		AI.5.3 Identify, graph, solve, and interpret linear/quadratic equations/inequalities and the concept of variation. A-SSE.3, A-CED.2, A-REI.10,12, F-IF.8, F-LE.2,3	**(9) Continuous linear relationships can be identified and represented in many connected ways to identify regularities and make generalizations:** two-variable linear relations, and multi-step one-variable linear equations.
		AI.5.4 Recognize, evaluate, and interpret functions, including domain and range. F-IF.1,2,4,5,6	**(9) Continuous linear relationships can be identified and represented in many connected ways to identify regularities and make generalizations:** two-variable linear relations, and multi-step one-variable linear equations.

		AI.6 Be able to apply appropriate techniques, tools, and formulas to interpret and solve problems.	**(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials.
		AI.6.2 Demonstrate mathematical proficiency using technology when appropriate.	**(9) Continuous linear relationships can be identified and represented in many connected ways to identify regularities and make generalizations:** two-variable linear relations, and multi-step one-variable linear equations.
		AI.6.4 Perform operations involving polynomials and rational expressions. A-APR.1,7	**(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials.
		AI.6.5 Solve consumer-related problems (i.e. profit/loss, sales tax, mark-up/discount, interest) N-Q.1,2,3	**(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials, and financial literacy.
		AI.6.6 Solve simple equations and inequalities in one variable (linear, quadratic, rational, radical, exponential, absolute value). A-REI.2,3,4, F-IF.8	**(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials.
		AI.6.7 Solve systems of equations and inequalities using graphs and algebraic methods. A-CED.1, A-REI.1,5,6	**(9) Computational fluency and flexibility with numbers extend to operations with rational numbers:** operations with polynomials.
Operations and Algebraic Thinking	10	AI.2.1 Understand mathematical concepts (number sense, algebraic and geometric thinking, measurement, data analysis, and probability). MP.7	**(10) The meanings of, and connections between, each operation extend to powers and polynomials.** **(10) Representing and analyzing situations allows us to notice and wonder about relationships.** *Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number. *Connect mathematical concepts with each other, other areas, and personal interests.
		AI.2.2 Utilize the problem-solving process (explore, plan, solve, verify). MP.1, MP.2	**(10) The meanings of, and connections between, each operation extend to powers and polynomials.** *Solve problems with persistence and a positive disposition. *Apply flexible and strategic approaches to solve problems.
		AI.2.3 Develop higher-order thinking skills (analyze, evaluate, reason, classify, predict, generalize, solve, decide, relate, interpret, simplify, model, synthesize).MP.2, MP.3, MP.4	**(10) Algebra allows us to generalize relationships through abstract thinking.** **(10) Representing and analyzing situations allows us to notice and wonder about relationships.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools. *Model with mathematics in situational contexts. *Explain and justify mathematical ideas and decisions in many ways. *Apply flexible and strategic approaches to solve problems. *Develop thinking strategies to solve puzzles and play games.
		AI.2.4 Attend to precision. MP.6	**(10) The meanings of, and connections between, each operation extend to powers and polynomials.** *Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number.

		AI.3.1 Use a variety of strategies in the problem-solving process (i.e. patterns, tables, diagrams). MP.7, MP.8	**(10) The meanings of, and connections between, each operation extend to powers and polynomials.** *Apply flexible and strategic approaches to solve problems. *Develop thinking strategies to solve puzzles and play games.
		AI.3.2 Conduct research (locate, observe/gather, analyze, conclude).	**(10) Representing and analyzing situations allows us to notice and wonder about relationships.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.
		AI.3.3 Perform calculations with and without technology in life situations. MP.5	**(10) The meanings of, and connections between, each operation extend to powers and polynomials.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools. *Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number (this is part of the mental math section). *Model with mathematics in situational contexts (this is related to real-life scenarios).
		AI.3.4 Read critically and communicate proficiently with mathematical vocabulary.	**(10) The meanings of, and connections between, each operation extend to powers and polynomials.** *Use mathematical vocabulary and language to contribute to discussions in the classroom. *Develop, demonstrate, and apply conceptual understanding of mathematical ideas through play, story, inquiry, and problem solving.
		AII.4.2 Simplify expressions using the order of operations, including radicals and absolute value. N-RN.1,2, N-CN.1,2	**(10) The meanings of, and connections between, each operation extend to powers and polynomials.** Radicals are related to Pre-Calc 11 and "absolute value" kind of shows up randomly. *Radical operations and equations.
		AII.4.3 Know and use the Fundamental Theorem of Algebra. N-CN.9	**(10) The meanings of, and connections between, each operation extend to powers and polynomials.** **(10) Algebra allows us to generalize relationships through abstract thinking.**
		AII.5 Be able to represent mathematical situations using algebraic symbols and models.	**(10) The meanings of, and connections between, each operation extend to powers and polynomials.** *Represent mathematical ideas in concrete, pictorial, and symbolic forms.
		AII.5.1 Use and evaluate expressions involving variables. A-SSE.1, F-BF.1	**(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) The meanings of, and connections between, each operation extend to powers and polynomials.** Multiple content competencies would be relevant: *Polynomial factoring. *Multiplication of polynomial expressions. *Linear functions: slope and equations of lines.
		AII.5.2 Write higher-order equations and inequalities from written and oral expression and recognize equivalent forms. A-SSE.2, N-CN.8, F-LE.2,3	**(10) The meanings of, and connections between, each operation extend to powers and polynomials.** Inequalities are definitely not covered in Math 10 but linear graphs are: *Functions and relations: connecting data, graphs, and situations. **(11) Quadratic relationships are prevalent in the world around us.**

			*Linear and quadratic inequalities(P11). *Linear inequalities (F11).
		AII.5.3 Identify, graph, and interpret various functions (i.e. quadratic, inverse, trigonometric, logarithmic, exponential). F-IF.5,7,8, F-BF.3, F-LE.1, G-GPE.1,2,3	**(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** Math 10 would only do the quadratic section. The other parts would be related to Pre-Calc 12: *Trigonometry: functions, equations, & identities. *Logarithms: operations, functions, and equations. *Exponential functions and equations.
		AII.6.4 Graph and perform operations involving polynomials and rational expressions. A-APR.2,3,6,7, F-BF.1,4	**(10) The meanings of, and connections between, each operation extend to powers and polynomials.** **(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools Note that rationals would be covered in Pre-Calc 11 and Pre-Calc 12: *Rational expressions and equations (P11) *Rational functions (P12)
		AII.6.5 Demonstrate mathematical proficiency using a graphing utility. MP.3	**(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.
		AII.7.1 Find and interpret information from graphs, charts, and numerical data. S-ID.6, F-IF.4,9, F-BF.4, F-LE.2,5	**(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** *Functions and relations: connecting data, graphs, and situations.
		AII.6 Be able to apply appropriate techniques, tools, and formulas to interpret and solve problems.	**(10) The meanings of, and connections between, each operation extend to powers and polynomials.** *Apply flexible and strategic approaches to solve problems.
		AII.6.1 Solve systems of equations and inequalities using graphs and algebraic methods. A-REI.7,11	**(10) The meanings of, and connections between, each operation extend to powers and polynomials.** Inequalities are definitely not covered in Math 10 but linear graphs are: *Functions and relations: connecting data, graphs, and situations.
		AII.6.2 Solve consumer-related problems involving linear programming. A-CED.3	**(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** *Model with mathematics in situational contexts.
		AII.6.3 Solve quadratic, exponential, radical, rational, and logarithmic equations. N-CN.7, A-REI.2,4, F-IF.8 F-BF.5, F-LE.4	**(10) The meanings of, and connections between, each operation extend to powers and polynomials.** Math 10 would only do the quadratic section. The other parts would be related to Pre-Calc 12: *Trigonometry: functions, equations, & identities. *Logarithms: operations, functions, and equations. *Exponential functions and equations.

