

Correlation of British Columbia Program of Studies with Mathology Grade 6

Curriculum Expectations	Grade 6 Mathology.ca	Pearson Canada Grades 4-6 Mathematics Learning Progression
Content - Elaborations		
<p>small to large numbers (thousandths to billions):</p> <ul style="list-style-type: none"> • place value from thousandths to billions, operations with thousandths to billions • numbers used in science, medicine, technology, and media • compare, order, and estimate 	<p>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</p> <p>Number Unit 3: Fractions, Decimals, Percents, and Integers 15: Representing Decimals 16: Comparing and Ordering Decimals 21: Consolidation of Fractions, Decimals, Percents and Integers</p>	<p>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.</p>

		<ul style="list-style-type: none"> - 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). <p>Big Idea: Quantities and numbers can be operated on to determine how many and how much.</p> <p>Developing conceptual meaning of operations</p> <ul style="list-style-type: none"> - Extends whole number computation models to larger numbers. - Demonstrates an understanding of decimal number computation through modelling and flexible strategies. <p>Developing fluency of operations</p> <ul style="list-style-type: none"> - 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.
<p>multiplication and division facts to 100 (developing computational fluency):</p> <ul style="list-style-type: none"> • mental math strategies (e.g., the double-double strategy to multiply 23×4) 	<p>Number Unit 2: Fluency with Whole Numbers</p> <p>6: Solving Problems with Whole Numbers</p> <p>7: Estimating Reasonableness of Solutions</p> <p>9: Mental Math Strategies</p> <p>12: Consolidation of Fluency with Whole Numbers</p>	<p>Big Idea: Quantities and numbers can be operated on to determine how many and how much.</p> <p>Developing fluency of operations</p> <ul style="list-style-type: none"> - 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).
<p>order of operations with whole numbers:</p> <ul style="list-style-type: none"> • includes the use of brackets, but excludes exponents • quotients can be rational numbers 	<p>Number Unit 2: Fluency with Whole Numbers</p> <p>8: The Order of Operations</p> <p>12: Consolidation of Fluency with Whole Numbers</p>	<p>Big Idea: Quantities and numbers can be operated on to determine how many and how much.</p> <p>Investigating number and arithmetic properties</p> <ul style="list-style-type: none"> - Applies order of operations for whole numbers and explains the effect when order is not followed.
<p>factors and multiples - greatest common factor and least common multiple:</p> <ul style="list-style-type: none"> • 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 	<p>Number Unit 1: Number Relationships and Place Value</p> <p>3: Identifying Factors and Multiples</p> <p>4: Identifying Prime and Composite Numbers</p> <p>5: Consolidation of Number Relationships and Place Value</p>	<p>Big Idea: Numbers are related in many ways.</p> <p>Decomposing and composing numbers to investigate equivalencies</p> <ul style="list-style-type: none"> - Decomposes numbers into prime factors. <p>Big Idea: Quantities and numbers can be operated on to determine how many and how much.</p>

<p>numbers for common factors and common multiples</p>		<p>Investigating number and arithmetic properties</p> <ul style="list-style-type: none"> - 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., $3^4 = 3 \times 3 \times 3 \times 3 = 81$). <p>Developing fluency of operations</p> <ul style="list-style-type: none"> - Fluently recalls multiplication and division facts to 100.
<p>improper fractions and mixed numbers:</p> <ul style="list-style-type: none"> • using benchmarks, number line, and common denominators to compare and order, including whole numbers • using pattern blocks, Cuisenaire Rods, fraction strips, fraction circles, grids • birchbark biting 	<p>Number Unit 3: Fractions, Decimals, Percents, and Integers</p> <p>13: Representing Fractions 14: Comparing and Ordering Fractions 21: Consolidation of Fractions, Decimals, Percents and Integers</p>	<p>Big Idea: Numbers are related in many ways.</p> <p>Comparing and ordering quantities (multitude or magnitude)</p> <ul style="list-style-type: none"> - Compares, orders, and locates fractions using flexible strategies (e.g., comparing models; creating common denominators or numerators). <p>Estimating quantities and numbers</p> <ul style="list-style-type: none"> - Estimates the size and magnitude of fractions by comparing to benchmarks. <p>Decomposing and composing numbers to investigate equivalencies</p> <ul style="list-style-type: none"> - Models equivalent forms of improper fractions and mixed numbers using flexible strategies.
<p>introduction to ratios:</p> <ul style="list-style-type: none"> • comparing numbers, comparing quantities, equivalent ratios • part-to-part ratios and part-to-whole ratios 	<p>Number Unit 2: Fluency with Whole Numbers</p> <p>11: Exploring Ratios 12: Consolidation of Fluency with Whole Numbers</p>	<p>Big Idea: Numbers are related in many ways.</p> <p>Using ratios, rates, proportions, and percents creates a relationship between quantities</p> <ul style="list-style-type: none"> - Understands the concept of ratio as a relationship between two quantities (e.g., 3 wins to 2 losses).
<p>whole-number percents and percentage discounts:</p> <ul style="list-style-type: none"> • use base 10 blocks, geoboard, 10×10 grid to represent whole number percents • find missing part (whole or percentage) • $50\% = \frac{1}{2} = 0.5 = 50:100$ 	<p>Number Unit 3: Fractions, Decimals, Percents, and Integers</p> <p>18: Relating Fractions, Decimals, and Percents 21: Consolidation of Fractions, Decimals, Percents and Integers</p>	<p>Big Idea: Numbers are related in many ways.</p> <p>Decomposing and composing numbers to investigate equivalencies</p> <ul style="list-style-type: none"> - Models and explains the relationships among fractions, decimals, and percents. - Translates flexibly between representations.

