Correlation of Ontario Program of Studies with Mathology Grade 5

Curriculum Expectations	Grade 5 Mathology.ca	Pearson Canada Grades 4-6 Mathematics Learning Progression
B. Number		
B1. Number Sense demonstrate an understanding of numbers and make connections to the way numbers are used in everyday life		
Whole Numbers		
B1.1 read, represent, compose, and decompose whole numbers up to and including 100 000, using appropriate tools and strategies, and describe various ways they are used in everyday life	**Number Unit 1: Number Relationships and Place Value** 1: Representing Larger Numbers 4. Consolidation of Number Relationships and Place Value	**Big Idea: The set of real numbers is infinite. Extending whole number understanding to the set of real numbers** - Extends whole number understanding to 100 000. **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.

B1.2 compare and order whole numbers up to and including 100 000, in various contexts.	**Number Unit 1: Number Relationships and Place Value** 2: Comparing Larger Numbers 4. Consolidation of Number Relationships and Place Value	**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.
Fractions, Decimals, and Percents		
B1.3 represent equivalent fractions from halves to twelfths, including improper fractions and mixed numbers, using appropriate tools, in various contexts	**Number Unit 3: Fractions and Decimals and Percents** 10: Equivalent Fractions 11: Exploring Improper Fractions and Mixed Numbers 12: Comparing and Ordering Fractions 18. Consolidation of Fractions and Decimals and Percents	**Big Idea: Numbers are related in many ways. 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). - Models equivalent forms of improper fractions and mixed numbers using flexible strategies. **Big Idea: Quantities and numbers can be grouped by or partitioned into equal-sized units.** **Partitions fractional quantities to form fractions** - Partitions fractional parts into smaller fractional units (e.g., partitions halves into thirds to create sixths).
B1.4 compare and order fractions from halves to twelfths, including improper fractions and mixed numbers, in various contexts	**Number Unit 3: Fractions and Decimals and Percents** 12: Comparing and Ordering Fractions 18. Consolidation of Fractions and Decimals and Percents	**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).

B1.5 read, represent, compare, and order decimal numbers up to hundredths, in various contexts	**Number Unit 3: Fractions and Decimals and Percents** 13: Representing Decimals 15: Comparing and Ordering Decimals 18. Consolidation of Fractions and Decimals and Percents	**Big Idea: The set of real numbers is infinite. Extending whole number understanding to the set of real numbers.** - Explores decimal fractions to tenths (e.g., 0.1, 0.5, 0.8) and hundredths (e.g., 0.42, 0.05, 0.90). **Big Idea: Numbers are related in many ways. Comparing and ordering quantities (multitude or magnitude)** - Compares, orders, and locates decimal numbers using place-value understanding. **Estimating quantities and numbers** - Estimates the location of decimals and fractions on a number line. **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). **Big Idea: Quantities and numbers can be grouped by or partitioned into equal-sized units.** **Unitizing quantities into base-ten units** - 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).
B1.6 round decimal numbers to the nearest tenth, in various contexts	**Number Unit 3: Fractions and Decimals and Percents** 14: Rounding Decimals 18. Consolidation of Fractions and Decimals and Percents	**Big Idea: Numbers are related in many ways. Estimating quantities and numbers** - Provides approximate decimal values using multiple strategies (e.g., estimation, rounding, truncating).

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| B1.7 describe relationships and show equivalences among fractions, decimal numbers up to hundredths, and whole number percents, using appropriate tools and drawings, in various contexts | **Number Unit 3: Fractions and Decimals and Percents**

16: Relating Fractions and Decimals
17: Relating Fractions, Decimals, and Percents
18. Consolidation of Fractions and Decimals and Percents

Data Unit 1B: Data Management
2B: Exploring Relative Frequency | **Big Idea: Numbers are related in many ways.**
Decomposing and composing numbers to investigate equivalencies
- Models and explains the relationship between a fraction and its equivalent decimal form (e.g., $\frac{2}{5} = \frac{4}{10} = 0.4$).
- 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 discounts).
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). |

