MATH CONTINUUM OF BIG IDEAS (UNDERSTAND)

	K	1	2	3	4	5	6-9	10-12
Numbers	Number represents and describes quantity: **Quantities can be decomposed into smaller parts.**	Number represents and describes quantity: **Numbers to 20 can be decomposed into 10's and 1's.**	Number represents and describes quantity: **Numbers to 100 can be decomposed into 10's and 1's.**	Number represents & describes quantity: **Parts of wholes can be represented by fractions.**	Number represents and describes quantity: **Parts of wholes can be represented by fractions and decimals.**	Number represents and describes quantity: **Parts of wholes can be represented by equivalent fractions.**	Numbers can be represented in many forms and reflect different relationships.	Number represents and describes quantity
Developing Computational Fluency	Developing computational fluency comes from a strong sense of number: **One-to-one correspondence and a sense of 5 and 10 are essential for working with numbers.**	Developing computational fluency comes from a strong sense of number: **Addition and subtraction can be modelled concretely, pictorially, and mentally, using strategies involving counting and making 10.**	Developing computational fluency comes from a strong sense of number: **Fluency in addition and subtraction with numbers to 100 requires understanding of place value and mental math strategies.**	Developing computational fluency comes from a strong sense of number: **Flexible decomposing and composing are used when adding, subtracting, multiplying, and dividing whole numbers.**	Developing computational fluency comes from a strong sense of number: **Patterns and relations within multiplication and division develop multiplicative thinking.**	Developing computational fluency comes from a strong sense of number: **Flexibility in working with numbers extends to operations with larger (multi-digit) numbers.**	Numeracy helps us to see patterns, communicate ideas, and solve problems.	Developing computational fluency comes from a strong sense of number.
Spatial Sense	We can describe, measure, and compare spatial relationships: **Objects have attributes.**	We can describe, measure, and compare spatial relationships: **Objects and shapes have attributes.**	We can describe, measure, and compare spatial relationships: **Objects and shapes have attributes.**	We can describe, measure, and compare spatial relationships: **Standard units are used to measure attributes of objects shapes.**	We can describe, measure, and compare spatial relationships: **Polygons are closed shapes with similar attributes.**	We can describe, measure, and compare spatial relationships: **Closed shapes have area and perimeter.**	Geometry and measurement empower us to make meaning of the world.	We can describe, measure, and compare spatial relationships.
Patterns and Relations	We use patterns to represent identified regularities and to form generalizations: **Repeating elements can be identified.**	We use patterns to represent identified regularities and to form generalizations: **Repeating elements can be identified.**	We use patterns to represent identified regularities and to form generalizations: **The regular change in increasing patterns can be identified.**	We use patterns to represent identified regularities and to form generalizations: **The regular change in increasing and decreasing patterns can be identified.**	We use patterns to represent identified regularities and to form generalizations: **The regular change in patterns can be represented using tools and tables.**	We use patterns to represent identified regularities and to form generalizations: **Number patterns can be expressed using variables in tables.**	Patterns allow us to see relationships and develop generalizations.	We use patterns to represent identified regularities and to form generalizations.
Statistics and Probability	Analyzing data and chance help us to compare and interpret: **Familiar events can be described as likely or unlikely.**	Analyzing data and chance help us to compare and interpret: **Concrete graphs show one-to-one correspondence.**	Analyzing data and chance help us to compare and interpret: **Concrete items can be represented pictorially in a graph.**	Analyzing data and chance help us to compare and interpret: **The likelihood of possible outcomes can be examined.**	Analyzing data and chance help us to compare and interpret: **Probability experiments develop an understanding of chance.**	Analyzing data and chance help us to compare and interpret: **Graphs can be used to show many-to-one correspondence.**	Data enable us to draw conclusions and make predictions in an unstable world. We can apply mathematics to inquiry questions and use it to communicate information and data.	Analyzing data and chance helps us to compare and interpret.