		<p>Using ratios, rates, proportions, and percents creates a relationship between quantities</p> <ul style="list-style-type: none"> - Understands and applies the concept of percentage as a rate per 100 (e.g., calculating sales tax, tips, or discount).
<p>multiplication and division of decimals:</p> <ul style="list-style-type: none"> • 0.125×3 or $7.2 \div 9$ • using base 10 block array • birchbark biting 	<p>Number Unit 4: Operations with Fractions and Decimals</p> <p>22: Multiplying Decimals by 1-Digit Numbers</p> <p>24: Dividing Decimals by 1-Digit Numbers</p> <p>30: Consolidation of Operations with Fractions and Decimals</p>	<p>Big Idea: Quantities and numbers can be operated on to determine how many and how much.</p> <p>Developing conceptual meaning of operations</p> <ul style="list-style-type: none"> - Demonstrates an understanding of decimal number computation through modelling and flexible strategies. <p>Developing fluency of operations</p> <ul style="list-style-type: none"> - Solves decimal number computation using efficient strategies.
<p>increasing and decreasing patterns, using expressions, tables, and graphs as functional relationships:</p> <ul style="list-style-type: none"> • 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 	<p>Patterning Unit 1: Patterning</p> <p>1: Investigating Patterns and Relationships in Tables and Graphs</p> <p>2: Solving Problems</p> <p>4: Consolidation of Patterning</p> <p>Patterning Unit 2: Variables and Equations</p> <p>7: Representing Generalizations in Patterns</p>	<p>Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.</p> <p>Representing patterns, relations, and functions</p> <ul style="list-style-type: none"> - Represents a numeric or shape pattern using a table of values by pairing the term value with a term number. - Represents a mathematical context or problem with expressions and equations using variables to represent unknowns. <p>Generalizing and analyzing patterns, relations, and functions</p> <ul style="list-style-type: none"> - 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).
<p>one-step equations with whole number coefficients and solutions:</p> <ul style="list-style-type: none"> • preservation of equality (e.g., using a balance, algebra tiles) • $3x = 12$, $x + 5 = 11$ 	<p>Patterning Unit 2: Variables and Equations</p> <p>6: Investigating Equality in Equations</p> <p>8: Solving Equations</p> <p>10: Consolidation of Variables and Equations</p>	<p>Big Idea: Patterns and relations can be represented with symbols, equations, and expressions.</p> <p>Understanding equality and inequality, building on generalized properties of numbers and operations</p> <ul style="list-style-type: none"> - Expresses a one-step mathematical problem as an equation using a symbol or letter to represent an unknown number

		<p>(e.g., Sena had some tokens and used four. She has seven left: $\square - 4 = 7$).</p> <ul style="list-style-type: none"> - Determines an unknown number in simple one-step equations using different strategies (e.g., $n \times 3 = 12$; $13 - \square = 8$). - 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., $3x = 12$). <p>Using variables, algebraic expressions, and equations to represent mathematical relations</p> <ul style="list-style-type: none"> - 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 $7 - n$).
<p>perimeter of complex shapes:</p> <ul style="list-style-type: none"> • A complex shape is a group of shapes with no holes (e.g., use colour tiles, pattern blocks, tangrams). 	<p>Measurement Unit 1A: Perimeter, Area, Volume, and Capacity</p> <p>1: Determining the Perimeter of Polygons</p> <p>6: Consolidation of Perimeter, Area, Volume, and Capacity</p>	<p>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</p> <ul style="list-style-type: none"> - Measures, constructs, and estimates perimeter and area of regular and irregular polygons.