B2. Operations		
use knowledge of numbers and operations to solve mathematical problems encountered in everyday life		
Properties and Relationships		
B2.1 use the properties of operations, and the relationships between operations, to solve problems involving whole numbers and decimal numbers, including those requiring more than one operation, and check calculations	**Number Unit 1: Number Relationships and Place Value** 3: Estimating to Solve Problems **Number Unit 2: Fluency with Addition and Subtraction** 5: Estimating Sums and Differences 6: Exploring Addition Strategies 7: Exploring Subtraction Strategies 9. Consolidation of Fluency with Addition and Subtraction **Number Unit 4: Fluency with Multiplication and Division** 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 **Number Unit 5: Operations with Decimals**	**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** - 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.

	26: Estimating Sums and Differences with Decimals 27: Adding with Decimal Numbers 28: Subtracting with Decimal Numbers 32. Consolidation of Operations with Decimals **Number Unit 6: Financial Literacy** 33: Exploring Taxes 34: Problem Solving with Money 36: Finding Best Value (Unit Rates) 37: Designing a Basic Budget 38: Consolidation of Financial Literacy	
Math Facts		
B2.2 recall and demonstrate multiplication facts from 0 × 0 to 12 × 12, and related division facts	**Number Unit 4: Fluency with Multiplication and Division** 19: Relating Multiplication and Division Facts 25. Consolidation of Fluency with Multiplication and Division	**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.
Mental Math		
B2.3 use mental math strategies to multiply whole numbers by 0.1 and 0.01, and estimate sums and differences of decimal numbers up to hundredths, and explain the strategies used	**Number Unit 5: Operations with Decimals and Fractions** 26: Estimating Sums and Differences with Decimals 31: Multiplication with 0.01 and 0.1 32. Consolidation of	**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.

	Operations with Decimals and Fractions	- Understands operation 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** - 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 cost of transactions involving dollars and cents). - Solves decimal number computation using efficient strategies.
Addition and Subtraction		
B2.4 represent and solve problems involving the addition and subtraction of whole numbers that add up to no more than 100 000, and of decimal numbers up to hundredths, using appropriate tools, strategies, including algorithms	**Number Unit 1: Number Relationships and Place Value** 3: Estimating to Solve Problems **Number Unit 2: Fluency with Addition and Subtraction** 5: Estimating Sums and Differences 6: Exploring Addition Strategies 7: Exploring Subtraction Strategies 9. Consolidation of Fluency with Addition and Subtraction **Number Unit 5: Operations with Decimals and Fractions** 26: Estimating Sums and Differences with Decimals	**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** - 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).

	27: Adding with Decimal Numbers 28: Subtracting with Decimal Numbers 32. Consolidation of Operations with Decimals and Fractions **Number Unit 6: Financial Literacy** 33: Exploring Taxes	- Solves decimal number computation using efficient strategies.
B2.5 add and subtract fractions with like denominators, in various contexts	**Number Unit 5: Operations with Decimals and Fractions** 29: Adding and Subtracting Fractions with Like Denominators 32. Consolidation of Operations with Decimals and Fractions	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Developing conceptual meaning of operations** - Models and symbolizes fraction addition and subtraction with like denominators (e.g., $\frac{2}{5} + \frac{1}{5}$) and where one denominator is a multiple of the other (e.g., $\frac{2}{5} + \frac{3}{10}$).
Multiplication and Division		
B2.6 represent and solve problems involving the multiplication of two-digit whole numbers by two-digit whole numbers, using the area model and using algorithms, and make connections between the two methods	**Number Unit 4: Fluency with Multiplication and Division** 20: Using Estimation for Multiplication and Division 21: Strategies for Multiplying Larger Numbers 22: Multiplying Whole Numbers 25. Consolidation of Fluency with Multiplication and Division	**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** - 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).
B2.7 represent and solve problems involving the division of three-digit whole	**Number Unit 4: Fluency with Multiplication and Division**	**Big Idea: Quantities and numbers can be operated on to determine how many and how**

