Correlation of Ontario Program of Studies with Mathology Grade 6

Curriculum Expectations	Grade 6 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		
Rational Numbers		
B1.1 read and represent whole numbers up to and including one million, 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 (to 1 000 000 and Beyond) 2: Representing Numbers in Different Forms 5. 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 1 000 000. **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 read and represent integers, using a variety of tools and strategies, including horizontal and vertical number lines	**Number Unit 3: Fractions, Decimals, Percents, and Integers** 19: Representing Integers	**Big Idea: The set of real numbers is infinite Extending whole number understanding to the set of real numbers** - Extends whole number understanding to negative numbers.

	21. Consolidation of Fractions, Decimals, Percents, and Integers	
B1.3 compare and order integers, decimal numbers, and fractions, separately and in combination, in various contexts	**Number Unit 3: Fractions, Decimals, Percents, and Integers** 14: Comparing and Ordering Fractions 17: Comparing and Ordering Fractions and Decimals 20: Comparing and Ordering Integers 21. Consolidation of Fractions, Decimals, Percents, and Integers	**Big Idea: The set of real numbers is infinite** **Extending whole number understanding to the set of real numbers** - Extends whole number understanding to negative numbers.
Fractions, Decimals, and Percents		
B1.4 read, represent, compare, and order decimal numbers up to thousandths, in various contexts	**Number Unit 3: Fractions, Decimals, Percents, and Integers** 15: Representing Decimals 16: Comparing and Ordering Decimals 21. Consolidation of Fractions, Decimals, Percents, and Integers	**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.** **Comparing and ordering quantities (multitude or magnitude)** **-** Compares, orders, and locates decimal numbers using place-value understanding. **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 (e.g., numerals, number names, expanded form).
B1.5 round decimal numbers, both terminating and repeating, to the nearest tenth, hundredth, or whole number, as applicable, in various contexts	**Number Unit 3: Fractions, Decimals, Percents, and Integers** 16: Comparing and Ordering Decimals 21. Consolidation of Fractions, Decimals, Percents, and Integers	**Big Idea: Numbers are related in many ways. Comparing and ordering quantities (multitude or magnitude)** - Provides approximate decimal values using multiple strategies (e.g., estimation, rounding, truncating).
B1.6 describe relationships and show equivalences among fractions and decimal numbers up to thousandths, using appropriate tools and drawings, in various contexts	**Number Unit 3: Fractions, Decimals, Percents, and Integers** 15: Representing Decimals 17: Comparing and Ordering Fractions and Decimals 21. Consolidation of Fractions, Decimals, Percents, and Integers	**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. **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.

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, decimal numbers, fractions, ratios, rates, and whole number percents, including those requiring multiple steps or multiple operations	**Number Unit 2: Fluency with Whole Numbers** 6: Solving Problems with Whole Numbers 7: Estimating Reasonableness of Solutions 8: The Order of Operations 9: Mental Math Strategies 10: Unit Rates 11: Exploring Ratios 12. Consolidation of Fluency with Whole Numbers **Number Unit 4: Operations with Fractions and Decimals** 22: Multiplying Decimals by 1-Digit Numbers 24: Dividing Decimals by 1-Digit Numbers 25: Dividing 3-Digit Whole Numbers by Decimal Tenths 26: Adding and Subtracting Decimals 27: Adding and Subtracting Fractions 28: Multiplying and Dividing Whole Numbers by Proper Fractions 29: Using Mental Math to Calculate Percents 30. Consolidation of Operations with Fractions and Decimals	**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?). - 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 conceptual meaning of operations** - Extends whole number computation models to larger numbers. - Demonstrates an understanding of decimal number computation through modelling and flexible strategies. **Developing fluency of operations** - Solves whole number computation using efficient strategies (e.g., mental computation, algorithms, calculating cost of transactions and change owing, saving money to make a purchase). - Solves decimal number computation using efficient strategies.