MATH K-12 - CURRICULAR COMPETENCY CONTINUUM (DO)

Competencies		K-5	6-12
Core	Curricular		
THINKING	Reasoning and Analyzing	I can estimate reasonably	I can inductively and deductively reason and use logic to explore, make connections, predict, analyze, generalize, and make conclusions
		I can develop mental math strategies and abilities to make sense of quantities	I can develop and apply mental math strategies and estimate amounts and outcomes
		I can use reasoning and logic to explore and make connections	I can use tools or technology to explore and create patterns and relationships, and test conjectures
	Understanding and Solving	I can use multiple strategies to engage in problem solving (e.g., visual, oral, role-play, experimental, written, symbolic)	I can implement multiple strategies to solve problems in both abstract and real-life situations using different cultural perspectives
		I can develop, construct, and apply mathematical understanding through role-play, inquiry, and problem solving	
		I can engage in problem-solving experiences that are connected to place, story, and cultural practices relevant to the local community	
COMMUNICATING	Communicating and representing	I can communicate in many ways (concretely, pictorially, symbolically, and by using spoken or written language to express, describe, explain, and apply mathematical ideas)	I can use mathematical vocabulary and language to contribute to mathematical discussions
		I can describe, create, and interpret relationships through concrete, pictorial, and symbolic representations	I can communicate in a variety of ways to explain, clarify, and justify mathematical ideas
		I can use technology appropriately to explore mathematics, solve problems, record, communicate, and represent thinking	
			I can develop mathematical understanding through concrete, pictorial, and symbolic representations
PERSONAL AND SOCIAL	Connecting and Reflecting	I can visualize and describe mathematical concepts	I can visualize and describe mathematical concepts
		I can connect mathematical concepts to each other and make mathematical connections to the real world (e.g., in daily activities, local and traditional practices, the environment, popular media and news events, cross-curricular integration)	I can explore, apply and connect concepts to each other, to other disciplines, and to the real world
		I can share and reflect upon mathematical thinking	I can use mathematical arguments to support personal choices and anticipate consequences
		I can draw upon local First Peoples knowledge and/or expertise of local Elders to make connections to mathematical topics and concepts	I can apply cultural perspectives of First Peoples to the concepts of locating, measuring, and numbering.

MATH K-9 CONTINUUM OF CONTENT (KNOW)