Operations and Algebraic Thinking	11	AI.2.1 Understand mathematical concepts (number sense, algebraic and geometric thinking, measurement, data analysis, and probability). MP.7	**(F11) Statistical analysis allows us to notice, wonder about, and answer questions about variation.** **(P11) Algebra allows us to generalize relationship through abstract thinking.** Math 10 would only do the quadratic section. The other parts would be related to Pre-Calc 12: *Trigonometry: functions, equations, & identities. *Logarithms: operations, functions, and equations. *Exponential functions and equations.
		AI.2.2 Utilize the problem-solving process (explore, plan, solve, verify). MP.1, MP.2	**(F11) The meanings of, and connections between, operations extend to powers, radicals, and polynomials.** **(P11) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Solve problems with persistence and a positive disposition. *Apply flexible and strategic approaches to solve problems.
		AI.2.3 Develop higher-order thinking skills (analyze, evaluate, reason, classify, predict, generalize, solve, decide, relate, interpret, simplify, model, synthesize).MP.2, MP.3, MP.4	**(F11) Logical reasoning helps us discover and describe mathematical truths.** **(P11) The meanings of, and connections between, operations extend to powers, radicals, and polynomials.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools. *Model with mathematics in situational contexts. *Explain and justify mathematical ideas and decisions in many ways. *Apply flexible and strategic approaches to solve problems. *Develop thinking strategies to solve puzzles and play games.
		AI.2.4 Attend to precision. MP.6	**(F11) Optimization informs the decision-making process in situations involving extreme values.** **(P11) The meanings of, and connections between, operations extend to powers, radicals, and polynomials.** *Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number.
		AI.3.1 Use a variety of strategies in the problem-solving process (i.e. patterns, tables, diagrams). MP.7, MP.8	**(F11) Logical reasoning helps us discover and describe mathematical truths.** **(P11) The meanings of, and connections between, operations extend to powers, radicals, and polynomials.** *Apply flexible and strategic approaches to solve problems. *Develop thinking strategies to solve puzzles and play games.
		AI.3.2 Conduct research (locate, observe/gather, analyze, conclude).	**(F11) Statistical analysis allows us to notice, wonder about, and answer questions about variation.** **(P11) The meanings of, and connections between, operations extend to powers, radicals, and polynomials.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.

		AI.3.3 Perform calculations with and without technology in life situations. MP.5	**(F11) Logical reasoning helps us discover and describe mathematical truths.** **(P11) The meanings of, and connections between, operations extend to powers, radicals, and polynomials.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools. *Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number (this is part of the mental math section). *Model with mathematics in situational contexts (this is related to real-life scenarios).
		AI.3.4 Read critically and communicate proficiently with mathematical vocabulary.	**(F11) Logical reasoning helps us discover and describe mathematical truths.** **(P11) Quadratic relationships are prevalent in the world around us.** *Use mathematical vocabulary and language to contribute to discussions in the classroom. *Develop, demonstrate, and apply conceptual understanding of mathematical ideas through play, story, inquiry, and problem solving.
		PC.4 Be able to understand concepts of functions.	**(F11) Logical reasoning helps us discover and describe mathematical truths.** *Quadratic functions (F11). **(P11) The meanings of, and connections between, operations extend to powers, radicals, and polynomials.** *Quadratic functions and equations (P11). **(P12) Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions.** *Linear functions: slope and equations of lines (M10). *Transformations of functions and relations (P12) *Exponential functions and equations (P12) *Polynomial functions and equations (P12) *Rational functions (P12) *Trigonometry: functions, equations, and identities (P12)
		PC.4.1 Characterize, classify, and transform functions (i.e. even, odd, periodic, piece-wise, continuous, translation, stretch, compression, and trigonometric). F-IF.4, F-BF.3, F-TF.2,4	**(P12) Transformations of shapes extend to functions and relations in all of their representations.** **(P12) Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions.** *Trigonometry: functions, equations, and identities. *Transformations of functions and relations.
		PC.4.2 Demonstrate knowledge of limits (definition, properties, finite, infinite).	**(C12) The concept of a limit is foundational to calculus.**
		PC.5 Be able to represent mathematical relationships and situations.	**(F11) Logical reasoning helps us discover and describe mathematical truths.** **(P11) Quadratic relationships are prevalent in the world around us.**

			*Represent mathematical ideas in concrete, pictorial, and symbolic forms.
		PC.5.1 Simplify, verify, and derive trigonometric identities. F-TF.8,9, G-SRT.9,10	**(P12) Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions.** *Trigonometry: functions, equations & identities.
		PC.5.2 Write, graph, and convert between different forms of equations (rectangular, polar, parametric). N-CN.4	**(C12) The concept of a limit is foundational to calculus.** *Functions and graphs.
		PC.5.3 Identify, graph, and interpret various expressions and functions (i.e. polynomial, inverse, trigonometric, logarithmic, exponential, vectors). N-VM.1,2,3, A-APR.3,4, F-IF.7, F-BF.4,5, F-LE.5, F-TF.1,3,6	**(P11) the meanings of, and connections between, operations extend to powers, radicals, and polynomials.** **(P11) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** **(P12) Using inverses is the foundation of solving equations and can be extended to relationships between functions.** *Trigonometry: functions, equations, and identities. *Logarithms: operations, functions, and equations. *Exponential functions and equations. *Transformations of functions and relations (this includes inverses).
		PC.5.5 Explore characteristics and operations with sequences and series, as they apply to limits. A-SSE.4, F-BF.2	**(C12) The concept of a limit is foundational to calculus.**
		PC.5.6 Perform operations of complex numbers on the complex plane. N-CN.4,5,6	**(P11) The meanings of, and connections between, operations extend to powers, radicals, and polynomials.**
		PC.6 Be able to apply appropriate techniques, tools, and formulas to interpret and solve problems.	**(F11) Logical reasoning helps us discover and describe mathematical truths.** **(P11) The meanings of, and connections between, operations extend to powers, radicals, and polynomials.** *Apply flexible and strategic approaches to solve problems.
		PC.6.1 Solve systems of equations and inequalities using graphs, algebraic methods, and matrices. N-VM.6, A-REI.8,9	**(F11) Optimization informs the decision-making process in situations involving extreme values.** **(P11) The meanings of, and connections between, operations extend to powers, radicals, and polynomials.**
		PC.6.2 Solve higher-order equations and inequalities from written and oral expression, recognizing equivalent forms.	**(F11) Optimization informs the decision-making process in situations involving extreme values.** *Linear inequalities. **(P11) The meanings of, and connections between, operations extend to powers, radicals, and polynomials.** *Linear and quadratic inequalities.
		PC.6.3 Solve exponential, logarithmic, and trigonometric equations. F-LE.4, F-TF.7, G-SRT.10,11	**(P12) Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions.** *Trigonometry: functions, equations, and identities. *Logarithms: operations, functions, and equations.