Math Facts		
B2.2 understand the divisibility rules and use them to determine whether numbers are divisible by 2, 3, 4, 5, 6, 8, 9, and 10	**Number Unit 1: Number Relationships and Place Value** 3: Identifying Factors and Multiples 4: Identifying Prime and Composite Numbers 5: Consolidation of Number Relationships and Place Value **Number Unit 2: Fluency with Whole Numbers** 6: Solving Problems with Whole Numbers 10: Unit Rates **Number Unit 4: Operations with Fractions and Decimals** 24: Dividing Decimals by 1-Digit Numbers 25: Dividing 3-Digit Whole Numbers by Decimal Tenths 30. Consolidation of Operations with Decimals, Fractions, and Percentages	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating number and arithmetic properties** - Uses reasoning and knowledge of factors to examine divisibility of numbers (by 4, 8, 3, 6, and 9).
Mental Math		
B2.3 use mental math strategies to calculate percents of whole numbers, including 1%, 5%, 10%, 15%, 25%, and 50%, and explain the strategies used	**Number Unit 4: Operations with Fractions, Decimals and Percents** 29: Using Mental Math to Calculate Percents 30. Consolidation of Operations with Fractions, Decimals and Percents	**Big Idea: Numbers are related in many ways.** **Decomposing and composing numbers to investigate equivalencies** - Models and explains the relationships among fractions, decimals, and percents. - Translates flexibly between representations. **Using ratios, rates, proportions, and percents creates a relationship between quantities** - Understands and applies the concept of

		percentage as a rate per 100 (e.g., calculating sales tax, tips, or discounts).
Addition and Subtraction		
B2.4 represent and solve problems involving the addition and subtraction of whole numbers and decimal numbers, using estimation and algorithms	**Number Unit 2: Fluency with Whole Numbers** 6: Solving Problems with Whole Numbers 7: Estimating Reasonableness of Solutions 9: Mental Math Strategies 12. Consolidation of Fluency with Whole Numbers **Number Unit 4: Operations with Fractions, Decimals and Percents** 26: Adding and Subtracting Decimals 30. Consolidation of Operations with Fractions, Decimals and Percents	**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.
B2.5 add and subtract fractions with like and unlike denominators, using appropriate tools, in various contexts	**Number Unit 4: Operations with Fractions, Decimals and Percents** 27: Adding and Subtracting Fractions 30. Consolidation of Operations with Fractions, Decimals and Percents	**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 composite numbers as a product of their prime factors, including through the use of factor trees	**Number Unit 1: Number Relationships and Place Value** 3: Identifying Factors and Multiples 4: Identifying Prime and Composite Numbers 5. Consolidation of Number Relationships and Place Value	**Big Idea: Numbers are related in many ways.** **Decomposing and composing numbers to investigate equivalencies** - Decomposes numbers into prime factors. **Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating number and arithmetic properties** - Examines and classifies whole numbers based on their properties (e.g., even/odd; prime; composite; divisible by 2, 5, 10). - Generates multiples and factors for numbers using flexible strategies. - Distinguishes between and investigates properties of prime and composite numbers (e.g., prime factorization). **Developing fluency of operations** - Fluently recalls multiplication and division facts to 100.
B2.7 represent and solve problems involving the multiplication of three-digit whole numbers by decimal tenths, using algorithms	**Number Unit 2: Fluency with Whole Numbers** 6: Solving Problems with Whole Numbers 12: Consolidation of Fluency with Whole Numbers **Number Unit 4: Operations with Fractions, Decimals and Percents** 23: Multiplying 3-Digit Whole Numbers by Decimal Tenths 30: Consolidation with Fractions, Decimals and Percents	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Developing conceptual meaning of operations** - Understands and explains the effect of multiplying and dividing decimal numbers by powers of 10 less than one (i.e., 0.1, 0.001, etc.). - Explores multiplication as scaling and estimates the resulting product when scaling a given number by a number less than, equal to, or greater than 1 (e.g., $\frac{1}{2} \times 12$; 5.2×12; 0.3×12). **Developing fluency of operations** - Solves decimal number computation using efficient strategies.

