**Correlation of British Columbia Program of Studies with Mathology Grade 5**

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| **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 numbers e.g., 10 = two hands, 20 = one person) | **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-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., = = 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 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., > 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, distributive principle, commutative principle, repeated addition, repeated subtraction) * using multiplication and division in real-life contexts and problem-based situations * whole-class number talks | **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  22: Multiplying Whole Numbers  23: Dividing Larger Numbers  25: Consolidation of Fluency with Multiplication and Division | 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.  - 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 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) | **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.**  **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. |

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| **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* × 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; 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*). |
| **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 square may represent five cookies) | **Data Management Unit 1A: Data Management**  1: Exploring First-Hand and Second-Hand Data  2: Constructing Double-Bar Graphs  3: Interpreting Double-Bar Graphs  4: Consolidation of Data Management | 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** - 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 * representing single outcome probabilities using fractions | **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 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 ). |
| **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