

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	10	All.4 Be able to understand concepts involving real and complex numbers.	<p>(10) Algebra allows us to generalize relationships through abstract thinking.</p> <p>(10) The meanings of, and connections between, each operation extend to powers and polynomials.</p> <p>*Develop, demonstrate, and apply conceptual understanding of mathematical ideas through play, story, inquiry, and problem solving.</p>
		All.4.1 Identify numbers and relationships among numbers (i.e. properties, equations, inequalities). N-CN.3	<p>(10) Algebra allows us to generalize relationships through abstract thinking:</p> <p>(10) The meanings of, and connections between, each operation extend to powers and polynomials.</p> <p>*Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number.</p> <p>*Connect mathematical concepts with each other, with other areas, and with personal interests.</p>
Operations and Algebraic Thinking	10	Al.2.1 Understand mathematical concepts (number sense, algebraic and geometric thinking, measurement, data analysis, and probability). MP.7	<p>(10) The meanings of, and connections between, each operation extend to powers and polynomials.</p> <p>(10) Representing and analyzing situations allows us to notice and wonder about relationships.</p> <p>*Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number.</p> <p>*Connect mathematical concepts with each other, other areas, and personal interests.</p>
		Al.2.2 Utilize the problem-solving process (explore, plan, solve, verify). MP.1, MP.2	<p>(10) The meanings of, and connections between, each operation extend to powers and polynomials.</p> <p>*Solve problems with persistence and a positive disposition.</p> <p>*Apply flexible and strategic approaches to solve problems.</p>
		Al.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	<p>(10) Algebra allows us to generalize relationships through abstract thinking.</p> <p>(10) Representing and analyzing situations allows us to notice and wonder about relationships.</p> <p>*Explore, analyze, and apply mathematical ideas using reason, technology, and other tools.</p> <p>*Model with mathematics in situational contexts.</p> <p>*Explain and justify mathematical ideas and decisions in many ways.</p> <p>*Apply flexible and strategic approaches to solve problems.</p> <p>*Develop thinking strategies to solve puzzles and play games.</p>
		Al.2.4 Attend to precision. MP.6	<p>(10) The meanings of, and connections between, each operation extend to powers and polynomials.</p> <p>*Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number.</p>

	<p>AI.3.1 Use a variety of strategies in the problem-solving process (i.e. patterns, tables, diagrams). MP.7, MP.8</p>	<p>(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.</p>
<p>AI.3.2 Conduct research (locate, observe/gather, analyze, conclude).</p>	<p>(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.</p>	
<p>AI.3.3 Perform calculations with and without technology in life situations. MP.5</p>	<p>(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).</p>	
<p>AI.3.4 Read critically and communicate proficiently with mathematical vocabulary.</p>	<p>(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.</p>	
<p>All.4.2 Simplify expressions using the order of operations, including radicals and absolute value. N-RN.1,2, N-CN.1,2</p>	<p>(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.</p>	
<p>All.4.3 Know and use the Fundamental Theorem of Algebra. N-CN.9</p>	<p>(10) The meanings of, and connections between, each operation extend to powers and polynomials. (10) Algebra allows us to generalize relationships through abstract thinking.</p>	
<p>All.5 Be able to represent mathematical situations using algebraic symbols and models.</p>	<p>(10) The meanings of, and connections between, each operation extend to powers and polynomials. *Represent mathematical ideas in concrete, pictorial, and symbolic forms.</p>	
<p>All.5.1 Use and evaluate expressions involving variables. A-SSE.1, F-BF.1</p>	<p>(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.</p>	
<p>All.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</p>	<p>(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.</p>	

		<p>*Linear and quadratic inequalities(P11). *Linear inequalities (F11).</p>
	All.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	<p>(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.</p>
	All.6.4 Graph and perform operations involving polynomials and rational expressions. A-APR.2,3,6,7, F-BF.1,4	<p>(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</p> <p>Note that rationals would be covered in Pre-Calc 11 and Pre-Calc 12: *Rational expressions and equations (P11) *Rational functions (P12)</p>
	All.6.5 Demonstrate mathematical proficiency using a graphing utility. MP.3	<p>(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.</p>
	All.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	<p>(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.</p>
	All.6 Be able to apply appropriate techniques, tools, and formulas to interpret and solve problems.	<p>(10) The meanings of, and connections between, each operation extend to powers and polynomials. *Apply flexible and strategic approaches to solve problems.</p>
	All.6.1 Solve systems of equations and inequalities using graphs and algebraic methods. A-REI.7,11	<p>(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.</p>
	All.6.2 Solve consumer-related problems involving linear programming. A-CED.3	<p>(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.</p>
	All.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	<p>(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.</p>

