Correlation of British Columbia Program of Studies with Mathology Grade 4

Curriculum Expectations	Grade 4 Mathology.ca	Pearson Canada Grades 4-6 Mathematics Learning Progression
Content - Elaborations		
number concepts to 10 000 • counting: - multiples - flexible counting strategies - whole number benchmarks	**Number Unit 1: Number Relationships and Place Value** 1: Representing Numbers to 10 000 3: Estimating and Rounding Numbers 5: Estimating to Solve Problems 6: Consolidation of Number Relationships and Place Value **Number Unit 5: Fluency with Multiplication and Division Facts** 24: Strategies for Multiplication 25: Solving Multiplication Problems	**Big Idea: Numbers are related in many ways.** **Estimating quantities and numbers** - Rounds whole numbers using place-value understanding (e.g., 4736 can be rounded to 5000, 4700, 4740). **Decomposing and composing numbers to investigate equivalencies** - Composes and decomposes whole numbers using standard and non-standard partitioning (e.g., 1000 is 10 hundreds or 100 tens). **Big Idea: Quantities and numbers can be grouped by or partitioned into equal-sized units.** **Unitizing quantities into base-ten units** - Writes and reads whole numbers in multiple forms (e.g., 1358; one thousand three hundred fifty-eight; 1000 + 300 + 50 + 8). - Understands that the value of a digit is ten times the value of the same digit one place to the right.
• Numbers to 10 000 can be arranged and recognized: - comparing and ordering numbers - estimating large quantities	**Number Unit 1: Number Relationships and Place Value** 3: Estimating and Rounding Numbers 4: Comparing and Ordering Numbers 6: Consolidation of Number Relationships and Place Value	**Big Idea: Numbers are related in many ways.** **Comparing and ordering quantities (multitude or magnitude)** - Compares, orders, and locates whole numbers based on place-value understanding and records using <, =, > symbols. **Estimating quantities and numbers** - Rounds whole numbers using place-value understanding (e.g., 4736 can be rounded to 5000, 4700, 4740).

• place value - 1000s, 100s, 10s, and 1s - understanding the relationship between digit places and their value, to 10 000	**Number Unit 1: Number Relationships and Place Value** 1: Representing Numbers to 10 000 6: Consolidation of Number Relationships and Place Value	**Big Idea: Numbers are related in many ways.** **Decomposing and composing numbers to investigate equivalencies** - Composes and decomposes whole numbers using standard and non-standard partitioning (e.g., 1000 is 10 hundreds or 100 tens). **Big Idea: Quantities and numbers can be grouped by or partitioned into equal-sized units.** **Unitizing quantities into base-ten units** - Writes and reads whole numbers in multiple forms (e.g., 1358; one thousand three hundred fifty-eight; 1000 + 300 + 50 + 8). - Understands that the value of a digit is ten times the value of the same digit one place to the right.
decimals to hundredths: • Fractions and decimals are numbers that represent an amount or quantity. • Fractions and decimals can represent parts of a region, set, or linear model. • Fractional parts and decimals are equal shares or equal-sized portions of a whole or unit. • understanding the relationship between fractions and decimals	**Number Unit 4: Decimals** 20: Exploring Tenths 21: Exploring Hundredths 23: Consolidation of Decimals	**Big Idea: The set of real numbers is infinite.** **Extending whole number understanding to the set of real numbers** - Explores decimal fractions to tenths (e.g., 0.1, 0.5, 0.8) and hundredths (e.g., 0.42, 0.05, 0.90). **Big Idea: Numbers are related in many ways.** **Estimating quantities and numbers** - Estimates the location of decimals and fractions on a number line. **Big Idea: Quantities and numbers can be grouped by or partitioned into equal-sized units.** **Unitizing quantities into base-ten units** - Uses fractions with denominators of 10 to develop decimal fraction understanding and notation (e.g., five-tenths is $\frac{5}{10}$ or 0.5). - Counts forwards and backwards by decimal units (e.g., 0.1, 0.2, … 0.9, 1.0). - Understands that the value of a digit is ten times the value of the same digit one place to the right. - Understands that the value of a digit is one-tenth the value of the same digit one place to the left. - Writes and reads decimal numbers in multiple forms (e.g., numerals, number names, expanded form).

