Correlation of British Columbia Program of Studies with Mathology Grade 6

Curriculum Expectations	Grade 6 Mathology.ca	Mathology Practice Workbook 6	Pearson Canada Grades 4-6 Mathematics Learning Progression
Content - Elaborations			
small to large numbers (thousandths to billions): • place value from thousandths to billions, operations with thousandths to billions • numbers used in science, medicine, technology, and media • compare, order, and estimate	**Number Unit 1: Number Relationships and Place Value** 1: Representing Larger Numbers (to 1 000 000 and Beyond) 2: Representing Numbers in Different Forms 5: Consolidation of Number Relationships and Place Value **Number Unit 3: Fractions, Decimals, Percents, and Integers** 15: Representing Decimals 16: Comparing and Ordering Decimals 21: Consolidation of Fractions, Decimals, Percents, and Integers	Unit 2 Questions 1, 2, 3, 4, 5, 6 (pp. 9-10) Unit 7 Questions 6, 7, 8, 15, 16 (pp. 47-48, 50-51) Unit 8 Questions 1, 2, 3 (pp. 52-53) Unit 11 Question 11 (p. 78)	**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. - Extends decimal number understanding to thousandths. **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 <, =, and > symbols. - Compares, orders, and locates decimal numbers using place-value understanding. **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). - Composes and decomposes decimal numbers using standard and non-standard partitioning (e.g., 1.6 is 16 tenths or 0.16 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. - 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). **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. - Demonstrates an understanding of decimal number computation through modelling and flexible strategies. **Developing fluency of operations** - 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). - Solves decimal number computation using efficient strategies.
multiplication and division facts to 100 (developing computational fluency): • mental math strategies (e.g., the double-double strategy to multiply 23 × 4)	**Number Unit 2: Fluency with Whole Numbers** 6: Solving Problems with Whole Numbers 7: Estimating Reasonableness of Solutions 9: Mental Math Strategies 12: Consolidation of Fluency with Whole Numbers	Unit 2 Questions 7, 8, 9, 11, 13, 14, 16 (pp. 11-12, 13-14) Unit 12 Questions 1, 3 (pp. 81-83)	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **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).
order of operations with whole numbers:	**Number Unit 2: Fluency with Whole Numbers**	Unit 3 Questions 1, 2, 3, 4, 14 (pp. 15-16, 20)	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating number and arithmetic properties**

• includes the use of brackets, but excludes exponents • quotients can be rational numbers	8: The Order of Operations 12: Consolidation of Fluency with Whole Numbers		- Applies order of operations for whole numbers and explains the effect when order is not followed.
factors and multiples - greatest common factor and least common multiple: • prime and composite numbers, divisibility rules, factor trees, prime factor phrase (e.g., 300 = $2^2 \times 3 \times 5^2$) • using graphic organizers (e.g., Venn diagrams) to compare numbers for common factors and common multiples	**Number Unit 1: Number Relationships and Place Value** 3: Identifying Factors and Multiples 4: Identifying Prime and Composite Numbers 5: Consolidation of Number Relationships and Place Value	Unit 2 Questions 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 (pp. 11-14)	**Big Idea: Numbers are related in many ways.** **Decomposing and composing numbers to investigate equivalencies** - Decomposes numbers into prime factors. **Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating number and arithmetic properties** - Determines whether one number is a multiple of any one-digit number. - Examines and classifies whole numbers based on their properties (e.g., even/odd; prime; composite; divisible by 2, 5, and 10). - Generates multiples and factors for numbers using flexible strategies. - Distinguishes between and investigates properties of prime and composite numbers (e.g., prime factorization). - Extends exponent notation to any repeated multiplication (e.g., $2 \times 2 \times 2 \times 2 = 2^4$) and evaluates expressions using exponents (e.g., $3^4 = 3 \times 3 \times 3 \times 3 = 81$). **Developing fluency of operations** - Fluently recalls multiplication and division facts to 100.
improper fractions and mixed numbers: • using benchmarks, number line, and common denominators to compare and order, including whole numbers • using pattern blocks, Cuisenaire Rods, fraction	**Number Unit 3: Fractions, Decimals, Percents, and Integers** 13: Representing Fractions 14: Comparing and Ordering Fractions 21: Consolidation of Fractions, Decimals, Percents, and Integers	Unit 7 Questions 1, 2, 3, 4, 5, 15, 16 (pp. 45-46, 50-51)	**Big Idea: Numbers are related in many ways.** **Comparing and ordering quantities (multitude or magnitude)** - Compares, orders, and locates fractions using flexible strategies (e.g., comparing models; creating common denominators or numerators). **Estimating quantities and numbers** - Estimates the size and magnitude of fractions by comparing to benchmarks. **Decomposing and composing numbers to investigate equivalencies**