numbers by two-digit whole numbers, using the area model and using algorithms, and make connections between the two methods, while expressing any remainders appropriately	20: Using Estimation for Multiplication and Division 23: Dividing Larger Numbers 25. Consolidation of Fluency with Multiplication and Division	**much.** **Developing conceptual meaning of operations** - Extends whole number computation models to larger numbers. - Models and develops meanings for division of whole numbers that result in fractions. **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).
B2.8 multiply and divide one-digit whole numbers by unit fractions, using appropriate tools and drawings	**Number Unit 5: Operations with Decimals and Fractions** 30: Multiplication and Division with Unit Fractions 32. Consolidation of Operations with Decimals and Fractions	**Big Idea: Quantities and numbers can be grouped by or partitioned into equal-sized units.** **Partitioning quantities to form fractions** - Understands the meaning of an $\frac{a}{b}$ fraction as a multiple of the unit fraction $\frac{1}{b}$ (e.g., $\frac{3}{5}$ = 3 × $\frac{1}{5}$). - Understands the fraction $\frac{a}{b}$ as $a \div b$. - Continues to extend fraction understanding to multiple contexts (e.g., sharing, division, ratios).
B2.9 represent and create equivalent ratios and rates, using a variety of tools and models, in various contexts	**Number Unit 4: Fluency with Multiplication and Division** 24: Equivalent Ratios and Rates 25. Consolidation of Fluency with Multiplication and Division	**Big Idea: Numbers are related in many ways.** **Using ratios, rates, proportions, and percents creates a relationship between quantities** - Demonstrates multiplicative reasoning by applying unit rates in whole number contexts (e.g., If she earns \$12 per hour, how much will she earn for 5 hours of work?). - Understands the concept of ratio as a relationship between two quantities (e.g., 3 wins to 2 losses). - Understands and applies the concept of unit rates (e.g., If 3 kg is \$5, how much is 1 kg, or how many kg for \$1?).
C. Algebra		

C.1 Patterns and Relationships		
identify, describe, extend, create, and make predictions about a variety of patterns, including those found in real-life contexts		
Patterns		
C1.1 identify and describe repeating, growing, and shrinking patterns, including patterns found in real-life contexts	**Patterning Unit 1: Patterning** 1: Investigating Geometric Patterns 2: Investigating Number Patterns 3: Using Pattern Rules to Solve Problems 4: Consolidation of Patterning	**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. **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.
C1.2 create and translate growing and shrinking patterns using various representations, including tables of values and graphs	**Patterning Unit 1: Patterning** 1: Investigating Geometric Patterns 2: Investigating Number Patterns 3: Using Pattern Rules to Solve Problems 4: Consolidation of Patterning	**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 the term number. - Generates a visual model to represent a simple number pattern. **Generalizing and analyzing patterns, relations, and functions**

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		- Explains the rule for numeric patterns including the starting point and change. - Describes numeric and shape patterns using words and numbers.
C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in repeating, growing, and shrinking patterns	**Patterning Unit 1: Patterning** 1: Investigating Geometric Patterns 2: Investigating Number Patterns 3: Using Pattern Rules to Solve Problems 4. Consolidation of Patterning	**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. **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.
C1.4 create and describe patterns to illustrate relationships among whole numbers and decimal tenths and hundredths	**Patterning Unit 1: Patterning** 2: Investigating Number Patterns 4. Consolidation of Patterning	**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. **Generalizing and analyzing patterns, relations, and functions** - Describes numeric and shape patterns using words and numbers.