Measurement	10	GM.6.2 Select and use an appropriate direct or indirect method of measurement. G-GPE.6, G-C.3,4	<p>(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.</p> <p>*Apply flexible and strategic approaches to solve problems.</p> <p>*Explain and justify mathematical ideas and decisions in many ways.</p>
Geometry	10	All.4.4 Determine trigonometric values using the unit circle and right triangles. F-TF.1,2, G-SRT.6,7,8	<p>(P12) Transformations of shapes extend to functions and relations in all of their representations.</p> <p>*Trigonometry: exploring unit circle, reference and coterminal angles, special angles.</p>
		GM.4 Be able to understand terms and symbols of geometry.	<p>(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.</p> <p>(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.</p> <p>*Represent mathematical ideas in concrete, pictorial, and symbolic forms.</p>
		GM.4.1 Demonstrate understanding of undefined terms (point, line, plane, and space). G-CO.1	<p>(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.</p> <p>(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.</p> <p>*Develop, demonstrate, and apply mathematical understanding through play, story, inquiry, and problem solving.</p>
		GM.4.2 Interpret properties and relationships among figures using inductive and deductive reasoning.	<p>(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.</p> <p>(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.</p> <p>*Visualize to explore and illustrate mathematical concepts and relationships.</p> <p>*Explain and justify mathematical ideas and decisions in many ways.</p>
		GM.4.3 Understand how basic mathematical systems are built (observations, hypotheses/conjectures, postulates, theorems, corollaries).	<p>(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.</p> <p>(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.</p> <p>*Use mathematical vocabulary and language to contribute to discussions in the classroom.</p> <p>*Explain and justify mathematical ideas and decisions in many ways.</p>
		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	<p>(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.</p> <p>(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.</p> <p>*Visualize to explore and illustrate mathematical concepts and relationships.</p> <p>*Represent mathematical ideas in concrete, pictorial, and symbolic forms.</p>
		GM.4.5 Recognize various types of symmetry and transformations. G-CO.2,3,4	<p>(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.</p>

		<p>(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.</p>
	GM.5 Be able to represent geometric properties and relationships.	<p>(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.</p>
	GM.5.1 Specify spatial relationships using coordinate geometry. G-CO.5,6	<p>(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.</p>
	GM.5.2 Identify measurable attributes of figures and objects. G-GMD.4	<p>(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.</p>
	GM.5.3 Verify similarity and congruence of geometric figures. G-CO.6,7,8, G-SRT.1,2,3, G-C.1	<p>(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.</p>
	GM.6 Be able to apply appropriate techniques, tools, and formulas to interpret and solve problems.	<p>(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.</p>
	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	<p>(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.</p>
	GM.6.3 Construct geometric figures and objects. G-CO.12,13, G-C.3,4	<p>(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.</p>

			<p>*Model with mathematics in situational contexts.</p> <p>*Visualize to explore and illustrate mathematical concepts and relationships.</p>
		GM.6.4 Use trigonometric functions and laws to solve triangles and find areas. G-SRT.6,7,8,9	<p>(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.</p> <p>(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.</p> <p>*Apply flexible and strategic approaches to solve problems.</p>
		GM.6.5 Apply geometric methods to solve real-life problems. G-MG.1,2,3	<p>(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.</p> <p>(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.</p> <p>*Apply flexible and strategic approaches to solve problems.</p>
		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	<p>(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.</p> <p>(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.</p> <p>*Apply flexible and strategic approaches to solve problems.</p>
		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	<p>(10) constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.</p> <p>(10) Trigonometry involves using proportional reasoning to solve indirect measurement problems.</p> <p>*Develop, demonstrate, and apply mathematical understanding through play, story, inquiry, and problem solving.</p>
Data Analysis, Statistics, and Probability	10	All.5.5 Understand, interpret, and evaluate sequences and series. A-SSE.4, F-IF.3, F-BF.2	<p>(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.</p> <p>(10) Representing and analyzing situations allows us to notice and wonder about relationships.</p> <p>*Arithmetic sequences.</p>
		All.5.4 Present data using statistics and probability (linear regressions, counting techniques) S-ID.2,4, S-CP.7,9	<p>(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.</p> <p>(10) Representing and analyzing situations allows us to notice and wonder about relationships.</p>
		All.7 Be able to analyze results and draw appropriate conclusions.	<p>(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.</p> <p>(10) Representing and analyzing situations allows us to notice and wonder about relationships.</p> <p>*Explain and justify mathematical ideas and decisions in many ways.</p>
		All.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	<p>(10) Constant rate of change is an essential attribute of linear relations and has meaning in different representations and contexts.</p> <p>(10) Representing and analyzing situations allows us to notice and wonder about relationships.</p>

			*Visualize to explore and illustrate mathematical concepts and relationships.
		All.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.
		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.	
Christian Values	10	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:

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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)