**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 Numbers2: Comparing Larger Numbers3: Estimating to Solve Problems4: 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 Decimals18: Consolidation of Fractions and Decimals**Number Unit 8: Financial Literacy**34: Problem Solving with Money | Unit 7 Questions 5, 6, 7 (p. 44)  | **Big Idea: The set of real numbers is infinite.Extending whole number understanding to the set of real numbers.**- Extends decimal number understanding to thousandths.**Big Idea: Numbers are related in many ways.****Decomposing and composing numbers to investigate equivalencies**- Composes and decomposes decimal numbers using standard and non-standard partitioning (e.g., 1.6 is 16 tenths or 0.16 tens).- Models and explains the relationship between a fraction and its equivalent decimal form (e.g., $\frac{2}{5}$ = $\frac{4}{10}$ = 0.4).**Big Idea: Quantities and numbers can be grouped by or partitioned into equal-sized units.****Unitizing quantities into base-ten units**- Uses fractions with denominators of 10 to develop decimal fraction understanding and notation (e.g., five-tenths is $\frac{5}{10}$ or 0.5).- Understands that the value of a digit is ten times the value of the same digit one place to the right.- Understands that the value of a digit is one-tenth the value of the same digit one place to the left.- Writes and reads decimal numbers in multiple forms (i.e., numerals, number names, expanded form). |
| **equivalent fractions** **whole number, fraction, and decimal benchmarks:*** Two equivalent fractions are two ways to represent the same amount (having the same whole).
* comparing and ordering fractions and decimals
* addition and subtraction of decimals to thousandths
* estimating decimal sums and differences
* estimating fractions with benchmarks (e.g., zero, half, whole)
* equal partitioning
 | **Number Unit 3: Fractions and Decimals**10: Equivalent Fractions 12: Comparing and Ordering Fractions13: Representing Decimals15: Comparing and Ordering Decimals16: Relating Fractions and Decimals18: Consolidation of Fractions and Decimals**Number Unit 5: Operations with Fractions and Decimals**26: Estimating Sums and Differences with Decimals27: Adding with Decimal Numbers28: Subtracting with Decimal Numbers32: Consolidation of Operations with Fractions and Decimals**Data Unit 2: Probability**5: Describing Likelihood of Events | Unit 9 Questions 1, 2, 3, 4, 5, 12 (pp. 52-54, 57)Unit 12 Questions 1, 3, 4 (pp. 72-73) | **Big Idea: Numbers are related in many ways.****Comparing and ordering quantities (multitude or magnitude)**- Compares, orders, and locates fractions with the same numerator or denominator using reasoning (e.g., $\frac{3}{5}$ > $\frac{3}{6}$ because fifths are larger parts).- Compares, orders, and locates fractions using flexible strategies (e.g., comparing models; creating common denominators or numerators).**Estimating quantities and numbers**- Estimates the location of decimals and fractions on a number line.- Estimates the size and magnitude of fractions by comparing to benchmarks.**Decomposing and composing numbers to investigate equivalencies**- Generates and identifies equivalent fractions using flexible strategies (e.g., represents the same part of a whole; same part of a set; same location on a number line).**Big Idea: Quantities and numbers can be grouped by or partitioned into equal-sized units.**- Partitions fractional parts into smaller fractional units (e.g., partitions halves into thirds to create sixths).**Big Idea: Quantities and numbers can be operated on to determine how many and how much.****Developing fluency of operations**- Estimates sums and differences of decimal numbers (e.g., calculating costs of transactions involving dollars and cents).- Solves decimal number computation using efficient strategies. |
| **addition and subtraction of whole numbers to 1 000 000:*** using flexing computational strategies involving taking apart (e.g., decomposing using friendly numbers and compensating) and combining numbers in a variety of ways, regrouping
* estimating sums and differences to 10 000
* using addition and subtraction in real-life contexts and problem-based situations
 | **Number Unit 2: Fluency with Addition and Subtraction**5: Estimating Sums and Differences6: Exploring Addition Strategies7: Exploring Subtraction Strategies8: Using Knowledge of Basic Facts9: 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 Facts20: Using Estimation for Multiplication and Division21: Strategies for Multiplying Larger Numbers22: Multiplying Whole Numbers23: Dividing Larger Numbers25: 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 Decimals27: Adding with Decimal Numbers28: Subtracting with Decimal Numbers32: 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 Facts25: 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 Patterns2: Investigating Number Patterns3: Using Pattern Rules to Solve Problems4: 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 Variables6: Solving Addition and Subtraction Equations7: Solving Multiplication and Division Equations8: 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 Rectangles4: Relating the Perimeter and Area of Rectangles6: 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 Time14: Solving Problems Involving Time15: 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 Objects2: Investigating Quadrilaterals3: Constructing Prisms4: 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 Translations6: Investigating Reflections7: Investigating Rotations8: Identifying Transformations9: 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 Data2: Constructing Double-Bar Graphs 3: Interpreting Double-Bar Graphs4: 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 Events6: Conducting Experiments7: Designing Experiments8: 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 $\frac{3}{5}$). |
| **financial literacy – monetary calculations, including making change with amounts to $1000 and developing simple financial plans:*** making monetary calculations, including making change and decimal notation to $1000 in real-life contexts and problem-based situations
* applying a variety of strategies such as counting up, counting back, and decomposing, to calculate totals and make change
* making simple financial plans to meet a financial goal
* developing a budget that takes into account income and expenses
 | **Number Unit 8: Financial Literacy**34: Problem Solving with Money35: Credit, Debt, and Transfers37: Designing a Basic Budget38: 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