strips, fraction circles, grids • birchbark biting			- Models equivalent forms of improper fractions and mixed numbers using flexible strategies.
introduction to ratios: • comparing numbers, comparing quantities, equivalent ratios • part-to-part ratios and part-to-whole ratios	**Number Unit 2: Fluency with Whole Numbers** 11: Exploring Ratios 12: Consolidation of Fluency with Whole Numbers	Unit 3 Questions 9, 10, 11, 12, 13, 14 (pp. 18-20)	**Big Idea: Numbers are related in many ways.** **Using ratios, rates, proportions, and percents creates a relationship between quantities** - Understands the concept of ratio as a relationship between two quantities (e.g., 3 wins to 2 losses).
whole-number percents and percentage discounts: • use base 10 blocks, geoboard, 10 × 10 grid to represent whole number percents • find missing part (whole or percentage) • 50% = $\frac{1}{2}$ = 0.5 = 50:100	**Number Unit 3: Fractions, Decimals, Percents, and Integers** 18: Relating Fractions, Decimals, and Percents 21: Consolidation of Fractions, Decimals, Percents, and Integers	Unit 7 Questions 9, 10 (pp. 48-49) Unit 12 Questions 7, 8, 9, 10, 14 (pp. 84-85, 87)	**Big Idea: Numbers are related in many ways.** **Decomposing and composing numbers to investigate equivalencies** - Models and explains the relationships among fractions, decimals, and percents. - Translates flexibly between representations. **Using ratios, rates, proportions, and percents creates a relationship between quantities** - Understands and applies the concept of percentage as a rate per 100 (e.g., calculating sales tax, tips, or discount).
multiplication and division of decimals: • 0.125 × 3 or 7.2 ÷ 9 • using base 10 block array • birchbark biting	**Number Unit 4: Operations with Fractions, Decimals, and Percents** 22: Multiplying Decimals by 1-Digit Numbers 24: Dividing Decimals by 1-Digit Numbers 30: Consolidation of Operations with Fractions, Decimals, and Percents	Unit 12 Questions 1, 2, 3, 4, 5, 14 (pp. 81-84, 87)	**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** - Solves decimal number computation using efficient strategies.
increasing and decreasing patterns, using expressions, tables, and graphs as functional relationships:	**Patterning Unit 1: Patterning** 1: Investigating Patterns and Relationships in Tables	Unit 1 Questions 1, 2, 3, 4, 5, 6, 7, 8 (pp. 2-8)	**Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.** **Representing patterns, relations, and functions** - Represents a numeric or shape pattern using a table of values by pairing the term value with a term number.

• limited to discrete points in the first quadrant • visual patterning (e.g., colour tiles) • Take 3 add 2 each time, $2n + 1$, and 1 more than twice a number all describe the pattern 3, 5, 7, … • graphing data on First Peoples language loss, effects of language intervention	and Graphs 2: Solving Problems 4: Consolidation of Patterning **Patterning Unit 2: Variables and Equations** 7: Representing Generalizations in Patterns		- 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. - Describes the relationship between two numeric patterns (e.g., for every 4 steps, she travels 3 metres).
one-step equations with whole number coefficients and solutions: • preservation of equality (e.g., using a balance, algebra tiles) • $3x = 12$, $x + 5 = 11$	**Patterning Unit 2: Variables and Equations** 6: Investigating Equality in Equations 8: Solving Equations 10: Consolidation of Variables and Equations	Unit 14 Questions 4, 5, 7, 8, 9, 10, 11, 13 (pp. 98-102)	**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). - Recognizes that an equal sign between two expressions with variables indicates that the expressions are equivalent (e.g., $5n - 4 = 3n$; $3r = 2 + s$). - 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).