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C2. Equations and Inequalities demonstrate an understanding of variables, expressions, equalities, and inequalities, and apply this understanding in various contexts		
Variables and Expressions		
C2.1 translate among words, algebraic expressions, and visual representations that describe equivalent relationships	**Patterning Unit 2: Variables and Equations** 5: Using Variables 10. Consolidation of Variables and Equations	**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: $\Box - 4 = 7$). **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., $13 - \Box = 8$; $4n = 12$). - Flexibly uses symbols and letters to represent unknown quantities in equations (e.g., knows that $4 + \Box = 7$; $4 + x = 7$; and $4 + y = 7$ all represent the same equation with $\Box$, 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 $7 - n$). - Understands a variable as a changing quantity (e.g., $5s$, where s can be any value).
C2.2 evaluate algebraic expressions that involve whole numbers	**Patterning Unit 2: Variables and Equations** 5: Using Variables 10. Consolidation of Variables and Equations	**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 and perimeter of rectangles.

		- Develops and generalizes strategies to compute area of triangles, quadrilaterals, and other polygons (e.g., decomposing a parallelogram and rearranging to form a rectangle).
Equalities and Inequalities		
C2.3 solve equations that involve whole numbers up to 100 in various contexts, and verify solutions	**Patterning Unit 2: Variables and Equations** 6: Solving Addition and Subtraction Equations 7: Solving Multiplication and Division Equations 8: Using Equations to Solve Problems 10. Consolidation of Variables and Equations	**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** - 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 $a + 5 = 9$). - 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 $12 - 7 = b$).
C2.4 solve inequalities that involve one operation and whole numbers up to 50, and verify and graph the solutions	**Patterning Unit 2: Variables and Equations** 9: Solving and Graphing Inequalities 10. Consolidation of Variables and Equations	
C3. Coding		
solve problems and create computational representations of mathematical situations using coding concepts and skills		
Coding Skills		

| C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves conditional statements and other control structures | **Patterning Unit 3: Coding**
11: Altering Dance Code
12: Making Shapes
13: Classifying Triangles
14. Consolidation of Coding | **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 objects 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).
- Understands angle as a geometric figure formed from two rays or line segments sharing a common endpoint.
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.) |
| C3.2 read and alter existing code, including code that involves conditional statements and other control structures, and describe how changes to the code affect the outcomes | **Patterning Unit 3: Coding**
11: Altering Dance Code
12: Making Shapes
13: Classifying Triangles
14. Consolidation of Coding | **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 objects 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). - Understands angle as a geometric figure formed from two rays or line segments sharing a common endpoint. **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.)
C4. Mathematical Modelling		
Apply the process of mathematical modelling to represent, analyse, make predictions, and provide insight into real-life situations		
This overall expectation has no specific expectations. Mathematical modelling is an iterative and interconnected process that is applied to various contexts, allowing students to bring in learning from other strands. Students' demonstration of the process of mathematical modelling, as they apply concepts and skills learned in other strands, is assessed and evaluated.	**Number** 3: Estimating to Solve 7: Exploring Subtraction Strategies 10: Equivalent Fractions 20: Using Estimation for Multiplication and Division 27: Adding with Decimal Numbers 30: Multiplication and Division with Unit Fractions 34: Problem Solving with Money **Patterning** 3: Using Pattern Rules to Solve Problems	

	8 Using Equations to Solve Problems 11: Altering Dance Code **Measurement** 4: Relating the Perimeter and Area of Rectangles 8: Investigating Capacity **Data Management** 4: Analyzing Graphs 6: Conducting Experiments	
D. Data		
D.1 Data Literacy		
manage, analyse, and use data to make convincing arguments and informed decisions, in various contexts drawn from real life		
Data Collection and Organization		
D1.1 explain the importance of various sampling techniques for collecting a sample of data that is representative of a population	**Data Management Unit 1B: Data Management** 1: Collecting and Organizing Data 7: Consolidation of Data Management	**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). - Selects and justifies an appropriate method of data collection (e.g., experiment, observation, survey) based on question posed.
D1.2 collect data, using appropriate sampling techniques as needed, to answer questions of interest about a population, and organize the data in relative-frequency tables	**Data Management Unit 1B: Data Management** 1: Collecting and Organizing Data 2: Exploring Relative-Frequency Tables	**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**

	5: Measures of Central Tendency 7: Consolidation of Data Management	- Constructs data organizers to support data collection (e.g., creates tally chart or line plot on a grid to collect survey 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** - Visually represents two or more data sets (e.g., double bar chart, stacked bar graph, multi-line graph, multi-column table).