			*Exponential functions and equations.
		PC.6.4 Perform operations involving polynomials, functions, rational expressions, vectors and matrices. N-VM.4,5,6,7,8,9,10,11,12, A-APR.2,5, F-BF.1	**(P11) The meanings of, and connections between, operations extend to powers, radicals, and polynomials.** **(P11) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Polynomial factoring. *Rational expressions and equations.
		PC.6.5 Demonstrate fractional decomposition.	**(P11) The meanings of, and connections between, operations extend to powers, radicals, and polynomials.** *Rational expressions & equations: simplifying and applying operations to rational expressions.
		PC.6.6 Demonstrate mathematical proficiency using a graphing utility. MP.5	**(F11) Similar shapes and objects have proportional relationships that can be described, measured, and compared.** **(P11) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.
		PC.6.7 Write, graph, and manipulate equations for conic sections. G-GPE.2,3	**(F11) Similar shapes and objects have proportional relationships that can be described, measured, and compared.** *Quadratic functions. **(P11) Quadratic relationships are prevalent in the world around us.** *Quadratic functions and equations.
Operations and Algebraic Thinking	12	AI.2.1 Understand mathematical concepts (number sense, algebraic and geometric thinking, measurement, data analysis, and probability). MP.7	**(P12) Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions.** **(C12) The concept of a limit is foundational to calculus: functions and graphs.** *Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number. *Connect mathematical concepts with each other, other areas, and personal interests.
		AI.2.2 Utilize the problem-solving process (explore, plan, solve, verify). MP.1, MP.2	**(P12) Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions.** **(C12) The concept of a limit is foundational to calculus.** *Solve problems with persistence and a positive disposition. *Apply flexible and strategic approaches to solve problems.
		AI.2.3 Develop higher-order thinking skills (analyze, evaluate, reason, classify, predict, generalize, solve, decide, relate, interpret, simplify, model, synthesize).MP.2, MP.3, MP.4	**(P12) Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions.** **(C12) Derivatives and integrals are inversely related.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools. *Model with mathematics in situational contexts.

			*Explain and justify mathematical ideas and decisions in many ways. *Apply flexible and strategic approaches to solve problems. *Develop thinking strategies to solve puzzles and play games.
		AI.2.4 Attend to precision. MP.6	**(P12) Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions: transformations** **(C12) The concept of a limit is foundational to calculus.** *Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number.
		AI.3.1 Use a variety of strategies in the problem-solving process (i.e. patterns, tables, diagrams). MP.7, MP.8	**(P12) Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions: exponential, geometric, logarithms, polynomial, rational, and trigonometry.** **(C12) Derivatives and integrals are inversely related.** *Apply flexible and strategic approaches to solve problems.
		AI.3.2 Conduct research (locate, observe/gather, analyze, conclude).	**(P12) Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions.** **(C12) Derivatives and integrals are inversely related.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.
		AI.3.3 Perform calculations with and without technology in life situations. MP.5	**(P12) Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions.** **(C12) Derivatives and integrals are inversely related.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools. *Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number (this is part of the mental math section). *Model with mathematics in situational contexts (this is related to real-life scenarios).
		AI.3.4 Read critically and communicate proficiently with mathematical vocabulary.	**(P12) Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions.** **(C12) Derivatives and integrals are inversely related.** *Use mathematical vocabulary and language to contribute to discussions in the classroom. *Develop, demonstrate, and apply conceptual understanding of mathematical ideas through play, story, inquiry, and problem solving (mostly for the story part).

		CA.4 Be able to understand concepts of differentiation and integration.	**(C12) Differential calculus develops the concept of instantaneous rate of change.** *The whole differentiation and integration sections.
		CA.4.1 Understand limits of functions (i.e. definition, graphs, calculating, properties, behaviors, finite, infinite, one-sided).	**(C12) The concept of a limit is foundational to calculus.** *Limits. *Left and right limits. *Limits to infinity.
		CA.4.2 Identify continuity of functions (i.e. intuitively, definition in terms of limits, and graphically).	**(C12) The concept of a limit is foundational to calculus.** *Continuity *Limits
		CA.4.3 Demonstrate knowledge of the derivative (i.e. concept, definition, at a point, as a function, applications, linearization and second derivatives).	**(C12) Differential calculus develops the concept of instantaneous rate of change.** *Differentiation: rate of change, rules, higher order & implicit, applications.
		CA.4.4 Demonstrate knowledge of the integral (i.e. concept, definition of anti-derivatives, techniques, fundamental theorems of calculus, and numerical approximations).	**(C12) Integral calculus develops the concept of determining a product involving a continuously changing quantity over an interval.** *Integration: approximations, fundamental theorem, methods, and application.
		CA.5 Be able to represent mathematical relationships and situations using calculus.	**(C12) The concept of a limit is foundational to calculus: functions and graphs.** *Represent mathematical ideas in concrete, pictorial, and symbolic forms.
		CA.5.1 Interpret applications of the derivative in various situations (i.e. optimization, velocity, speed, acceleration, increasing/decreasing, concave up/down and points of inflection.	**(C12) Differential calculus develops the concept of instantaneous rate of change.** *Applications of differentiation.
		CA.5.2 Solve a variety of situations (physical, biological, or economic) and represent their limits as definite integrals.	**(C12) Derivatives and integrals are inversely related.** *Methods of integration. *Limits.
		CA.5.3 Identify, graph, and interpret various derivatives and integrals in applied contexts.	**(C12) Derivatives and integrals are inversely related.** *Applications of differentiation. *Applications of integration.
		CA.5.4 Present solutions resulting from applications of derivatives and integrals in conjunction with substitution techniques in finding anti-derivatives.	**(C12) Derivatives and integrals are inversely related.** *Methods of integration.
		CA.6 Be able to apply appropriate techniques, tools, and formulas to interpret and solve problems,	**(P12) Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions.** **(C12) Derivatives and integrals are inversely related.** *Solve problems with persistence and a positive disposition. *Apply flexible and strategic approaches to solve problems.
		CA.6.1 Compute the derivatives of functions using the sum, product, quotient, and chain rules.	**(C12) Derivatives and integrals are inversely related.** *Differentiation rules.
		CA.6.3 Demonstrate mathematical mastery of a graphing utility.	**(P12) Understanding the characteristics of families of functions allows us to model and understand**