B2.8 represent and solve problems involving the division of three-digit whole numbers by decimal tenths, using appropriate tools, strategies, and algorithms, and expressing remainders as appropriate	**Number Unit 2: Fluency with Whole Numbers** 6: Solving Problems with Whole Numbers 12: Consolidation of Fluency with Whole Numbers **Number Unit 4: Operations with Fractions, Decimals and Percents** 25: Dividing 3-Digit Whole Numbers by Decimal Tenths 30. Consolidation of Operations with Fractions, Decimals and Percents	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Developing conceptual meaning of operations** - Understands and explains the effect of multiplying and dividing decimal numbers by powers of 10 less than one (i.e., 0.1, 0.001, etc.). **Developing fluency of operations** - Solves decimal number computation using efficient strategies.
B2.9 multiply whole numbers by proper fractions, using appropriate tools and strategies	**Number Unit 4: Operations with Fractions, Decimals and Percents** 28: Multiplying and Dividing Whole Numbers by Proper Fractions 30. Consolidation of Operations with Fractions, Decimals and Percents	**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). **Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Developing conceptual meaning of operations** - Explores multiplication as scaling and estimates the resulting product when scaling a given number by a number less than, equal to, or greater than 1 (e.g., $\frac{1}{2}$ × 12; 5.2 × 12; 0.3 × 12).

B2.10 divide whole numbers by proper fractions, using appropriate tools and strategies	Number Unit 4: Operations with Fractions, Decimals and Percents 28: Multiplying and Dividing Whole Numbers by Proper Fractions 30. Consolidation of Operations with Fractions, Decimals and Percents	**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).
B2.11 represent and solve problems involving the division of decimal numbers up to thousandths by whole numbers up to 10, using appropriate tools and strategies	Number Unit 4: Operations with Fractions, Decimals and Percents 24: Dividing Decimals by 1-Digit Numbers 30. Consolidation of Operations with Fractions, Decimals and Percents	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Developing fluency of operations** - Solves decimal number computation using efficient strategies.
B2.12 solve problems involving ratios, including percents and rates, using appropriate tools and strategies	**Number Unit 2: Fluency with Whole Numbers** 10: Unit Rates 11: Exploring Ratios 12. Consolidation of Fluency with Whole Numbers **Number Unit 4: Operations with Fractions, Decimals and Percents** 29: Using Mental Math to Calculate Percents 30. Consolidation of Operations with Fractions, Decimals and Percents	**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?). - Understands and applies the concept of percentage as a rate per 100 (e.g., calculating sales tax, tips, or discounts).

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, and specify which growing patterns are linear	**Patterning Unit 1: Patterning** 1: Investigating Patterns and Relationships in Tables and Graphs 2: Solving Problems 3: Representing Patterns in Different Ways 4. Consolidation of Patterning	**Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.** **Representing patterns, relations, and functions** - Represents a numeric or shape pattern using a table of values by pairing the term value with a term number. - Represents a mathematical context or problem with expressions and equations using variables to represent unknowns. **Generalizing and analyzing patterns, relations, and functions** - Explains the rule for numeric patterns including the starting point and change (e.g., given: 16, 22, 28, 34, …. Start at 16 and add 6 each time). - Describes numeric and shape patterns using words and numbers. - Predicts the value of a given element in a numeric or shape pattern using pattern rules. - Describes the relationship between two numeric patterns (e.g., for every 4 steps, she travels 3 metres).
C1.2 create and translate repeating, growing, and shrinking patterns using various representations, including tables of values and graphs, and, for linear growing patterns, algebraic expressions and equations	**Patterning Unit 1: Patterning** 1: Investigating Patterns and Relationships in Tables and Graphs 2: Solving Problems 3: Representing Patterns in Different Ways 4. Consolidation of Patterning	**Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.** **Representing patterns, relations, and functions** -Represents a numeric or shape pattern using a table of values by pairing the term value with a term number. - Represents a mathematical context or problem with expressions and equations using variables to represent unknowns.