			- Investigates and models the meaning of preservation of equality of single variable equations (e.g., $3x = 12$). **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., $13 - \square = 8$; $4n = 12$). - Flexibly uses symbols and letters to represent unknown quantities in equations (e.g., knows that $4 + \square = 7$; $4 + x = 7$; and $4 + y = 7$ all represent the same equation with $\square$, x, and y representing the same value). - Interprets and writes algebraic expressions (e.g., $2n$ means two times a number; subtracting a number from 7 can be written as $7 - n$).
perimeter of complex shapes: • A complex shape is a group of shapes with no holes (e.g., use colour tiles, pattern blocks, tangrams).	**Measurement Unit 1A: Perimeter, Area, Volume, and Capacity** 1: Determining the Perimeter of Polygons 6: Consolidation of Perimeter, Area, Volume, and Capacity	Unit 13 Questions 4, 5, 13 (pp. 90-91, 95)	**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** - Measures, constructs, and estimates perimeter and area of regular and irregular polygons.
area of triangles, parallelograms, and trapezoids: • grid paper explorations • deriving formulas • making connections between area of parallelogram and area of rectangle • birchbark biting	**Measurement Unit 1A: Perimeter, Area, Volume, and Capacity** 2: Determining the Area of Rectangles 3: Areas of Parallelograms, Triangles, and Trapezoids 6: Consolidation of Perimeter, Area, Volume, and Capacity	Unit 13 Questions 3, 4, 5, 6, 7, 13 (pp. 89-92, 95)	**Big Idea: Patterns and relations can be represented with symbols, equations, and expressions.** **Using variables, algebraic expressions, and equations to represent mathematical relations** - Uses expressions and equations with variables to represent generalized relations and algorithms (e.g., $P = 2l + 2w$). **Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.** **Understanding relationships among measured units** - Develops and generalizes strategies to compute area of triangles, quadrilaterals, and other polygons (e.g., decomposing a parallelogram and rearranging to form a rectangle).

angle measurement and classification: • straight, acute, right, obtuse, reflex • constructing and identifying; include examples from local environment • estimating using 45°, 90°, and 180° as reference angles • angles of polygons • Small Number stories: Small Number and the Skateboard Park	**Geometry Unit 1A: 2-D Shapes and Angles** 1: Classifying and Measuring Angles 2: Measuring and Constructing Angles 5: Investigating Polygons 6: Consolidation of 2-D Shapes and Angles	Unit 4 Questions 1, 2, 3, 12 (pp. 23-25, 29)	**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 angle as an attribute that can be measured and compared. - Understands angle is additive (e.g., 90° can be visualized as nine sectors that are 10° each). **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** - Measures, constructs, and estimates angles using degrees. **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** - Draws, compares, and classifies angles (i.e., right, acute, obtuse, straight, reflex).
volume and capacity: • using cubes to build 3D objects and determine their volume • referents and relationships (e.g., cm^3, m^3, mL, L) • the number of coffee mugs that hold a litre • berry baskets, seaweed drying	**Measurement Unit 1A: Perimeter, Area, Volume, and Capacity** 4: Determining the Volume of Right Rectangular Prisms 5: Investigating Capacity 6: Consolidation of Perimeter, Area, Volume, and Capacity	Unit 13 Questions 1, 2 (pp. 88-89)	**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 volume and capacity as attributes of 3-D objects 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 a unit cube to estimate and measure volume of 3-D objects. - Measures, constructs, and estimates volume using standard cube units (e.g., cubic centimetres). **Understanding relationships among measured units** - Understands and applies the multiplicative relationship