			relationships and to build connections between classes of functions. **(C12) Derivatives and integrals are inversely related.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.
Measurement	K	*Measurement:* K.M.1 Describe and compare measurable attributes of objects, such as length or weight (K.MD.1,2)	**(K) Objects have attributes that can be described, measured, and compared:** single attributes of 2D shapes and 3D objects.
		Measurement, cont: K.M.2 Understand that thermometers are used to measure temperature	**(K) Objects have attributes that can be described, measured, and compared:** direct comparative measurement.
		Time: K.M.3 Order a sequence of events by time (e.g., before, after, morning, night, seasons)	**(K) Objects have attributes that can be described, measured, and compared:** direct comparative measurement.
		Time, cont: K.M.4 Understand that clocks and calendars are used to measure time	**(K) Objects have attributes that can be described, measured, and compared:** direct comparative measurement.
Measurement	1	*Length:* 1.M.1 Measure, order, compare, and express lengths of objects by counting non-standard units (1.MD.1,2)	**(1) Objects and shapes have attributes that can be described, measured, and compared:** direct measurement with non-standard units.
		Time: 1.M.2 Tell and write time in hours and half-hours using analog and digital clocks (1.MD.3)	**(1) Objects and shapes have attributes that can be described, measured, and compared:** direct comparative measurement.
		Money: 1.M.3 Identify pennies, nickels, dimes, quarters, half-dollars, and dollar bills	**(1) Objects and shapes have attributes that can be described, measured, and compared:** financial literacy.
Measurement	2	*Length:* 2.M.1 Measure and estimate lengths in standard units (e.g., inches, feet, centimeters, meters) using appropriate tools (e.g., rulers, yardsticks, meter sticks) (2.MD.1,3)	**(2) Objects and shapes have attributes that can be described, measured, and compared:** direct linear measurement, introducing standard metric units.
		Length, cont: 2.M.2 Measure, compare, and describe the length of an object using two units of measurement (e.g, inches and yards, centimeters and meters) (2.MD.2)	**(2) Objects and shapes have attributes that can be described, measured, and compared:** direct linear measurement, introducing standard metric units.
		Length, cont: 2.M.3 Measure to compare the length of two objects using a standard length unit (2.MD.4)	**(2) Objects and shapes have attributes that can be described, measured, and compared:** direct linear measurement, introducing standard metric units.
		Length, cont: 2.M.4 Use addition and subtraction equations within 100 to solve word problems involving lengths of the same unit (2.MD.5)	**(2) Development of computational fluency in addition and subtraction with numbers to 100 requires an understanding of place value:** addition and subtraction to 100. **(2) Objects and shapes have attributes that can be described, measured, and compared:** direct linear measurement.
		Length, cont: 2.M.5 Represent whole numbers as equally spaced lengths from 0 on a number line; represent sums and differences within 100 on a number line (2.MD.6)	**(2) Development of computational fluency in addition and subtraction with numbers to 100 requires an understanding of place value:** addition and subtraction to 100. **(2) Objects and shapes have attributes that can be described, measured, and compared:** direct linear measurement.

		Time: 2.M.6 Tell and write time to the nearest five minutes from analog and digital clocks using a.m. and p.m. (2.MD.7)	**(2) The regular change in increasing patterns can be identified and used to make generalizations:** repeating and increasing patterns. **(3) Standard units are used to describe, measure, and compare attributes of objects' shapes:** time concepts. **(4) Regular changes in patterns can be identified and represented using tools and tables:** how to tell time with analog and digital clocks using 12- and 24-hour clocks.
		Money: 2.M.7 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ (2.MD.8)	**(2) Concrete items can be represented, compared, and interpreted pictorially in graphs:** financial literacy.
Measurement	3	*Measurement:* 3.M.1 Solve problems involving measurement and estimation of intervals of time (nearest minute), liquid volume (liter), and masses of objects (gram, kilogram) (3.MD.1,2)	**(3) Standard units are used to describe, measure, and compare attributes of objects' shapes:** time concepts; and measurement, using standard units.
		Measurement, cont: 3.M.2 Read and understand a calendar using day, week, month, and year	**(3) Standard units are used to describe, measure, and compare attributes of objects' shapes:** time concepts; and measurement, using standard units.
		Measurement, cont: 3.M.3 Explain and measure temperature using Celsius and Fahrenheit scales	**(3) Standard units are used to describe, measure, and compare attributes of objects' shapes:** measurement, using standard units.
		Geometric Measurement: 3.M.4 Understand concepts of area and its measurement by counting unit squares (cm2, m2, in2, ft2); apply multiplication and addition to area (3.MD.5,6,7)	**(3) Standard units are used to describe, measure, and compare attributes of objects' shapes:** measurement, using standard units. **(3) Development of computational fluency in addition, subtraction, multiplication, and division of whole numbers requires flexible decomposing and composing.**
		Geometric Measurement, cont: 3.M.5 Solve real-world and mathematical problems recognizing area and perimeter of plane figures; distinguish between linear and area measurements (3.MD.8)	**(3) Standard units are used to describe, measure, and compare attributes of objects' shapes:** measurement, using standard units. **(3) Development of computational fluency in addition, subtraction, multiplication, and division of whole numbers requires flexible decomposing and composing.**
		Money: 3.M.6 Construct various equivalent combinations of money; add and subtract money amounts	**(3) Development of computational fluency in addition, subtraction, multiplication, and division of whole numbers requires flexible decomposing and composing:** addition and subtraction. **(3) The likelihood of possible outcomes can be examined, compared, and interpreted:** financial literacy.
Measurement	4	*Measurement/Conversion:* 4.M.1 Solve problems involving measurement (time, volume, mass, money, simple fractions, decimals, distance) (4.MD.2)	**(4) Regular changes in patterns can be identified and represented using tools and tables:** how to tell time with analog and digital clocks using 12- and 24-hour clocks. **(4) Development of computational fluency and multiplicative thinking requires analysis of patterns and relations in multiplication and division.**
		Measurement/Conversion, cont:	**(4) Regular changes in patterns can be identified and represented using tools and tables:** algebraic relationships among quantities, and one-step