<p>area of triangles, parallelograms, and trapezoids:</p> <ul style="list-style-type: none"> • grid paper explorations • deriving formulas • making connections between area of parallelogram and area of rectangle • birchbark biting 	<p>Measurement Unit 1A: Perimeter, Area, Volume, and Capacity</p> <p>2: Determining the Area of Rectangles</p> <p>3: Areas of Parallelograms, Triangles, and Trapezoids</p> <p>6: Consolidation of Perimeter, Area, Volume, and Capacity</p>	<p>Big Idea: Patterns and relations can be represented with symbols, equations, and expressions.</p> <p>Using variables, algebraic expressions, and equations to represent mathematical relations</p> <p>- Uses expressions and equations with variables to represent generalized relations and algorithms (e.g., $P = 2l + 2w$).</p> <p>Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.</p> <p>Understanding relationships among measured units</p> <p>- Develops and generalizes strategies to compute area of triangles, quadrilaterals, and other polygons (e.g., decomposing a parallelogram and rearranging to form a rectangle).</p>
<p>angle measurement and classification:</p> <ul style="list-style-type: none"> • 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 	<p>Geometry Unit 1A: 2-D Shapes and Angles</p> <p>1: Classifying and Measuring Angles</p> <p>2: Measuring and Constructing Angles</p> <p>5: Investigating Polygons</p> <p>6: Consolidation of 2-D Shapes and Angles</p>	<p>Big Idea: Many things in our world (e.g., objects, spaces, events) have attributes that can be measured and compared.</p> <p>Understanding attributes that can be measured, compared, and ordered</p> <p>- Understands angle as an attribute that can be measured and compared.</p> <p>- Understands angle is additive (e.g., 90° can be visualized as nine sectors that are 10° each).</p> <p>Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.</p> <p>Selecting and using units to estimate, measure, construct, and make comparisons</p> <p>- Measures, constructs, and estimates angles using degrees.</p> <p>Big Idea: 2-D shapes and 3-D solids can be analyzed and classified in different ways by their attributes.</p> <p>Investigating geometric attributes and properties of 2-D shapes and 3-D solids</p> <p>- Draws, compares, and classifies angles (i.e., right, acute, obtuse, straight, reflex).</p>

<p>volume and capacity:</p> <ul style="list-style-type: none"> • 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 	<p>Measurement Unit 1A: Perimeter, Area, Volume, and Capacity</p> <p>4: Determining the Volume of Right Rectangular Prisms</p> <p>5: Investigating Capacity</p> <p>6: Consolidation of Perimeter, Area, Volume, and Capacity</p>	<p>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</p> <ul style="list-style-type: none"> - Understands volume and capacity as attributes of 3-D objects that can be measured and compared. <p>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</p> <ul style="list-style-type: none"> - 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). <p>Understanding relationships among measured units</p> <ul style="list-style-type: none"> - 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.
<p>triangles</p> <ul style="list-style-type: none"> • scalene, isosceles, equilateral • right, acute, obtuse • classified regardless of orientation 	<p>Geometry Unit 1A: 2-D Shapes and Angles</p> <p>3: Classifying Triangles</p> <p>4: Identifying and Constructing Triangles</p> <p>6: Consolidation of 2-D Shapes and Angles</p>	<p>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</p> <ul style="list-style-type: none"> - Sorts, describes, and classifies 2-D shapes based on their geometric properties (e.g., side lengths, angles, diagonals).
<p>combinations of transformations:</p> <ul style="list-style-type: none"> • 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) 	<p>Geometry Unit 2A: Transformations</p> <p>7: Rotating 2-D Shapes on a Grid</p> <p>8: Single Transformations on a Grid</p> <p>9: Combining Transformations on a Grid</p> <p>10: Plotting and Reading Coordinates</p> <p>11: Transformations on a Coordinate Plane</p>	<p>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</p> <ul style="list-style-type: none"> - 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. <p>Big Idea: Objects can be located in space and viewed from multiple perspectives. Locating and mapping objects in space</p>

	12: Consolidation of Transformations	<ul style="list-style-type: none"> - 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.)
<p>line graphs:</p> <ul style="list-style-type: none"> • table of values, data set; creating a line graph from a given set of data 	<p>Data Management Unit 1: Data Management</p> <p>1: Exploring Line Graphs</p> <p>3: Collecting and Organizing Data</p> <p>4: Interpreting Graphs to Solve Problems</p> <p>6: Consolidation of Data Management</p>	<p>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.</p> <p>Collecting data and organizing it into categories</p> <ul style="list-style-type: none"> - 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. <p>Creating graphical displays of collected data</p> <ul style="list-style-type: none"> - 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. <p>Reading and interpreting data displays and analyzing variability</p> <ul style="list-style-type: none"> - Reads and interprets data displays using many-to-one correspondence. <p>Drawing conclusions by making inferences and justifying decisions based on data collected</p> <ul style="list-style-type: none"> - 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.

<p>single-outcome probability, both theoretical and experimental:</p> <ul style="list-style-type: none"> • 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 • Lahal stick games 	<p>Data Management Unit 2: Probability</p> <p>7: Exploring Theoretical Probability</p> <p>8: Identifying Possible Outcomes</p> <p>9: Conducting Experiments</p> <p>10: Consolidation of Probability</p>	<p>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</p> <ul style="list-style-type: none"> - Records the results of multiple trials of simple events. <p>Using the language and tools of chance to describe and predict events</p> <ul style="list-style-type: none"> - 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 coins tosses is $\frac{3}{5}$).
<p>financial literacy – simple budgeting and consumer math:</p> <ul style="list-style-type: none"> • informed decision making on saving and purchasing • How many weeks of allowance will it take to buy a bicycle? 	<p>Number Unit 5: Financial Literacy</p> <p>31: Advantages and Disadvantages of Payment Methods</p> <p>32: Interest Rates and Fees</p> <p>33: Planning for Financial Goals</p> <p>34: Consolidation of Financial Literacy</p>	<p>Big Idea: Quantities and numbers can be operated on to determine how many and how much. Developing fluency of operations</p> <ul style="list-style-type: none"> - 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.