ordering and comparing fractions • comparing and ordering fractions with common denominators • estimating fractions with benchmarks (e.g., zero, half, whole) • using concrete and visual models • equal partitioning	**Number Unit 3: Fractions** 13: What Are Fractions? 14: Counting by Unit Fractions 15: Exploring Different Representations of Fractions 17: Exploring Equivalence in Fractions 18: Comparing and Ordering Fractions 19: Consolidation of Fractions	**Big Idea: Numbers are related in many ways.** **Comparing and ordering quantities (multitude or magnitude)** - Compares, orders, and locates fractions with the same numerator or denominator using reasoning (e.g., $\frac{3}{5} > \frac{3}{6}$ because fifths are larger parts). **Estimating quantities and numbers** - Estimates the size and magnitude of fractions by comparing to benchmarks. **Big Idea: Quantities and numbers can be grouped by or partitioned into equal-sized units.** **Partitioning quantities to form fractions** - Partitions fractional parts into smaller fractional parts (e.g., partitions halves into thirds to create sixths). - Uses models to describe, name, and count forward and backward by unit fractions. - Explains that two equivalent fractions represent the same part of a whole, but not necessarily equal quantities (e.g., $\frac{1}{2}$ of a set of 12 and $\frac{1}{2}$ of a set of 6 are equal fractions, but unequal quantities).
addition and subtraction to 10 000: • using flexible computation strategies, involving taking apart (e.g., decomposing using friendly numbers and compensating) and combining numbers in a variety of ways, regrouping • estimating sums and differences to 10 000 • using addition and subtraction in real-life contexts and problem-based situations	**Number Unit 2: Fluency with Addition and Subtraction** 7: Estimating Sums and Differences 8: Modelling Addition and Subtraction 9: Adding and Subtracting Larger Numbers 10: Using Mental Math to Add and Subtract 11: Creating and Solving Problems 12: Consolidation of Fluency with Addition and Subtraction	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating number and arithmetic properties** - Recognizes and generates equivalent numerical expressions using commutative and associative properties. - Understands operation relationships (e.g., inverse relationship between multiplication/division, addition/subtraction). - Understands the identity of operations (e.g., 5 + 0 = 5; 7 × 1 = 7). **Developing conceptual meaning of operations** - Models and develops meaning for whole number computation to four digits. **Developing fluency of operations** - Estimates the result of whole number operations using contextually relevant strategies (e.g., How many buses are needed to take the Grade 8 classes to the

		museum?). - Solves whole number computation using efficient strategies (e.g., mental computation, algorithms, calculating cost of transactions and change owing, saving money to make a purchase).
multiplication and division of two- or three-digit numbers by one-digit numbers: • understanding the relationship between multiplication and division, multiplication and addition, division and subtraction • using flexible computational strategies (e.g., decomposing, distributive principle, commutative principle, repeated addition and repeated subtraction) • using multiplication and division in real-life contexts and problem-based situations	**Number Unit 6: Multiplying and Dividing Larger Numbers** 30: Exploring Strategies for Multiplying 31: Estimating Products 32: Exploring Strategies for Dividing 33: Estimating Quotients 34: Dividing with Remainders 35: Consolidation of Multiplying and Dividing Larger Numbers	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating number and arithmetic properties** - Recognizes and generates equivalent numerical expressions using commutative and associative properties. - Understands operation relationships (e.g., inverse relationship between multiplication/division, addition/subtraction). **Developing conceptual meaning of operations** - Models and develops meaning for whole number computation to four digits. **Developing fluency of operations** - Estimates the result of whole number operations using contextually relevant strategies (e.g., How many buses are needed to take the Grade 8 classes to the museum?). - Solves whole number computation using efficient strategies (e.g., mental computation, algorithms, calculating cost of transactions and change owing, saving money to make a purchase).
addition and subtraction of decimals to hundredths: • estimating decimal sums and differences • using visual models, such as base 10 blocks, place-value mats, grid paper, and number lines • using addition and subtraction in real-life contexts and problem-based situations	**Number Unit 7: Operations with Fractions and Decimals** 36: Estimating Sums and Differences with Decimals 37: Adding and Subtracting Decimals 38: Using Mental Math to Add and Subtract Decimals 40: Consolidation of Operations with Fractions and Decimals	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Developing conceptual meaning of operations** - Demonstrates an understanding of decimal number computation through modelling and flexible strategies. **Developing fluency of operations** - Estimates sums and differences of decimal numbers (e.g., calculating cost of transactions involving dollars and cents). - Solves decimal number computation using efficient strategies.