		4.M.2 Convert measurement from a larger unit to a smaller unit (km, m, cm; kg, g; lb, oz; L, mL; hr, min, sec) (4.MD.1)	equations with an unknown number using all operations.
		Measurement/Conversion, cont: 4.M.3 Apply area and perimeter formulas (4.MD.3)	**(4) Polygons are closed shapes with similar attributes that can be described, measured, and compared:** regular and irregular polygons, perimeter or regular and irregular shapes, line symmetry. **(5) Closed shapes have area and perimeter that can be described, measured, and compared:** area measurement of squares and rectangles, and relationships between area and perimeter.
		Measurement/Conversion, cont: 4.M.4 Read a Fahrenheit and Celsius thermometer knowing the significance of 32°F, 212°F, 0°C, and 100°C	**(4) Regular changes in patterns can be identified and represented using tools and tables:** algebraic relationships among quantities, and one-step equations with an unknown number using all operations.
		Angles: 4.M.5 Recognize angles as geometric shapes that are formed wherever two rays share a common end point; understand concepts of angle measurement and measure angles in whole-number degrees (4.MD.5,6,7)	**(4) Polygons are closed shapes with similar attributes that can be described, measured, and compared:** regular and irregular polygons, perimeter or regular and irregular shapes, line symmetry.
		Money: 4.M.6 Know how to count up to make change	**(4) Analyzing and interpreting experiments in data probability develops an understanding of chance:** financial literacy.
Measurement	5	*Conversion:* 5.M.1 Convert like units within a given measurement system (e.g., cm to m, m to cm) (5.MD.1)	**(5) Closed shapes have areas and perimeter that can be described, measured, and compared.**
		Volume: 5.M.2 Understand concepts of volume measurement in cubic measure (cm3, in3, ft3) and apply to multiplication and addition (5.MD.3,4,5)	**(6) Properties of objects and shapes can be described, measured, and compared using volume, area, perimeter, and angles:** volume and capacity.
		Geometric Measurement: 5.M.3 Know the relationship between radius and diameter	**(7) The constant ratio between the circumference and diameter of circles can be used to describe, measure, and compare spatial relationships:** circumference and area of circles.
Measurement	6	*Elapsed Time:* 6.M.1 Calculate elapsed time	**(5) Identified regularities in number patterns can be expressed in tables:** duration, using measurement of time.
Measurement	7	*Measurement Systems:* 7.M.1 Convert between a variety of standard/metric measures (e.g., in to cm, cm to in)	**(7) Linear relations can be represented in many connected ways to identify regularities and make generalizations:** discrete linear relations. **(7) Volume of rectangular prisms and cylinders.**
Measurement	8	*Mathematical Precision:* 8.M.1 Use appropriate significant digits in calculations	**(8) Computational fluency and flexibility extend to operations with fractions.**
Measurement	9	AI.6.1 Calculate measurable attributes of figures (degrees of angles, lengths, perimeter, area, volume). N-Q.1,2,3	**(9) Similar shapes have proportional relationships that can be described, measured, and compared:** spatial proportional reasoning.
		AI.6.3 Use and manipulate given formulas to solve a variety of problems (i.e. slope, distance, area, volume, perimeter, midpoint) N-Q.1,2,3, A-CED.4, G-SRT.8	**(9) Similar shapes have proportional relationships that can be described, measured, and compared:** spatial proportional reasoning. **(9) Continuous linear relationships can be identified and represented in many connected ways to**

			identify regularities and make generalizations: multi-step one-variable linear equations, and two-variable linear relations.
Measurement	10	GM.6.2 Select and use an appropriate direct or indirect method of measurement. G-GPE.6, G-C.3,4	**(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Apply flexible and strategic approaches to solve problems. *Explain and justify mathematical ideas and decisions in many ways.
Measurement	11	None	
Measurement	12	CA.6.2 Use the integral in specific applications to give accumulated change, find the area of a region, the volume of a solid with known cross sections, the average value of a function, and the distance traveled by a particle along a line.	**(C12) Integral calculus develops the concept of determining a product involving a continuously changing quantity over an interval.** *Applications of integration
Geometry	K	*Shapes:* K.GEO.1 Identify, describe, analyze, and compare two- and three-dimensional shapes (regardless of size or orientation) by size, color, and shape; describe relative positions of objects (e.g., above, beside, behind, nearer, farther) (K.G.1,2,3,4)	**(K) Objects have attributes that can be described, measured, and compared:** single attributes of 2D shapes and 3D objects.
		Shapes, cont: K.GEO.2 Create two- and three-dimensional shapes by building or drawing; compose simple shapes to form larger shapes (K.G.5,6)	**(K) Objects have attributes that can be described, measured, and compared:** single attributes of 2D shapes and 3D objects.
Geometry	1	*Shapes:* 1.GEO.1 Describe, build, and draw shapes with defining attributes (1.G.1)	**(1) Objects and shapes have attributes that can be described, measured, and compared:** comparison of 2D shapes and 3D objects.
		Shapes, cont: 1.GEO.2 Compose two- and three- dimensional shapes to form composite or new shapes (1.G.2)	**(1) Objects and shapes have attributes that can be described, measured, and compared:** comparison of 2D shapes and 3D objects.
		Fractions: 1.GEO.3 Partition circles and rectangles into two and four equal parts; describe the whole and its parts using the words halves, fourths, quarters, half of, quarter of and third of (1.G.3)	**(1) Objects and shapes have attributes that can be described, measured, and compared:** comparison of 2D shapes and 3D objects, and meaning of equality and inequality.
Geometry	2	*Shapes:* 2.GEO.1 Recognize and draw two- and three-dimensional shapes having specified attributes (2.G.1)	**(2) Objects and shapes have attributes that can be described, measured, and compared:** multiple attributes of 2D shapes and 3D objects.
		Area: 2.GEO.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of squares (2.G.2)	**(2) Objects and shapes have attributes that can be described, measured, and compared:** multiple attributes of 2D shapes and 3D objects, symbolic representation of equality and inequality.
		Fractions: 2.GEO.3 Partition circles and rectangles into two, three, and four equal parts; describe the whole and its parts using the words halves, thirds, half of, third of, etc.; understand that equal parts need not have the same shape (2.G.3)	**(2) Objects and shapes have attributes that can be described, measured, and compared:** multiple attributes of 2D shapes and 3D objects, symbolic representation of equality and inequality.
Geometry	3	*Shapes:* 3.GEO.1 Sort and classify shapes to compare and contrast attributes (3.G.1,2)	**(3) Standard units are used to describe, measure, and compare attributes of objects' shapes:** measure, using standard units, and construction of 3D shapes. **(3) The likelihood of possible outcomes can be examined, compared, and interpreted:** one-to-one