	Patterning Unit 2: Variables and Equations	Generalizing and analyzing patterns, relations, and functions
	5: Investigating Algebraic Expressions 7: Representing Generalizations in Patterns 10. Consolidation of Variables and Equations	- Explains the rule for numeric patterns including the starting point and change (e.g., given: 16, 22, 28, 34, …. Start at 16 and add 6 each time). - Describes numeric and shape patterns using words and numbers. - Predicts the value of a given element in a numeric or shape pattern using pattern rules. - Describes the relationship between two numeric patterns (e.g., for every 4 steps, she travels 3 metres). **Big Idea: Patterns and relations can be represented with symbols, equations, and expressions.** **Using variables, algebraic expressions, and equations to represent mathematical relations** - 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). - Writes two-variable equations to describe a relationship (e.g., $5s = t$). - Uses expressions and equations with variables to represent generalized relations and algorithms (e.g., $P = 2l + 2w$).

| 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, and use algebraic representations of the pattern rules to solve for unknown values in linear growing patterns | **Patterning Unit 1: Patterning**
1: Investigating Patterns and Relationships in Tables and Graphs
2: Solving Problems
3: Representing Patterns in Different Ways
4. Consolidation of Patterning

Patterning Unit 2: Variables and Equations
5: Investigating Algebraic Expressions
7: Representing Generalizations in Patterns
10. Consolidation of Variables and Equations | **Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.**
Representing patterns, relations, and functions
- Represents a numeric or shape pattern using a table of values by pairing the term value with a term number.
- Represents a mathematical context or problem with expressions and equations using variables to represent unknowns.
Generalizing and analyzing patterns, relations, and functions
- Explains the rule for numeric patterns including the starting point and change (e.g., given: 16, 22, 28, 34, …. Start at 16 and add 6 each time).
- Describes numeric and shape patterns using words and numbers.
- Predicts the value of a given element in a numeric or shape pattern using pattern rules.
- Describes the relationship between two numeric patterns (e.g., for every 4 steps, she travels 3 metres).
Big Idea: Patterns and relations can be represented with symbols, equations, and expressions.
Using variables, algebraic expressions, and equations to represent mathematical relations
- 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).
- Writes two-variable equations to describe a relationship (e.g., $5s = t$). |

		- Uses expressions and equations with variables to represent generalized relations and algorithms (e.g., $P = 2l + 2w$).
C1.4 create and describe patterns to illustrate relationships among whole numbers and decimal numbers	**Patterning Unit 1: Patterning** 2: Solving Problems 4. Consolidation of Patterning	**Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.** **Representing patterns, relations, and functions** - Represents a numeric or shape pattern using a table of values by pairing the term value with a term number. - Represents a mathematical context or problem with expressions and equations using variables to represent unknowns. **Generalizing and analyzing patterns, relations, and functions** - Explains the rule for numeric patterns including the starting point and change (e.g., given: 16, 22, 28, 34, …. Start at 16 and add 6 each time). - Describes numeric and shape patterns using words and numbers. - Predicts the value of a given element in a numeric or shape pattern using pattern rules. - Describes the relationship between two numeric patterns (e.g., for every 4 steps, she travels 3 metres).

C.2 Equations and Inequalities
demonstrate an understanding of variables, expressions, equalities, and inequalities, and apply this understanding in various contexts

Variables and Expressions

C2.1 add monomials with a degree of 1 that involve whole numbers, using tools	**Patterning Unit 2: Variables and Equations** 5: Investigating Algebraic Expressions 10. Consolidation of Variables and Equations	**Big Idea: Patterns and relations can be represented with symbols, equations, and expressions.** **Using variables, algebraic expressions, and equations to represent mathematical relations**

