Correlation of British Columbia Program of Studies with Mathology Grade 5

Curriculum Expectations	Grade 5 Mathology.ca	Mathology Practice Workbook 5	Pearson Canada Grades 4-6 Mathematics Learning Progression
number concepts to 1 000 000: • counting: - multiples - flexible counting strategies - whole number benchmarks • Numbers to 1 000 000 can be arranged and recognized: - comparing and ordering numbers - estimating large quantities • place value: - 100 000s, 10 000s, 1000s, 100s, 10s, and 1s - understanding the relationship between digit places and their value, to 1 000 000 • First Peoples use unique counting systems (e.g., Tsimshian use of three counting systems, for animals, people and things; Tlingit counting for the naming of	**Number Unit 1: Number Relationships and Place Value** 1: Representing Larger Numbers 2: Comparing Larger Numbers 3: Estimating to Solve Problems 4: Consolidation of Number Relationships and Place Value **Number Unit 4: Fluency with Multiplication and Division** 19: Relating Multiplication and Division Facts	Unit 2 Questions 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 15 (pp. 8-11, 13)	**Big Idea: The set of real numbers is infinite.** **Extending whole number understanding to the set of real numbers** - Extends whole number understanding to 1 000 000. **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). **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-**

numbers e.g., 10 = two hands, 20 = one person)			**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 thousandths	**Number Unit 3: Fractions and Decimals** 13: Representing Decimals 18: Consolidation of Fractions and Decimals **Number Unit 8: Financial Literacy** 34: Problem Solving with Money	Unit 7 Questions 5, 6, 7 (p. 44)	**Big Idea: The set of real numbers is infinite.** **Extending whole number understanding to the set of real numbers.** - Extends decimal number understanding to thousandths. **Big Idea: Numbers are related in many ways.** **Decomposing and composing numbers to investigate equivalencies** - Composes and decomposes decimal numbers using standard and non-standard partitioning (e.g., 1.6 is 16 tenths or 0.16 tens). - Models and explains the relationship between a fraction and its equivalent decimal form (e.g., $\frac{2}{5} = \frac{4}{10} = 0.4$). **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). - 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 (i.e., numerals, number names, expanded form).
equivalent fractions **whole number, fraction, and decimal benchmarks:** • Two equivalent fractions are two ways to represent the same amount (having the same whole). • comparing and ordering fractions and decimals • addition and subtraction of decimals to thousandths • estimating decimal sums and differences • estimating fractions with benchmarks (e.g., zero, half, whole) • equal partitioning	**Number Unit 3: Fractions and Decimals** 10: Equivalent Fractions 12: Comparing and Ordering Fractions 13: Representing Decimals 15: Comparing and Ordering Decimals 16: Relating Fractions and Decimals 18: Consolidation of Fractions and Decimals **Number Unit 5: Operations with Fractions and Decimals** 26: Estimating Sums and Differences with Decimals 27: Adding with Decimal Numbers 28: Subtracting with Decimal Numbers 32: Consolidation of Operations with Fractions and Decimals **Data Unit 2: Probability** 5: Describing Likelihood of Events	Unit 9 Questions 1, 2, 3, 4, 5, 12 (pp. 52-54, 57) Unit 12 Questions 1, 3, 4 (pp. 72-73)	**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). - Compares, orders, and locates fractions using flexible strategies (e.g., comparing models; creating common denominators or numerators). **Estimating quantities and numbers** - Estimates the location of decimals and fractions on a number line. - Estimates the size and magnitude of fractions by comparing to benchmarks. **Decomposing and composing numbers to investigate equivalencies** - Generates and identifies equivalent fractions using flexible strategies (e.g., represents the same part of a whole; same part of a set; same location on a number line). **Big Idea: Quantities and numbers can be grouped by or partitioned into equal-sized units.** - Partitions fractional parts into smaller fractional units (e.g., partitions halves into thirds to create sixths). **Big Idea: Quantities and numbers can be operated on to determine how many and how much.**

			Developing fluency of operations - Estimates sums and differences of decimal numbers (e.g., calculating costs of transactions involving dollars and cents). - Solves decimal number computation using efficient strategies.
addition and subtraction of whole numbers to 1 000 000: • using flexing computational 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** 5: Estimating Sums and Differences 6: Exploring Addition Strategies 7: Exploring Subtraction Strategies 8: Using Knowledge of Basic Facts 9: Consolidation of Fluency with Addition and Subtraction	Unit 2 Question 13 (p. 12) Unit 3 Questions 1, 2, 3, 4, 5, 6, 7, 8 (pp. 14-19)	**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). **Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Developing conceptual meaning of operations** - Extends whole number computation models to larger numbers. **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 to 3 digits, including division with remainders: • understanding the relationship between multiplication and division, multiplication and addition, and division and subtraction • using flexible computation strategies (e.g., decomposing,	**Number Unit 4: Fluency with Multiplication and Division** 19: Relating Multiplication and Division Facts 20: Using Estimation for Multiplication and Division 21: Strategies for Multiplying Larger Numbers	Unit 2 Questions 5, 12, 14 (pp. 9, 12) Unit 13 Questions 3, 4, 5, 6, 7, 8, 9, 13 (pp. 81-83, 85)	**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.