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Data Visualization		
D1.3 select from among a variety of graphs, including stacked-bar graphs, the type of graph best suited to represent various sets of data; display the data in the graphs with proper sources, titles, and labels, and appropriate scales; and justify their choice of graph	**Data Management Unit 1B: Data Management** 3: Exploring Stacked-Bar Graphs 7: Consolidation of Data Management	**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. Creating graphical displays of collected data** - Creates charts and graphs with appropriate titles and labels to represent data collected (e.g., bar graph, line plot, pictograph, stem-and-leaf plot). - Chooses and justifies appropriate visual representations for displaying discrete (e.g., bar graph) and continuous (e.g., line graph) data. - Visually represents two or more data sets (e.g., double bar chart, stacked bar graph, multi-line graph, multi-column table).
D1.4 create an infographic about a data set, representing the data in appropriate ways, including in relative-frequency tables and stacked-bar graphs, and incorporating any other relevant information that helps to tell a story about the data	**Data Management Unit 1B: Data Management** 6: Creating an Infographic 7: Consolidation of Data Management	**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. Creating graphical displays of collected data** - Creates charts and graphs with appropriate titles and labels to represent data collected (e.g., bar graph, line plot, pictograph, stem-and-leaf plot). - Chooses and justifies appropriate visual representations for displaying discrete (e.g., bar graph) and continuous (e.g., line graph) data. - Visually represents two or more data sets (e.g., double bar chart, stacked bar graph, multi-line graph, multi-column table).

Data Analysis		
D1.5 determine the mean and the median and identify the mode(s), if any, for various data sets involving whole numbers and decimal numbers, and explain what each of these measures indicates about the data	**Data Management Unit 1B: Data Management** 5: Measures of Central Tendency 7. Consolidation of Data Management	**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.** **Reading and interpreting data displays and analyzing variability** - Visualizes and determines the median value as a middle measure representing a whole data set. - Visualizes and determines the mean of a data set. - Understands that measures of central tendency (i.e., mode, median, mean) are summary measures that represent all values in a data set with a single number (i.e., most frequent value; middle value; balance point of values). - Understands and describes the difference between the central tendency values (i.e., mode, median, mean) and explores which measure is most appropriate for the data collected. **Using the language and tools of chance to describe and predict events** - Describes data using frequency counts (e.g., 5 people chose peppermint) and modal value (e.g., dogs are the most common pet).
D1.6 analyse different sets of data presented in various ways, including in stacked-bar graphs and in misleading graphs, by asking and answering questions about the data, challenging preconceived notions, and drawing conclusions, then make convincing arguments and informed decisions	**Data Management Unit 1B: Data Management** 3: Exploring Stacked Bar Graphs 4: Analyzing Graphs 6: Creating an Infographic 7. Consolidation of Data Management	**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.** **Drawing conclusions by making inferences and justifying decisions based on data collected** - Draws conclusions based on data presented. - Uses inferences to make predictions about