		- 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*). - Understands a variable as a changing quantity (e.g., 5*s*, where *s* can be any value). - Writes two-variable equations to describe a relationship (e.g., 5*s* = *t*). - Uses expressions and equations with variables to represent generalized relations and algorithms (e.g., *P* = 2*l* + 2*w*).
C2.2 evaluate algebraic expressions that involve whole numbers and decimal tenths	**Patterning Unit 2: Variables and Equations** 5: Investigating Algebraic Expressions 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 multiple terms and whole numbers in various contexts, and verify solutions	**Patterning Unit 2: Variables and Equations** 6: Investigating Equality in Equations 7: Representing Generalizations in Patterns 8: Solving Equations 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* × 3 = 12; 13 – □ = 8). - Investigates and models the meaning of preservation of equality of single variable equations (e.g., 3*x* = 12).

C2.4 solve inequalities that involve two operations and whole numbers up to 100, 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 efficient code, including code that involves conditional statements and other control structures	**Patterning Unit 3: Coding** 11: Altering Code for a Game 12: Making Shapes 13: Classifying Polygons 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 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). - 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.) **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** - Investigates and calculates the experimental probability of simple events (i.e., relative frequency) of simple events (e.g., 3 heads in 5 coin tosses is $\frac{3}{5}$).
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 and the efficiency of the code	**Patterning Unit 3: Coding** 11: Altering Code for a Game 12: Making Shapes 13: Classifying Polygons 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 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). - 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.) **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** - Investigates and calculates the experimental probability of simple events (i.e., relative frequency) of simple events (e.g., 3 heads in 5 coin tosses is $\frac{3}{5}$).

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** 4: Identifying Prime and Composite Numbers 6: Solve Problems with Whole Numbers 14: Comparing and Ordering Fractions 22: Multiplying Decimals by 1-Digit Numbers 33: Planning for Financial Goals **Patterning** 8: Solving Equations **Measurement** 2: Determining Area **Data Management** 2: Exploring Histograms 8: Identifying Possible Outcomes	

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 describe the difference between discrete and continuous data, and provide examples of each	**Data Management Unit 1: Data Management** 1: Exploring Line Graphs 2: Exploring Histograms 6. 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** - Distinguishes between discrete (e.g., votes) and continuous (e.g., height) data. **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). - Represents data graphically using many-to-one correspondence with appropriate scales and intervals (e.g., each symbol on pictograph represents 10 people). - Chooses and justifies appropriate visual representations for displaying discrete (e.g., bar graph) and continuous (e.g., line graph) data.
D1.2 collect qualitative data and discrete and continuous quantitative data to answer questions of interest about a population, and organize the sets of data as appropriate, including using intervals	**Data Management Unit 1: Data Management** 2: Exploring Histograms 3: Collecting and Organizing Data 6. 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). - Differentiates between primary (i.e., first-hand) and secondary (i.e., second-hand) data.

		- Selects and justifies an appropriate method of data collection (e.g., experiment, observation, survey) based on question posed. **Creating graphical displays of collected data** - Represents data graphically using many-to-one correspondence with appropriate scales and intervals (e.g., each symbol on pictograph represents 10 people). - Chooses and justifies appropriate visual representations for displaying discrete (e.g., bar graph) and continuous (e.g., line graph) data. **Drawing conclusions by making inferences and justifying decisions based on data collected** - Draws conclusions on based data presented. - Interprets the results of data presented graphically from primary (e.g., class survey) and secondary (e.g., online news report) sources.
Data Visualization		
D1.3 select from among a variety of graphs, including histograms and broken-line 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 1: Data Management** 1: Exploring Line Graphs 2: Exploring Histograms 3: Collecting and Organizing Data 4: Interpreting Graphs to Solve Problems 6. 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). - Represents data graphically using many-to-one correspondence with appropriate scales and intervals (e.g., each symbol on pictograph represents 10 people). - Chooses and justifies appropriate visual representations for displaying discrete (e.g., bar graph) and continuous (e.g., line graph) data.

