**Correlation of British Columbia Program of Studies with Mathology Grade 6**

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| **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 Forms5: Consolidation of Number Relationships and Place Value**Number Unit 3: Fractions, Decimals, Percents, and Integers**15: Representing Decimals16: Comparing and Ordering Decimals21: 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 Numbers7: Estimating Reasonableness of Solutions9: Mental Math Strategies12: 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:*** includes the use of brackets, but excludes exponents
* quotients can be rational numbers
 | **Number Unit 2: Fluency with Whole Numbers**8: The Order of Operations12: Consolidation of 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**- 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 = 22 × 3 × 52)
* 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 Multiples4: Identifying Prime and Composite Numbers5: 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 × 2 × 2 × 2 = 24) and evaluates expressions using exponents (e.g., 34 = 3 × 3 × 3 × 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 strips, fraction circles, grids
* birchbark biting
 | **Number Unit 3: Fractions, Decimals, Percents, and Integers**13: Representing Fractions14: Comparing and Ordering Fractions21: 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**- 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 Ratios12: 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 Percents21: 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 Numbers24: Dividing Decimals by 1-Digit Numbers30: Consolidation of Operations with Fractions, Decimals, and Percents | Unit 12 Questions1, 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:*** limited to discrete points in the first quadrant
* visual patterning (e.g., colour tiles)
* Take 3 add 2 each time, 2*n* + 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
 | **Patterning Unit 1: Patterning**1: Investigating Patterns and Relationships in Tables and Graphs2: Solving Problems4: Consolidation of Patterning**Patterning Unit 2: Variables and Equations**7: Representing Generalizations in Patterns | 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.- 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)
* 3*x* = 12, *x* + 5 = 11
 | **Patterning Unit 2: Variables and Equations**6: Investigating Equality in Equations8: Solving Equations10: 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* × 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., 5*n* – 4 = 3*n*; 3*r* = 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., 3*x* = 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 – □ = 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*). |
| **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 Polygons6: 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 Rectangles3: Areas of Parallelograms, Triangles, and Trapezoids6: 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* = 2*l* + 2*w*).**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 Angles2: Measuring and Constructing Angles5: Investigating Polygons6: 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., cm3, m3, 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 Prisms5: Investigating Capacity6: 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 Triangles4: Identifying and Constructing Triangles6: 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 Grid8: Single Transformations on a Grid9: Combining Transformations on a Grid10: Plotting and Reading Coordinates11: Transformations on a Cartesian Plane12: 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 Graphs3: Collecting and Organizing Data4: Interpreting Graphs to Solve Problems6: Consolidation of Data Management | 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.****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
* Lahal stick games
 | **Data Management Unit 2: Probability**7: Exploring Theoretical Probability8: Independent Events9: Conducting Experiments10: 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 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 Methods32: Interest Rates and Fees33: Planning for Financial Goals34: 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