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		future events (e.g., Would the pictograph of shoe types look the same every day?). - Interprets the results of data presented graphically from primary (e.g., class survey) and secondary (e.g., online news report) sources.
D2. Probability describe the likelihood that events will happen, and use that information to make predictions		
Probability		
D2.1 use fractions to express the probability of events happening, represent this probability on a probability line, and use it to make predictions and informed decisions	**Data Management Unit 2B: Probability** 8: Describing Likelihood of Outcomes 10: Designing Experiments 11. Consolidation of Probability	**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.** **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).
D2.2 determine and compare the theoretical and experimental probabilities of an event happening	**Data Management Unit 2B: Probability** 9: Conducting Experiments 10: Designing Experiments 11. Consolidation of Probability	**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** - 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 $\frac{3}{5}$).
		- Determines theoretical probability as a ratio (i.e., number of outcomes for a given event to total number of possible outcomes).
		- Uses theoretical probability to predict the outcome of an experiment or game.
		- Extends understanding of the probability continuum by expressing and comparing probabilities using decimals (between 0 and 1), ratios, fractions, and percents.
E. Spatial Sense		
E1. Geometric and Spatial Reasoning		
describe and represent shape, location, and movement by applying geometric properties and spatial relationships in order to navigate the world around them		
Geometric Reasoning		
E1.1 identify geometric properties of triangles, and construct different types of triangles when given side or angle measurements	**Geometry Unit 1B: 2-D Shapes, Angles, and 3-D Solids** 2: Properties of Triangles 3: Identifying and Constructing Triangles 6. Consolidation of 2-D Shapes, Angles, and 3-D Solids	**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, constructs, and classifies polygons based on side attributes (e.g., parallel, perpendicular, regular/irregular). - Sorts, describes, and classifies 2-D shapes based on their geometric properties (e.g., side lengths, angles, diagonals).
E1.2 identify and construct congruent triangles, rectangles, and parallelograms	**Geometry Unit 1B: 2-D Shapes, Angles, and 3-D Solids** 4: Identifying and Constructing Congruent 2-D Shapes 6. Consolidation of 2-D Shapes, Angles, and 3-D Solids	**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** - Demonstrates an understanding of congruency (i.e., same side lengths and angles).

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E1.3 draw top, front, and side views of objects, and match drawings with objects	**Geometry Unit 1B: 2-D Shapes, Angles, and 3-D Solids** 5: Drawing Views 6. Consolidation of 2-D Shapes, Angles, and 3-D Solids	**Big Idea: Objects can be located in space and viewed from multiple perspectives.** **Viewing and representing objects from multiple perspectives** - Investigates, predicts, and draws orthographic projections of 3-D objects (e.g., if you shine a light onto a linking cube structure, what will the shadow look like?).
Location and Movement		
E1.4 plot and read coordinates in the first quadrant of a Cartesian plane using various scales, and describe the translations that move a point from one coordinate to another	**Geometry Unit 2B: Grids and Transformations** 7: Plotting and Reading Coordinates 11. Consolidation of Grids and Transformations	**Big Idea: 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. **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).
E1.5 describe and perform translations and reflections, and rotations up to 180° on a grid, and predict the results of these transformations	**Geometry Unit 2B: Grids and Transformations** 8: Translating and Reflecting 2-D Shapes 9: Rotating 2-D Shapes 10: Identifying Transformations 11. Consolidation of Grids and Transformations	**Big Idea: 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.

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E2. Measurement		
compare, estimate, and determine measurements in various contexts		
The Metric System		
E2.1 use appropriate metric units to estimate and measure length, area, mass, and capacity	**Measurement Unit 1: Length, Perimeter, and Area** 1: Estimating and Measuring in Millimetres 2: Measuring Length in Different Units 3: Measuring the Area of Rectangles 4: Relating Perimeter and Area of Rectangles 5: Areas of Parallelograms and Triangles 6. Consolidation of Length, Perimeter, and Area **Measurement Unit 2: Volume, Capacity, and Mass** 7: Investigating Mass 8: Investigating Capacity 12. Consolidation of Volume, Capacity, and Mass	**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** - Measures, constructs, and estimates perimeter and area of regular and irregular polygons. - Chooses the most appropriate unit to measure a given attribute of an object (e.g., classroom area measured in square metres). **Understanding relationships among measured units** - Understands and applies the multiplicative relationships among metric units of length, mass, and capacity. - Develops and generalizes strategies to compute area and perimeter of rectangles.
E2.2 solve problems that involve converting larger metric units into smaller ones, and describe the base ten relationships among metric units	**Measurement Unit 1: Length, Perimeter, and Area** 2: Measuring Length in Different Units 6. Consolidation of Length, Perimeter, and Area **Measurement Unit 2: Volume, Capacity, and Mass** 7: Investigating Mass	**Big Idea: Quantities and numbers can be grouped by or partitioned into equal-sized units.** **Unitizing quantities into base-ten units** - 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.