	K	1	2	3	4	5	6	7	8	9
Numbers	• Number concepts to 10 • Ways to make 5	• Number concepts to 20 • Ways to make 10	• Number concepts to 100 • Benchmarks of 25, 50, and 100 and personal referent (ie: thumb = 1 inch)	• Number concepts to 1000 • Fraction concepts	• Number concepts to 10 000 • Decimals to hundredths • Ordering and comparing fractions	• Number concepts to 1 000 000 • Decimals to thousandths • Equivalent fractions • Whole-number, fraction, and decimal benchmarks	• Whole number percents and percentage discounts • Improper fractions and mixed numbers (ordering whole numbers, fractional numbers, proper and improper fractions) • Small to large numbers (thousandths to billions)	• Relationship between decimals, fractions, and percents • Classification of numbers as prime and composite	• Percents less than 1 and greater than 100 (decimal and fractional percents) • Perfect squares and cubes • Square roots and Pythagorean Theorem • Rates and proportional reasoning, ratio, proportions, and percent	• Rational numbers
Developing Computational Fluency	• Decomposition of numbers to 10 • Change in quantity to 10 using concrete materials	• Addition and subtraction to 20 (understanding of operation and process) • Change in quantity to 20 using concrete materials and verbally	• Addition and subtraction facts to 20 (introduction of computational strategies) • Addition and subtraction to 100 • Change in quantity using pictorial and symbolic representation	• Addition and subtraction facts to 1000 • Addition and subtraction facts to 20 (emerging computational fluency) • Multiplication and division concepts	• Addition and subtraction to 10 000 • Multiplication and division of two-or-three-digit numbers by one-digit numbers • Addition and subtraction of decimals to hundredths • Addition and subtraction facts to 20 (developing computational fluency) • Multiplication and division facts to 100 (introductory computational strategies)	• Addition and subtraction to 1 000 000 • Multiplication and division to three-digits including division with remainders • Addition and subtraction of decimals to thousandths • Addition and subtraction facts to 20 (extending computational fluency) • Multiplication and division facts to 100 (emerging computational strategies)	• Factors and multiples, greatest common factor and least common multiple • Order of operations with whole numbers • Multiplication and division of decimals • Multiplication and division facts to 1o 100 (developing computational fluency)	• Operations with integers (addition, subtraction, multiplication, division, and order of operations) • Multiplication and division facts to 100 (extending computational fluency) • Logic and puzzles to solve games and puzzles	• Operations with fractions (addition, subtraction, multiplication, division, and order of operations) • Numerical proportional reasoning • Logic and puzzles to solve games and puzzles	• Operations with rational numbers (addition, subtraction, multiplication, division and order of operations) • Rational numbers and order of operations • Operations with polynomials, of degree less than or equal to two • Numerical and spatial reasoning, logic and patterns to solve puzzles and games
	• Financial literacy: attributes of coins and financial role-play	• Financial literacy: values of coins and monetary exchanges	• Financial literacy: coin combinations to 100 cents, and spending and saving	• Financial literacy: fluency with coins and bills to 100 dollars, and earning and payment	• Financial literacy: monetary calculations, including making change with amounts to 100 dollars and making simple financial decisions	• Financial literacy: monetary calculations, including making change with amounts to 1000 dollars and developing simple financial decisions	• Financial literacy: simple budgeting and consumer math	• Financial Literacy: financial percentage calculations (ie: sales tax, tips, bill splitting, consignment)	• Financial Literacy: best buys (ie: coupons, proportions, unit price, products and services)	• Types of income (ie: wages, salary, piece work, commission) • Financial Literacy: simple budgets and transactions (ie: banking, interest, savings, planned purchases)
Spatial Sense	• Direct comparative measurement (ie: Linear, mass capacity) • Single attributes of 2D shapes and 3D objects	• Direct measurement with non-standard units (non-m and uniform) • Comparison of 2D shapes and 3D objects	• Direct linear measurement, introducing standard metric units • Multiple attributes of 2D shapes and 3D objects •	• Measurement using standard units (linear, mass, and capacity) • Time concepts • Construction of 3D shapes •	• How to tell time with analog and digital clocks, using 12-and-24-hour clocks • Regular and irregular polygons • Perimeter of regular and irregular shapes • Line symmetry	• Duration, using measurement of time • Area measurement of squares and rectangles • Relationships between area and perimeter • Classification of prisms and pyramids • Single transformations	• Perimeter of complex shapes • Area of triangles, parallelograms and trapezoids • Angle measurement and classification • Measurement units and referents for volume and capacity (ie: size of fist = cup) • Volume of rectangular prisms • Relation of capacity to volume • Triangles and pyramids	• Circumference and area of circles • Volume of cylinders • Combinations of transformations, including points in four quadrants	• Surface area and volume of regular solids (right prisms, triangular prism and cylinder) • Construction, views and nets of 3D objects	• Spatial proportional reasoning (ie: scale diagrams, similar triangles, linear unit conversions)