distributive principle, commutative principle, repeated addition, repeated subtraction) • using multiplication and division in real-life contexts and problem-based situations • whole-class number talks	22: Multiplying Whole Numbers 23: Dividing Larger Numbers 25: Consolidation of Fluency with Multiplication and Division		- 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 conceptual meaning of operations** - Understands the effect of multiplying and dividing whole numbers by powers of 10. - Extends whole number computation models to larger numbers. **Developing fluency of operations** - Fluently recalls multiplication and division facts to 100. - 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 thousandths: • 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 • whole-class number talks	**Number Unit 5: Operations with Fraction and Decimals** 26: Estimating Sums and Differences with Decimals 27: Adding with Decimal Numbers 28: Subtracting with Decimal Numbers 32: Consolidation of Fractions and Decimals	Unit 9 Questions 1, 2, 3, 4, 5, 12 (pp. 52-54, 57) Unit 12 Questions 1, 3, 4 (pp. 72-73)	**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 costs of transactions involving dollars and cents). - Solves decimal number computation using efficient strategies.
addition and subtraction facts to 20: • Provide opportunities for authentic practice, building	**Number Unit 2: Fluency with Addition and Subtraction** 8: Using Knowledge of Basic Facts	Unit 3 Questions 1, 4 (pp. 14, 16)	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.**

on previous grade-level addition and subtraction facts • applying strategies and knowledge of addition and subtraction facts in real-life contexts and problem-based situations, as well as when making math-to-math connections (e.g., for 800 + 700, you can annex the zeros and use the knowledge of 8 + 7 to find the total)			**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).
multiplication and division facts to 100 (emerging computational fluency): • Provide opportunities for concrete and pictorial representations of multiplication. • Use games to provide opportunities for authentic practice of multiplication computations. • looking for patterns in numbers, such as in a hundred chart, to further develop understanding of multiplication computation • Connect multiplication to skip-counting. • Connect multiplication to division and repeated addition. • using mental math strategies such as doubling and halving, annexing, and distributive property • developing computational fluency with facts to 100	**Number Unit 4: Fluency with Multiplication and Division** 19: Relating Multiplication and Division Facts 25: Consolidation of Fluency with Multiplication and Division **Patterning Unit 1: Patterning** 2: Investigating Number Patterns	Unit 13 Questions 1, 2, 5, 9 (pp. 80-81, 83)	**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. - 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).

rules for increasing and decreasing patterns with words, numbers, symbols, and variables	**Patterning Unit 1: Patterning** 1: Investigating Geometric Patterns 2: Investigating Number Patterns 3: Using Pattern Rules to Solve Problems 4: Consolidation of Patterning	Unit 1 Questions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 (pp. 2-7)	**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). - Represents a numeric or shape pattern using a table of values by pairing the term value with a term number. - Generates a visual model to represent a simple number pattern. - Represents a mathematical context or problem with expressions and equations using variables to represent unknowns. **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. - Predicts the value of a given element in a numeric or shape pattern using pattern rules.