addition and subtraction facts to 20 (developing computational fluency) • Provide opportunities for authentic practice, building on previous grade-level addition and subtraction facts. • flexible use of mental strategies	**Number Unit 2: Fluency with Addition and Subtraction** 10: Using Mental Math to Add and Subtract 12: Consolidation of Fluency with Addition and Subtraction	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating number and arithmetic properties** - Recognizes and generates equivalent numerical expressions using commutative and associative properties. - Understands operation relationships (e.g., inverse relationship between multiplication/division, addition/subtraction). - Understands the identity of operations (e.g., 5 + 0 = 5; 7 × 1 = 7).
multiplication and division facts to 100 (introductory computational strategies) • Provide opportunities for concrete and pictorial representations of multiplication. • building computational fluency • Use games to provide opportunities for authentic practice of multiplication computations. • looking for patterns in numbers, such as in a hundred chart, to develop understanding of multiplication computation • Connect multiplication to skip-counting. • Connecting multiplication to division and repeated addition. • using mental math strategies, such as doubling or halving • Students should be able to recall the following multiplication facts by the end of Grade 4 (2s, 5s, 10s).	**Number Unit 5: Fluency with Multiplication and Division Facts** 24: Strategies for Multiplication 25: Solving Multiplication Problems 26: Relating Multiplication and Division 27: Strategies for Division 29: Consolidation of Fluency with Multiplication and Division Facts	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating number and arithmetic properties** - Recognizes and generates equivalent numerical expressions using commutative and associative properties. - Understands operational relationships (e.g., inverse relationship between multiplication/division, addition/subtraction). - Understands the identity of operations (e.g., 5 + 0 = 5; 7 × 1 = 7). **Developing fluency of operations** - Fluently recalls multiplication and division facts to 100.
increasing and decreasing patterns using tables and charts: • Change in patterns can be represented in charts, graphs, and tables. • using words and numbers to describe increasing and decreasing patterns • fish stocks in lakes, life expectancies	**Patterning Unit 1: Increasing and Decreasing Patterns** 2: Investigating Increasing and Decreasing Patterns 3: Representing Patterns 4: Investigating Number Relationships 6: Consolidation of Increasing and Decreasing Patterns	**Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.** **Representing patterns, relations, and functions** - Describes, generates, extends, translates, and corrects number and shape patterns that follow a predetermined rule. - Uses multiple approaches to model situations involving repetition (i.e., repeating patterns) and change (i.e., increasing/decreasing patterns) (e.g.,