			correspondence with bar graphs, pictographs, charts, and tables.
		Fractions: 3.GEO.2 Partition shapes into equal areas and express as a fraction (3.G.2)	**(3) Fractions are a type of number that can represent quantities:** fraction concepts.
Geometry	4	*Lines/Angles:* 4.GEO.1 Draw and identify points, lines, line segments, rays, angles, and perpendicular and parallel lines (4.G.1)	**(4) Polygons are closed shapes with similar attributes that can be described, measured, and compared:** line symmetry.
		Lines/Angles, cont: 4.GEO.2 Classify figures with perpendicular and parallel lines, and angles of a specified size (4.G.2)	**(4) Polygons are closed shapes with similar attributes that can be described, measured, and compared:** regular and irregular polygons, and line symmetry.
		Lines/Angles, cont: 4.GEO.3 Recognize and draw lines of symmetry with two-dimensional figures (4.G.3)	**(4) Polygons are closed shapes with similar attributes that can be described, measured, and compared:** regular and irregular polygons, and line symmetry.
Geometry	5	*Graphs:* 5.GEO.1 Graph points in the first quadrant of the coordinate plane to solve real-world and mathematical problems (5.G.1,2)	**(5) Data represented in graphs can be used to show many-to-one correspondence:** one-to-one correspondence and many-to-one correspondence, and probability experiments.
		Sides/Angles: 5.GEO.2 Classify two-dimensional figures into categories based on their properties of sides and angles (5.G.3,4)	**(5) Closed shapes have area and perimeter that can be described, measured, and compared:** area measurement of squares and rectangles.
Geometry	6	*Area/Volume:* 6.GEO.1 Solve real-world and mathematical problems involving area, surface area, and volume (6.G.1,2,3,4)	**(6) Properties of objects and shapes can be described, measured, and compared using volume, area, perimeter, and angles.**
Geometry	7	*Figures:* 7.GEO.1 Draw, construct, and describe geometrical figures and identify the relationships between them (7.G.1,2,3)	**(7) The constant ratio between the circumference and diameter of circles can be used to describe, measure, and compare spatial relationships:** circumference and area of circles, and volume of rectangular prisms and cylinders. **(8) The relationship between surface area and volume of 3D objects can be used to describe, measure, and compare spatial relationships:** construction, views, and nets of 3D objects.
		Geometrical Measurements: 7.GEO.2 Solve real-world and mathematical problems involving angle measure, perimeter, area, surface area, and volume (7.G.4,5,6)	**(7) The constant ratio between the circumference and diameter of circles can be used to describe, measure, and compare spatial relationships:** circumference and area of circles, and volume of rectangular prisms and cylinders.
Geometry	8	*Figures:* 8.GEO.1 Understand congruence and similarity using various mediums including geometric software (8.G.1,2,3,4,5)	**(8) The relationship between surface area and volume of 3D objects can be used to describe, measure, and compare spatial relationships:** construction, views, and nets of 3D objects.
		Figures, cont: 8.GEO.2 Understand and apply the Pythagorean Theorem (8.G.6,7,8)	**(8) The relationship between surface area and volume of 3D objects can be used to describe, measure, and compare spatial relationships:** Pythagorean theorem.
		Volume: 8.GEO.3 Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres (8.G.9)	**(8) The relationship between surface area and volume of 3D objects can be used to describe, measure, and compare spatial relationships:** surface area and volume, and two-step equations.
Geometry	9	None	

Geometry	10	AII.4.4 Determine trigonometric values using the unit circle and right triangles. F-TF.1,2, G-SRT.6,7,8	**(P12) Transformations of shapes extend to functions and relations in all of their representations.** *Trigonometry: exploring unit circle, reference and coterminal angles, special angles.
		GM.4 Be able to understand terms and symbols of geometry.	**(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Represent mathematical ideas in concrete, pictorial, and symbolic forms.
		GM.4.1 Demonstrate understanding of undefined terms (point, line, plane, and space). G-CO.1	**(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Develop, demonstrate, and apply mathematical understanding through play, story, inquiry, and problem solving.
		GM.4.2 Interpret properties and relationships among figures using inductive and deductive reasoning.	**(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Visualize to explore and illustrate mathematical concepts and relationships. *Explain and justify mathematical ideas and decisions in many ways.
		GM.4.3 Understand how basic mathematical systems are built (observations, hypotheses/conjectures, postulates, theorems, corollaries).	**(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Use mathematical vocabulary and language to contribute to discussions in the classroom. *Explain and justify mathematical ideas and decisions in many ways.
		GM.4.4 Classify and characterize figures and objects (i.e. angles, polygons, polyhedrons, circles, and spheres). G-CO.1, G-C.2, G-MG.1	**(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Visualize to explore and illustrate mathematical concepts and relationships. *Represent mathematical ideas in concrete, pictorial, and symbolic forms.
		GM.4.5 Recognize various types of symmetry and transformations. G-CO.2,3,4	**(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools. *Analyze above includes making connections so I think it fits best.

		GM.5 Be able to represent geometric properties and relationships.	**(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Represent mathematical ideas in concrete, pictorial, and symbolic forms.
		GM.5.1 Specify spatial relationships using coordinate geometry. G-CO.5,6	**(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Develop, demonstrate, and apply mathematical understanding through play, story, inquiry, and problem solving.
		GM.5.2 Identify measurable attributes of figures and objects. G-GMD.4	**(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.
		GM.5.3 Verify similarity and congruence of geometric figures. G-CO.6,7,8, G-SRT.1,2,3, G-C.1	**(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Explain and justify mathematical ideas and decisions in many ways. *Visualize to explore and illustrate mathematical concepts and relationships.
		GM.6 Be able to apply appropriate techniques, tools, and formulas to interpret and solve problems.	**(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Apply flexible and strategic approaches to solve problems.
		GM.6.1 Apply coordinate geometry and algebraic formulas to verify characteristics of geometric figures. G-SRT.5, G-GPE.1,4,5,7, G-GMD.3	**(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Apply flexible and strategic approaches to solve problems.
		GM.6.3 Construct geometric figures and objects. G-CO.12,13, G-C.3,4	**(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Model with mathematics in situational contexts. *Visualize to explore and illustrate mathematical concepts and relationships.
		GM.6.4 Use trigonometric functions and laws to solve triangles and find areas. G-SRT.6,7,8,9	**(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.**

			(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems. *Apply flexible and strategic approaches to solve problems.
		GM.6.5 Apply geometric methods to solve real-life problems. G-MG.1,2,3	**(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Apply flexible and strategic approaches to solve problems.
		GM.6.6 Use formulas to find measurable attributes of figures and objects (i.e. arc, sector, perimeter, area, surface area, volume). G-C.2, G-GMD.1,2	**(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Apply flexible and strategic approaches to solve problems.
		GM.7.1 Investigate, apply, and prove properties and theorems. G-CO.9,10,11, G-SRT.4,5, G-C.1, G-GPE.4,5	**(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.** *Develop, demonstrate, and apply mathematical understanding through play, story, inquiry, and problem solving.
Geometry	11	None	None
Geometry	12	None	None
Data Analysis, Statistics, and Probability	1	*Data* 1.DSP.1 Organize, represent, compare, and interpret data with up to three categories (1.MD.4)	**(1) Concrete graphs help us to compare and interpret data and show one-to-one correspondence:** concrete graphs, and likelihood of familiar life events.
Data Analysis, Statistics, and Probability	2	*Data:* 2.DSP.1 Generate measurement data by measuring lengths of several objects to the nearest whole unit; show the measurements by making a line plot (2.MD.9)	**(1) Objects and shapes have attributes that can be described, measured, and compared:** direct measurement. **(1) Concrete graphs help us to compare and interpret data and show one-to-one correspondence:** concrete graphs.
		Data, cont: 2.DSP.2 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories; solve simple addition, subtraction, and comparison problems using information in a bar graph (2.MD.10)	**(1) Objects and shapes have attributes that can be described, measured, and compared:** direct measurement. **(1) Concrete graphs help us to compare and interpret data and show one-to-one correspondence:** concrete graphs. **(2) Concrete items can be represented, compared, and interpreted pictorially in graphs:** pictorial representation of concrete graphs, using one to one correspondence.
Data Analysis, Statistics, and Probability	3	*Data:* 3.DSP.1 Draw and interpret scaled picture and bar graphs to represent a data set (3.MD.3)	**(3) The likelihood of possible outcomes can be examined, compared, and interpreted:** one-to-one correspondence with bar graphs, pictographs, charts, and tables.