one-step equations with variables: • solving one-step equations with a variable • expressing a given problem as an equation, using symbols (e.g., 4 + X = 15)	**Patterning Unit 2: Variables and Equations** 5: Using Variables 6: Solving Addition and Subtraction Equations 7: Solving Multiplication and Division Equations 8: Using Equations to Solve Problems 10: Consolidation of Variables and Equations	Unit 16 Questions 1, 2, 3a, 3c, 5, 7, 8, 9, 13 (pp. 99-102, 104)	**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). - Determines an unknown number in simple one-step equations using different strategies (e.g., $n \times 3 = 12$; 13 – □ = 8). - Uses arithmetic properties to investigate and transform one-step 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). **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; 4n = 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*).
area measurement of squares and rectangles relationship between area and perimeter: • measuring area of squares and rectangles, using tiles, geoboards, grid paper • investigating perimeter and area and how they are related to but not dependent on each other • use traditional dwellings	**Measurement Unit 1: Length, Perimeter, and Area** 3: Measuring the Area of Rectangles 4: Relating the Perimeter and Area of Rectangles 6: Consolidation of Length, Perimeter, and Area	Unit 14 Questions 5, 6, 7, 8, 9, 12 (pp. 87-90, 92)	**Big Idea: Many things in our world (e.g., objects, spaces, events) have attributes that can be measured and compared.** **Understanding attributes that can be measured, compared, and ordered** - Understands area as an attribute of 2-D shapes that can be measured and compared. **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** - Develops understanding of square units (e.g., square unit, square cm, square m) to measure area of 2-D shapes. - Chooses the most appropriate unit to measure a given attribute of an object (e.g., classroom area measured in square metres). **Understands relationships among measured units** - Investigates the relationship between perimeter and area in rectangles.
duration, using measurement of time: • understanding elapsed time and duration • apply concepts of time in real-life contexts and problem-based situations • daily and seasonal cycles, moon cycles, tides, journeys, events	**Measurement Unit 3: Time** 13: Exploring Elapsed Time 14: Solving Problems Involving Time 15: Consolidation of Time	Unit 8 Questions 1, 2, 3, 4, 5, 6, 7 (pp. 48-51)	**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).
classification of prisms and pyramids: • investigating 3D objects and 2D shapes, based on multiple attributes • describing and sorting quadrilaterals • describing and constructing rectangular and triangular prisms • identifying prisms in the environment	**Geometry Unit 1A: 2-D Shapes and 3-D Solids** 1: Properties of 2-D Shapes and 3-D Objects 2: Investigating Quadrilaterals 3: Constructing Prisms 4: Consolidation of 2-D Shapes and 3-D Solids	Unit 4 Questions 1, 2, 3, 4, 5, 9, 10 (pp. 22-24, 26-27)	**Big Ideas: 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). - Sorts, describes, constructs, and classifies 3-D objects based on edges, faces, vertices, and angles (e.g., prisms, pyramids). - Sorts, describes, classifies 2-D shapes based on their geometric properties (e.g., side lengths, angles, diagonals). - Classifies 2-D shapes within a hierarchy based on their properties (e.g., rectangles are a subset of parallelograms).
single transformations: • single transformations (slide/translation, flip/reflection, turn/rotation) • using concrete materials with a focus on the motion of transformations • weaving, cedar basket, designs	**Geometry Unit 2A: Transformations** 5: Investigating Translations 6: Investigating Reflections 7: Investigating Rotations 8: Identifying Transformations 9: Consolidation of Transformations	Unit 5 Questions 4, 5, 6, 7, 8, 9, 10 (pp. 30-33)	**Big Ideas: 2-D shapes and 3-D solids can be transformed in many ways and analyzed for change.** **Exploring 2-D shapes and 3-D solids by applying and visualizing transformations** - Identifies, describes, and performs single transformations (i.e., translation, reflection, rotation) on 2-D shapes.
one-to-one correspondence and many-to-one correspondence, using double-bar graphs: • many-to-one correspondence: one symbol represents a group or a value (e.g., on a bar graph, one	**Data Management Unit 1A: Data Management** 1: Exploring First-Hand and Second-Hand Data 2: Constructing Double-Bar Graphs 3: Interpreting Double-Bar Graphs	Unit 10 Questions 3, 4, 8 (pp. 61, 62, 65)	**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**

square may represent five cookies)	4: Consolidation of Data Management		- Differentiates between primary (i.e., first-hand) and secondary (i.e., second-hand) data sources. **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). - Visually represents two or more data sets (e.g., double bar chart, stacked bar graph, multi-line graph, multi-column table). **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. - Interprets the results of data presented graphically from primary (e.g., class survey) and secondary (e.g., online news reports) sources.
probability experiments, single events or outcomes: • predicting outcomes of independent events (e.g., when you spin using a spinner and it lands on a single colour) • predicting single outcomes (e.g., when you spin using a spinner and it lands on a single colour) • using spinners, rolling dice, pulling objects out of a bag	**Data Management Unit 2A: Probability** 5: Describing Likelihood of Events 6: Conducting Experiments 7: Designing Experiments 8: Consolidation of Probability	Unit 11 Questions 1, 2, 3, 4, 5, 6, 7, 8, 9 (pp. 66-71)	**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

• representing single outcome probabilities using fractions			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 $1000 and developing simple financial plans: • making monetary calculations, including making change and decimal notation to $1000 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 plans to meet a financial goal • developing a budget that takes into account income and expenses	**Number Unit 8: Financial Literacy** 34: Problem Solving with Money 35: Credit, Debt, and Transfers 37: Designing a Basic Budget 38: Consolidation of Financial Literacy	Unit 11 Questions 1, 3, 4, 5, 6, 9, 10, 11, 12 (pp. 72-77)	**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.

Unit 6: Coding Not required, but recommended