	9: Investigating Relationships Among Units 12. Consolidation of Volume, Capacity, and Mass	**Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.** **Understanding relationships among measured units** - Understands and applies the multiplicative relationships among metric units of length, mass, and capacity.
Angles		
E2.3 compare angles and determine their relative size by matching them and by measuring them using appropriate non-standard units	**Geometry Unit 1B: 2-D Shapes, Angles, and 3-D Shapes** 1: Measuring and Comparing Angles 6. Consolidation of 2-D Shapes, Angles, and 3-D Solids	**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** - Understands angle as a geometric figure formed from two rays or line segments sharing a common endpoint. - Draws, compares, and classifies angles (i.e., right, acute, obtuse, straight, reflex).
E2.4 explain how protractors work, use them to measure and construct angles up to 180°, and use benchmark angles to estimate the size of other angles	**Geometry Unit 1B: 2-D Shapes, Angles, and 3-D Shapes** 1: Measuring and Comparing Angles 6. Consolidation of 2-D Shapes, Angles, and 3-D Solids	**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.

Area		
E2.5 use the area relationships among rectangles, parallelograms, and triangles to develop the formulas for the area of a parallelogram and the area of a triangle, and solve related problems	**Measurement Unit 1: Length, Perimeter, and Area** Lesson 5: Areas of Parallelograms and Triangles 6. Consolidation of Length, Perimeter, and Area	**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).
E2.6 show that two-dimensional shapes with the same area can have different perimeters, and solve related problems	**Measurement Unit 1: Length, Perimeter, and Area** 4: Relating the Perimeter and Area of Rectangles 6. Consolidation of Length, Perimeter, and Area	**Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.** **Understanding relationships among measured units** - Investigates the relationship between perimeter and area in rectangles.

Financial Literacy		
F1. Money and Finances		
demonstrate the knowledge and skills needed to make informed financial decisions		
Money Concepts		
F1.1 describe several ways money can be transferred among individuals, organizations, and businesses	**Number Unit 6: Financial Literacy** 35: Credit, Debt, and Transfers	
F1.2 estimate and calculate the cost of transactions involving multiple items priced in dollars and cents, including sales tax, using various strategies	**Number Unit 6: Financial Literacy** 33: Exploring Taxes 34: Problem Solving with Money 38: Consolidation of Financial Literacy	**Big Idea: Numbers are related in many ways. 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 discounts). **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 cost of transactions involving dollars and cents). - Solves decimal number computation using efficient strategies.
Financial Management		
F1.3 design sample basic budgets to manage finances for various earning and spending scenarios	**Number Unit 6: Financial Literacy** 37: Designing a Basic Budget 38: Consolidation of Financial Literacy	**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 money owing, saving money to make a purchase).
F1.4 explain the concepts of credit and debt, and describe how financial decisions may be impacted by each	**Number Unit 6: Financial Literacy** 35: Credit, Debt, and Transfers 38: Consolidation of Financial Literacy	
Consumer and Civic Awareness		
F1.5 calculate unit rates for various goods and services, and identify which rates offer the best value	**Number Unit 6: Financial Literacy** 36: Finding Best Value (Unit Rates) 38: Consolidation of Financial Literacy	**Big Idea: Numbers are related in many ways. Using ratios, rates, proportions, and percents creates a relationship between quantities** - Demonstrates multiplicative reasoning by applying unit rates in whole number contexts (e.g., If she earns $12 per hour, how much will she earn for 5 h of work?). - Understands the concept of unit rates (e.g., If 3 kg is $5, how much is 1 kg or how many kg for $1?).
F1.6 describe the types of taxes that are collected by the different levels of government in Canada, and explain how tax revenue is used to provide services in the community	**Number Unit 6: Financial Literacy** 33: Exploring Taxes 38: Consolidation of Financial Literacy	**Big Idea: Numbers are related in many ways. 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 discounts).

		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 cost of transactions involving dollars and cents).
		- Solves decimal number computation using efficient strategies.