		Data, cont: 3.DSP.2 Measure length using rulers marked with halves and fourths of an inch and the nearest whole centimeter; show data by making a line plot (3.MD.4)	**(3) Standard units are used to describe, measure, and compare attributes of objects' shapes:** measurement, using standard units. **(3) The likelihood of possible outcomes can be examined, compared, and interpreted:** one-to-one correspondence with bar graphs, pictographs, charts, and tables.
Data Analysis, Statistics, and Probability	4	*Data:* 4.DSP.1 Solve addition and subtraction problems using a line plot to display a data set of measurement in fractions of a unit (halves, fourths, and eighths) (4.MD.4)	**(4) Analyzing and interpreting experiments in data probability develops an understanding of chance:** one-to-one correspondence and many-to-one correspondence using bar graphs and pictographs.
Data Analysis, Statistics, and Probability	5	*Data:* 5.DSP.1 Use basic operations to solve problems using a line plot to display a data set of measurement in fractions of a unit (halves, fourths, and eighths) (5.MD.2)	**(5) Data represented in graphs can be used to show many-to-one correspondence:** one-to-one correspondence and many-to-one. **(5) Computational fluency and flexibility with numbers extend to operations with larger numbers:** addition and subtraction, and multiplication and division.
		Data, cont: 5.DSP.2 Find the mean, median, mode, and range of a given set of data	**(5) Data represented in graphs can be used to show many-to-one correspondence:** one-to-one correspondence and many-to-one.
Data Analysis, Statistics, and Probability	6	*Statistics and Probability:* 6.DSP.1 Develop understanding of statistical variability (6.SP.1,2,3)	**(6) Data from the results of an experiment can be used to predict the theoretical probability of an event and to compare and interpret:** single-outcome probability.
		Statistics and Probability, cont: 6.DSP.2 Summarize and describe distributions (6.SP.4,5)	**(6) Data from the results of an experiment can be used to predict the theoretical probability of an event and to compare and interpret:** single-outcome probability.
Data Analysis, Statistics, and Probability	7	*Statistics and Probability::* 7.DSP.1 Use random sampling to draw inferences about a population (7.SP.1,2)	**(7) Data from circle graphs can be used to illustrate proportion and to compare and interpret:** circle graphs, and experimental probability.
		Statistics and Probability, cont: 7.DSP.2 Draw informal comparative inferences about two populations (7.SP.3,4)	**(7) Data from circle graphs can be used to illustrate proportion and to compare and interpret:** circle graphs, and experimental probability.
		Statistics and Probability, cont: 7.DSP.3 Investigate chance processes and develop, use, and evaluate probability models (7.SP.5,6,7,8)	**(7) Data from circle graphs can be used to illustrate proportion and to compare and interpret:** cartesian coordinates and graphing, circle graphs, and experimental probability.
Data Analysis, Statistics, and Probability	8	*Statistics and Probability:* 8.DSP.1 Investigate patterns of association in bivariate data (8.SP.1,2,3,4)	**(8) Analyzing data by determining averages is one way to make sense of large data sets and enables us to compare and interpret:** central tendency, and theoretical probability with two independent events.
Data Analysis, Statistics, and Probability	9	PA.5.4 Apply basic concepts of statistics and probability (mean, median, mode, range, box and whisker).	**(9) Analyzing the validity, reliability, and representation of data enables us to compare and interpret.** *Statistics in society. *Apply multiple strategies to solve problems in both abstract and contextualized situations.
		AI.5.5 Apply basic concepts of statistics and probability (i.e. measures of central tendency, plots, combinations, permutations) S-ID.1,2,5, S-CP.1,9, S-MD.1,2,3,4,5	**(9) Analyzing the validity, reliability, and representation of data enables us to compare and interpret.** *Statistics in society. *Apply multiple strategies to solve problems in both abstract and contextualized situations.

		AI.7 Be able to analyze results and draw appropriate conclusions.	**(9) Analyzing the validity, reliability, and representation of data enables us to compare and interpret.** *Statistics in society *Explain and justify mathematical ideas and decisions in many ways.
		AI.7.1 Find and interpret information from graphs, charts, and numerical data. S-ID.6,7	**(9) Analyzing the validity, reliability, and representation of data enables us to compare and interpret:** statistics in society. *Use tools or technology to explore and create patterns and relationship, and text conjectures.
		AI.7.2 Predict patterns and generalize trends (i.e. arithmetic/geometric sequences, scatter plots, linear regressions). F-LE.1	**(9) Analyzing the validity, reliability, and representation of data enables us to compare and interpret:** statistics in society. **(9) Continuous linear relationship can be identified and represented in many connected ways to identify regularities and make generalizations.** *Two-variable linear relations, and multi-step one-variable linear equations. *Visualize to explore and illustrate mathematical concepts and relationships. *Represent mathematical ideas in concrete, pictorial, and symbolic forms.
		AI.7.3 Judge meaning, utility, and reasonableness of findings in a variety of situations, including those carried out by technology. S-IC.2, S-MD.6,7	**(9) Analyzing the validity, reliability, and representation of data enables us to compare and interpret:** statistics in society. *Apply flexible and strategic approaches to solve problems. *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.
Data Analysis, Statistics, and Probability	10	AII.5.5 Understand, interpret, and evaluate sequences and series. A-SSE.4, F-IF.3, F-BF.2	**(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Representing and analyzing situations allows us to notice and wonder about relationships.** *Arithmetic sequences.
		AII.5.4 Present data using statistics and probability (linear regressions, counting techniques) S-ID.2,4, S-CP.7,9	**(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Representing and analyzing situations allows us to notice and wonder about relationships.**
		AII.7 Be able to analyze results and draw appropriate conclusions.	**(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Representing and analyzing situations allows us to notice and wonder about relationships.** *Explain and justify mathematical ideas and decisions in many ways.
		AII.7.2 Predict patterns and generalize trends (i.e. scatter plots, linear, quadratic, exponential models and regressions), including data distribution. S-ID.6, F-LE.1	**(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Representing and analyzing situations allows us to notice and wonder about relationships.** *Visualize to explore and illustrate mathematical concepts and relationships.