		using objects, tables, graphs, symbols, loops and nested loops in coding). **Generalizing and analyzing patterns, relations, and functions** - Explains the rule for numeric patterns including the starting point and change (e.g., given: 16, 22, 28, 34, …. Start at 16 and add 6 each time). - Describes numeric and shape patterns using words and numbers.
algebraic relationships among quantities: • representing and explaining one-step equations with an unknown number • describing pattern rules, using words and numbers from concrete and pictorial representations • planning a camping or hiking trip; planning for quantities and materials needed per individual and group over time	**Patterning Unit 2: Variables and Equations** 7: Using Symbols 12: Using Equations to Solve Problems 13: Consolidation of Variables and Equations	**Big Idea: Patterns and relations can be represented with symbols, equations, and expressions.** **Understanding equality and inequality, building on generalized properties of numbers and operations** - Expresses a one-step mathematical problem as an equation using a symbol or letter to represent an unknown number (e.g., Sena had some tokens and used four. She has seven left: □ – 4 = 7). **Using variables, algebraic expressions, and equations to represent mathematical relations** - Understands an unknown quantity (i.e., variable) may be represented by a symbol or letter (e.g., 13 – □ = 8; 4*n* = 12). - Flexibly uses symbols and letters to represent unknown quantities in equations (e.g., knows that 4 + □ = 7; 4 + *x* = 7; and 4 + *y* = 7 all represent the same equation with □, *x*, and *y* representing the same value). - Interprets and writes algebraic expressions (e.g., 2*n* means two times a number; subtracting a number from 7 can be written as 7 – *n*). - Understands a variable as a changing quantity (e.g., 5*s*, where *s* can be any value).
one-step equations with an unknown number, using all operations: • one-step equations for all operations involving an unknown number (e.g., ___ + 4 = 15, 15 – □ = 11) • start unknown (e.g., n + 15 = 20, 20 – 15 = □) • change unknown (e.g., 12 + n = 20) • result unknown (e.g., 6 + 13 = __)	**Patterning Unit 2: Variables and Equations** 7: Using Symbols 8: Solving Equations Concretely 9: Solving Addition and Subtraction Equations 11: Solving Multiplication and Division Equations	**Big Idea: Patterns and relations can be represented with symbols, equations, and expressions.** **Understanding equality and inequality, building on generalized properties of numbers and operations** - Determines an unknown number in simple one-step equations using different strategies (e.g., *n* × 3 = 12; 13 – □ = 8). - Uses arithmetic properties to investigate and transform one-step

	12: Using Equations to Solve Problems 13: Consolidation of Variables and Equations	addition and multiplication equations (e.g., 5 + 4 = 9 and 5 + *a* = 9 have the same structure and can be rearranged in similar ways to maintain equality: 4 + 5 = 9 and *a* + 5 = 9). - Uses arithmetic properties to investigate and transform one-step subtraction and division equations (e.g., 12 – 5 = 7 and 12 – *b* = 7 have the same structure and can be rearranged in similar ways to maintain equality: 12 – 7 = 5 and 12 – 7 = *b*).
how to tell time with analog and digital clocks, using 12- and 24-hour clocks: • understanding how to tell time with analog and digital clocks, using 12- and 24-hour clocks • understanding the concept of a.m. and p.m. • understanding the number of minutes in an hour • understanding the concept of using a circle and of using fractions in telling time (e.g., half past, quarter to) • telling time in five-minute intervals • telling time to the nearest minute • First Peoples use of number in time and seasons, represented by seasonal cycles and moon cycles (e.g., how position of sun, moon, and stars is used to determine times for traditional activities, navigation)	**Measurement Unit 3: Time** 12: Exploring Time 13: Telling Time in One- and Five-Minute Intervals 14: Telling Time on a 24-Hour Clock 18: Consolidation of Time	**Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.** **Selecting and using units to estimate, measure, construct, and make comparisons** - Reads and records time (i.e., digital and analogue) and calendar dates. **Understanding relationships among measured units** - Understands relationship among different measures of time (e.g., seconds, minutes, hours, days, decades).
regular and irregular polygons: • describing and sorting regular and irregular polygons based on multiple attributes • investigating polygons (polygons are closed shapes with similar attributes) • Yup'ik border patterns	**Geometry Unit 1B: 2-D Shapes and Angles** 3: Investigating Polygons 5: Consolidation of 2-D Shapes and 3-D Solids	**Big Idea: 2-D shapes and 3-D solids can be analyzed and classified in different ways by their attributes.** **Investigating geometric attributes and properties of 2-D shapes and 3-D solids** - Sorts, describes, constructs, and classifies polygons based on side attributes (e.g., parallel, perpendicular, regular/irregular).
perimeter of regular and irregular shapes: • using geoboards and grids to create, represent, measure, and calculate perimeter	**Measurement Unit 1: Length, Perimeter, Area** 3: Measuring the Perimeter of Polygons 7: Consolidation of Length, Perimeter, and Area	**Big Idea: Many things in our world (e.g., objects, spaces, events) have attributes that can be measured and compared.** **Selecting and using units to estimate, measure, construct, and make comparisons**