	K	1	2	3	4	5	6	7	8	9
Patterns and Relations	• Repeating patterns with two or three elements • Equality as a balance and inequality as an imbalance	• Repeating patterns multiple elements and attributes • Meaning of equality and inequality	• Repeating and increasing patterns • Symbolic representation of equality and inequality	• Increasing and decreasing patterns • Pattern rules using words and numbers based on concrete experiences • One-step addition and subtraction equations with an unknown number	• Increasing and decreasing patterns, using tables and charts • Algebraic relationships among quantities • One-step equations with an unknown number using all operations	• Increasing and decreasing patterns with words, numbers, symbols, and variables • One-step equations with variables	• Increasing and decreasing patterns, using expressions, tables and graphs • Functional relationships • One-step equations with whole-number coefficients and solutions	• Two-step equations with whole number coefficients, constants and solutions	• Expressions and equations with integer coefficients, constants and solutions	• Multi-step one-variable linear equations, including distribution and rational coefficients, constants, and solutions • Two-variable linear relations, using graphing, interpolation, and extrapolation
Statistics and Probability	• Concrete or pictorial graphs as a visual tool for the class	• Concrete graphs using one-to-one correspondence	• Pictorial representation of concrete graphs using one-to-one correspondence	• One-to-one correspondence with bar graphs, pictographs, charts and tables	• One-to-one correspondence and many-to-one correspondence, using bar graphs and pictographs	• One-to-one correspondence and many-to-one correspondence, using double bar graphs	• Line graphs • Combinations of transformations, including points in the first quadrant	• Circle graphs • Discrete linear relations, using expressions, tables, and graphs • Cartesian coordinates and graphing		
	• Likelihood of familiar life events	Likelihood of familiar life events using comparative language	• Likelihood of events using comparative language	• Likelihood of events using comparative language	• Probability experiments	• Probability experiments, focusing on independence	• Single-outcome probability, both theoretical and experimental	• Experimental probability with two independent events	• Theoretical probability with two independent events	• Probability and statistics in society (ie: sampling techniques, misleading statistics)

MATH Grade 3

How might we bridge the gap between students' mathematics knowledge and their ability to apply it in a broad range of situations that they will encounter in everyday life?

CURRICULAR COMPETENCIES (DO) *same in grades K-5*			BIG IDEAS (UNDERSTAND)													
			Number Number represents and describes quantity: Parts of wholes can be represented by fractions.		**Developing Computational Fluency** Developing computational fluency comes from a strong sense of number: Flexible decomposing and composing are used when adding, subtracting, multiplying, and dividing whole numbers.				**Patterns and Relations** We use patterns to represent identified regularities and to form generalizations: The regular change in increasing and decreasing patterns can be identified.			**Spatial Sense** We can describe, measure, and compare spatial relationships: Standard units are used to measure attributes of objects shapes.			**Statistics and Probability** Analyzing data and chance help us to compare and interpret: The likelihood of possible outcomes can be examined.	
			CONTENT (KNOW)													
			Number concepts to 1000	Fraction concepts	Addition and Subtraction facts to 20	Addition and subtraction to 1000	Multiplication and division concepts	Financial Literacy	Increasing and decreasing patterns	Pattern rules	1-step addition and subtraction equations	Measurement using standard units	Time concepts	Construc-tion of 3D shapes	Bar graphs, pictographs, charts, tables	Likelihood of simulated events
THINKING	Reasoning and Analyzing	I can estimate reasonably														
		I can develop mental math strategies and abilities to make sense of quantities														
		I can use reasoning and logic to explore and make connections														
	Understanding and Solving	I can use multiple strategies to engage in problem solving (e.g., visual, oral, role-play, experimental, written, symbolic)														
		I can develop, construct, and apply mathematical understanding through role-play, inquiry, and problem solving														
		I can engage in problem-solving experiences that are connected to place, story, and cultural practices relevant to the local community														

COMMUNICATING	**Communicating and representing**	I can communicate in many ways (concretely, pictorially, symbolically, and by using spoken or written language to express, describe, explain, and apply mathematical ideas)															
		I can describe, create, and interpret relationships through concrete, pictorial, and symbolic representations															
		I can use technology appropriately to explore mathematics, solve problems, record, communicate, and represent thinking															
PERSONAL & SOCIAL	**Connecting and Reflecting**	I can visualize and describe mathematical concepts															
		I can connect mathematical concepts to each other and make mathematical connections to the real world (e.g., in daily activities, local and traditional practices, the environment, popular media and news events, cross-curricular integration)															
		I can share and reflect upon mathematical thinking															
		I can draw upon local First Peoples knowledge and/or expertise of local Elders to make connections to mathematical topics and concepts															