		AII.7.3 Judge meaning, utility, and reasonableness of findings in a variety of situations, including those carried out by technology. S-IC.2, S-MD.6,7	**(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Representing and analyzing situations allows us to notice and wonder about relationships.** *Apply flexible and strategic approaches to solve problems. *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.
		GM.7 Be able to analyze results and draw appropriate conclusions.	**(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Representing and analyzing situations allows us to notice and wonder about relationships.** *Explain and justify mathematical ideas and decisions in many ways.
		GM.7.2 Find and interpret information from graphs, charts, and numerical data.	**(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Representing and analyzing situations allows us to notice and wonder about relationships.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.
		GM.7.3 Make conjectures regarding meaning, utility, and reasonableness of findings in a variety of situations, including those carried out by technology.	**(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.** **(10) Representing and analyzing situations allows us to notice and wonder about relationships.** *Apply flexible and strategic approaches to solve problems. *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.
Data Analysis, Statistics, and Probability	11	CM.4 Be able to understand concepts of personal finance and business mathematics.	**(11) Financial literacy:** compound interest, investments, and loans.
		CM.4.2 Demonstrate knowledge of the time-value of money and basic financial management.	**(11) Financial literacy:** compound interest, investments, and loans.
		CM.5 Be able to represent mathematical situations in personal and business life using graphs, tables, and charts.	**(F11) Logical reasoning helps us discover and describe mathematical truths.** **(P11) Quadratic relationships are prevalent in the world around us.** **(11) Financial literacy:** compound interest, investments, and loans. *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.
		CM.6 Be able to apply appropriate techniques, tools, and formulas to interpret and solve problems.	**(F11) Logical reasoning helps us discover and describe mathematical truths.** **(P11) Quadratic relationships are prevalent in the world around us.** *Apply flexible and strategic approaches to solve problems.
		CM.6.1 Demonstrate proficiency in basic math skills used by consumers (i.e. decimals, fractions, percentages, proportions).	**(11) Financial literacy:** compound interest, investments, and loans. *Model with mathematics in situational contexts.
		CM.6.2 Exhibit money management skills (i.e. budgets, checking and savings accounts, risk	**(11) Financial literacy:** compound interest, investments, loads. *Model with mathematics in situational contexts.

		management, debt management, investments, mortgages, income taxes, and deductions).	
		CM.6.3 Solve consumer-related problems involving time value of money (i.e. simple and compound interest, inflation, present and future values of sums).	**(11) Financial literacy:** compound interest, investments, loads. *Model with mathematics in situational contexts.
		CM.6.4 Use both mental estimation and technology to make optimal consumer choices.	**(11) Financial literacy:** compound interest, investments, loads. *Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number.
		CM.7 Be able to analyze results and draw appropriate conclusions.	**(F11) Logical reasoning helps us discover and describe mathematical truths.** **(P11) Quadratic relationships are prevalent in the world around us.** *Explain and justify mathematical ideas and decisions in many ways.
		CM.7.1 Find and interpret information from graphs, charts, and financial statements.	**(F11) Statistical analysis allows us to notice, wonder about, and answer questions about variation.** **(P11) Quadratic relationships are prevalent in the world around us.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.
		CM.7.2 Predict patterns and generalize trends.	**(F11) Statistical analysis allows us to notice, wonder about, and answer questions about variation.** **(P11) Algebra allows us to generalize relationship through abstract thinking.** *Visualize to explore and illustrate mathematical concepts and relationships.
		CM.7.3 Judge meaning, utility, and reasonableness of findings in a variety of situations, including those carried out by technology.	**(F11) Statistical analysis allows us to notice, wonder about, and answer questions about variation.** **(P11) Algebra allows us to generalize relationship through abstract thinking.** *Apply flexible and strategic approaches to solve problems. *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.
		PC.7 Be able to analyze results and draw appropriate conclusions.	**(F11) Statistical analysis allows us to notice, wonder about, and answer questions about variation.** **(P11) Algebra allows us to generalize relationship through abstract thinking.** *Explain and justify mathematical ideas and decisions in many ways.
		PC.7.1 Find and interpret information from graphs, charts, and numerical data. S-ID.6,7, F-IF.9, F-TF.5	**(F11) Statistical analysis allows us to notice, wonder about, and answer questions about variation.** **(P11) Quadratic relationships are prevalent in the world around us.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.
		PC.7.2 Predict patterns and generalize trends. S-IC.4,5,6, F-LE.1	**(F11) Statistical analysis allows us to notice, wonder about, and answer questions about variation.** **(P11) Quadratic relationships are prevalent in the world around us.** *Visualize to explore and illustrate mathematical concepts and relationships.

		PC.7.3 Judge meaning, utility, and reasonableness of findings in a variety of situations, including those carried out by technology. S-IC.2, S-ID.8, S-MD.6,7	**(F11) Statistical analysis allows us to notice, wonder about, and answer questions about variation.** **(P11) Quadratic relationships are prevalent in the world around us.** *Apply flexible and strategic approaches to solve problems. *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.
Data Analysis, Statistics, and Probability	12	CA.7 Be able to analyze results and draw appropriate conclusions.	**(P12) Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions.** **(C12) Derivatives and integrals are inversely related.** *Explain and justify mathematical ideas and decisions in many ways.
		CA.7.1 Find and interpret information from graphs, charts, and numerical data.	**(P12) Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions.** **(C12) Derivatives and integrals are inversely related.** *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.
		CA.7.2 Predict patterns and generalize trends.	**(P12) Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions.** **(C12) Derivatives and integrals are inversely related.** *Visualize to explore and illustrate mathematical concepts and relationships.
		CA.7.3 Judge meaning, utility, and reasonableness of findings in a variety of situations, including those carried out by technology.	**(P12) Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions.** **(C12) Derivatives and integrals are inversely related.** *Apply flexible and strategic approaches to solve problems. *Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.
Christian Values	9	AI.1 Identify the principles of SDA Christian values in correlation with mathematics.	*Throughout all 5 main standards: • The principles and processes underlying operations with numbers apply equally to algebraic situations and can be described and analyzed. • Computational fluency and flexibility with numbers extend to operations with rational numbers. • Continuous linear relationships can be identified and represented in many connected ways to identify regularities and make generalizations.
		AI.1.1 Recognize God as Creator and Sustainer of an ordered universe.	
		AI.1.2 Value God's inspired writings and created works as a revelation of His precision, accuracy, and exactness.	
		AI.1.3 Develop accountability as expressed in God's word and laws.	
		AI.1.4 Employ Christian principles as a basis for learning and growth.	
		AI.1.5 Broaden intellectual abilities through the study of mathematics.	

		AI.1.6 Make biblically-based choices when dealing with mathematical data. AI.1.7 Apply biblical principles of Christian morality, integrity, and ethical behavior to mathematical processes.	• Similar shapes have proportional relationships that can be described, measured, and compared. • Analyzing the validity, reliability, and representation of data enables us to compare and interpret.
Christian Values	10	None	None
Christian Values	11	CM.4.1 Identify various aspects of stewardship (i.e. costs/benefits, needs/wants, tithes and offerings).	**(11) Financial literacy:** compound interest, investments, and loans. *Explain and justify mathematical ideas and decisions in many ways.
Christian Values	12	None	None

Note: NAD Secondary Mathematics standards are classified by course rather than by grade. For the correlation above, course standards were assigned to grades as follows:

Gr. 9 – Algebra I standards; Pre-Algebra standards
Gr. 10 – Algebra II standards; Geometry standards
Gr. 11 – Consumer Math standards; pre-Calculus standards
Gr. 12 – Calculus standards

**BC Note: Math 11 and 12 standards reflect two courses for each grade:

Gr. 11 – Foundations of Math (F11), Pre-Calculus 11 (P11)
Gr. 12 – Pre-Calculus 12 (P12), Calculus 12 (C12)