		- Measures, constructs, and estimates perimeter and area of regular and irregular polygons.
line symmetry: • using concrete materials such as pattern blocks to create designs that have a mirror image within them • First Peoples art, borders, birchbark biting, canoe building	**Geometry Unit 1A: 2-D Shapes and 3-D Solids** 4: Understanding Line Symmetry 5: Consolidation of 2-D Shapes and 3-D Solids	**Big Ideas: 2-D shapes and 3-D solids can be transformed in many ways and analyzed for change.** **Exploring symmetry to analyze 2-D shapes and 3-D solids** - Draws and identifies lines of symmetry (i.e., vertical, horizontal, diagonal, oblique) in 2-D shapes and designs.
one-to-one correspondence and many-to-one correspondence, using bar graphs and pictographs: • many-to-one correspondence: one symbol represents a group or value (e.g., on a bar graph, one square may represent five cookies)	**Data Management Unit 1A: Data Management** 1: Interpreting and Drawing Pictographs 2: Interpreting and Drawing Bar Graphs 3: Comparing Graphs 4: Consolidation of Data Management	**Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphical displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.** **Creating graphical displays of collected data** - Represents data graphically using many-to-one correspondence with appropriate scales and intervals (e.g., each symbol on pictograph represents 10 people). **Reading and interpreting data displays and analyzing variability** - Reads and interprets data displays using many-to-one correspondence. **Drawing conclusions by making inferences and justifying decisions based on data collected.** - Draws conclusions based on data presented.
probability experiments: • predicting single outcomes (e.g., when you spin using one spinner and it lands on a single colour) • using spinners, rolling dice, pulling objects out of a bag • recording results using tallies • Dene/Kaska hand games, Lahal stick games	**Data Management Unit 2A: Probability** 5: Describing Likelihood of Outcomes 6: Predicting Outcomes 7: Conducting Experiments to Check Predictions 9: Consolidation of Probability	**Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphical displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.** **Collecting data and organizing it into categories** - Records the results of multiple trials of simple events. **Using the language and tools of chance to describe and predict events** - Locates the likelihood of outcomes on a vocabulary-based probability continuum (e.g., impossible, unlikely, likely, certain). - Distinguishes between equally likely events (e.g., heads or tails on a fair coin) and unequally likely events (e.g., spinner with differently sized sections). - Identifies the sample space of

		independent events in an experiment (e.g., flipping a cup, drawing a coloured cube from a bag). - Investigates and calculates the experimental probability (i.e., relative frequency) of simple events (e.g., 3 heads in 5 coin tosses is $\frac{3}{5}$).
financial literacy – monetary calculations, including making change with amounts to $100 and making simple financial decisions • making monetary calculations, including decimal notation in real-life contexts and problem-based situations • applying a variety of strategies such as counting up, counting back, and decomposing, to calculate totals and make change • making simple financial decisions involving earning, spending, saving, and giving • equitable trade rules	**Number Unit 8: Financial Literacy** 41: Purchasing and Making Change (Whole-Dollar Amounts) 42: Purchasing and Making Change (Decimal Amounts) 43: Making Financial Decisions 44: Making Good Purchases 45: Consolidation of Financial Literacy	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Developing conceptual meaning of operations** - Models and develops meaning for whole number computation to four digits. - Demonstrates an understanding of decimal number computation through modelling and flexible strategies. **Developing fluency of operations** - Estimates the result of whole number operations using contextually relevant strategies (e.g., How many buses are needed to take the Grade 8 classes to the museum?). - Solves whole number computation using efficient strategies (e.g., mental computation, algorithms, calculating cost of transactions and change owing, saving money to make a purchase). - Estimates sums and differences of decimal numbers (e.g., calculating cost of transactions involving dollars and cents). - Solves decimal number computation using efficient strategies.