			among metric units of length, mass, and capacity. - Develops and generalizes strategies and formulas to compute volumes of right rectangular prisms.
triangles • scalene, isosceles, equilateral • right, acute, obtuse • classified regardless of orientation	**Geometry Unit 1A: 2-D Shapes and Angles** 3: Classifying Triangles 4: Identifying and Constructing Triangles 6: Consolidation of 2-D Shapes and Angles	Unit 4 Questions 5, 6, 7, 12 (pp. 25-26, 29)	**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, and classifies 2-D shapes based on their geometric properties (e.g., side lengths, angles, diagonals).
combinations of transformations: • plotting points on Cartesian plane using whole-number ordered pairs • translation(s), rotation(s), and/or reflections on a single 2D shape • limited to first quadrant • transforming, drawing, and describing image • Use shapes in First Peoples art to integrate printmaking (e.g., Inuit, Northwest coastal First Nations, frieze work)	**Geometry Unit 2A: Transformations** 7: Rotating 2-D Shapes on a Grid 8: Single Transformations on a Grid 9: Combining Transformations on a Grid 10: Plotting and Reading Coordinates 11: Transformations on a Cartesian Plane 12: Consolidation of Transformations	Unit 5 Questions 1a, 2a, 3, 4, 6, 9 (pp. 30-33, 36)	**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. - Identifies, describes, applies, and creates a combination of successive transformations on 2-D shapes. **Big Idea: Objects can be located in space and viewed from multiple perspectives.** **Locating and mapping objects in space** - Develops understanding of a Cartesian plane as a coordinate system using perpendicular axes. - Plots and locates points on a Cartesian plane, and relates the location to the two axes. (Limited to the first quadrant.) - Analyzes and locates the vertices of 2-D shapes after transformation on a Cartesian plane. (Limited to the first quadrant.)
line graphs: • table of values, data set; creating a line graph from a given set of data	**Data Management Unit 1: Data Management** 1: Exploring Line Graphs 3: Collecting and Organizing Data	Unit 9 Questions 1, 3, 4, 5, 8 (pp. 61-64, 66)	**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.**

	4: Interpreting Graphs to Solve Problems 6: Consolidation of Data Management		**Collecting data and organizing it into categories** - Constructs data organizers to support data collection (e.g., creates tally chart or line plot on a grid to collect survey data). - Differentiates between discrete (e.g., votes) and continuous (e.g., height) data. - Selects and justifies an appropriate method of data collection (e.g., experiment, observation, survey) based on question posed. **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). - Chooses and justifies appropriate visual representations for displaying discrete (e.g., bar graph) and continuous (e.g., line graph) data. **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 on data presented. - Interprets the results of data presented graphically from primary (e.g., class survey) and secondary (e.g., online news report) sources.
single-outcome probability, both theoretical and experimental: • single-outcome probability events (e.g., spin a spinner, roll a die, toss a coin) • listing all possible outcomes to determine theoretical probability • comparing experimental results with theoretical expectation	**Data Management Unit 2: Probability** 7: Exploring Theoretical Probability 8: Independent Events 9: Conducting Experiments 10: Consolidation of Probability	Unit 10 Questions 1, 2, 5, 6, 8 (pp. 67-68, 70, 72)	**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

• Lahal stick games			tails on a fair coin) 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 coins tosses is $\frac{3}{5}$).
financial literacy – simple budgeting and consumer math: • informed decision making on saving and purchasing • How many weeks of allowance will it take to buy a bicycle?	**Number Unit 5: Financial Literacy** 31: Advantages and Disadvantages of Payment Methods 32: Interest Rates and Fees 33: Planning for Financial Goals 34: Consolidation of Financial Literacy	Unit 11 Questions 1, 2, 3, 4, 5, 6, 8, 9, 10, 11 (pp. 73-80)	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Developing fluency of operations** - 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). - Solves decimal number computation using efficient strategies.

Unit 6: Coding Not required, but recommended