		Using the language and tools of chance to describe and predict events - Compares and explains the differences in the relative frequencies of a given outcome in a repeated experiment (e.g., number of heads in 10 coin tosses, repeated three times).
D1.4 create an infographic about a data set, representing the data in appropriate ways, including in tables, histograms, and broken-line graphs, and incorporating any other relevant information that helps to tell a story about the data	**Data Management Unit 1: Data Management** 1: Exploring Line Graphs 2: Exploring Histograms 6. 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). - Represents data graphically using many-to-one correspondence with appropriate scales and intervals (e.g., each symbol on pictograph represents 10 people). - Chooses and justifies appropriate visual representations for displaying discrete (e.g., bar graph) and continuous (e.g., line graph) data. - 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 range as a measure of spread and the measures of central tendency for various data sets, and use this information to compare two or more data sets	**Data Management Unit 1: Data Management** 5: Determining Range and Measures of Central Tendency 6. 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** - Determines range values (e.g., maximum, minimum, difference) and relates values to the variability of data collected. - Visualizes and determines the median value

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		as a middle measure representing a whole data set. - Visualizes and determine 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** - Describe 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 histograms and broken-line 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 1: Data Management** 1: Exploring Line Graphs 2: Exploring Histograms 4: Interpreting Graphs to Solve Problems 6. 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 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. - Interprets results and makes inferences about the similarities and differences of past and future events based on data collected.

D2. Probability
describe the likelihood that events will happen, and use that information to make predictions

Probability		
D2.1 use fractions, decimals, and percents 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 2: Probability** 7: Exploring Theoretical Probability 8: Identifying Possible Outcomes 9: Conducting Experiments 10. Consolidation of Probability **Patterning Unit 3: Coding** 11: Altering Code for a Game	**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) 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 $\frac{3}{5}$). - 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.

| D2.2 determine and compare the theoretical and experimental probabilities of two independent events happening | **Data Management Unit 2: Probability**
8: Identifying Possible Outcomes
9: Conducting Experiments
10. 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 $\frac{3}{5}$).
- Compares and explains the differences in the relative frequencies of a given outcome in a repeated experiment (e.g., number of heads in 10 coins tosses repeated three times).
- 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 create lists of the geometric properties of various types of quadrilaterals, including the properties of the diagonals, rotational symmetry, and line symmetry	**Geometry Unit 1B: 2-D Shapes, Angles and 3-D Solids** 3: Properties of Quadrilaterals 5. 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). - Classifies 2-D shapes within a hierarchy based on their properties (e.g., rectangles are a subset of parallelograms). **Big Ideas: 2-D shapes and 3-D solids can be transformed in many ways and analyzed for change.** **Exploring symmetry to analyze 2-D shapes and 3-D solids** - Explores and classifies quadrilaterals based on lines of symmetry. - Draws, creates, and identifies shapes that have rotational symmetry, and identifies the centre of rotation and angle of rotation.
E1.2 construct three-dimensional objects when given their top, front, and side views	**Geometry Unit 1B: 2-D Shapes, Angles and 3-D Solids** 4: Constructing 3-D Objects 5. 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** - Interprets and creates coded plans, and constructs objects from plans (e.g., used linking cubes to build 3-D object from plan).

Location and Movement		
E1.3 plot and read coordinates in all four quadrants of a Cartesian plane, and describe the translations that move a point from one coordinate to another	**Geometry Unit 2B: Transformations** 6: Plotting and Reading Coordinates 10. Consolidation of Transformations	**Big Idea: The set of real numbers is infinite. Extending whole number understanding to the set of real numbers** - Extends whole number understanding to negative numbers. **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).
E1.4 describe and perform combinations of translations, reflections, and rotations up to 360° on a grid, and predict the results of these transformations	**Geometry Unit 2B: Transformations** 7: Transformations on a Grid 8: Rotating 2-D Shapes up to 360° 9: Combining Transformations on a Grid 10. Consolidation of 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, applies, and creates a combination of successive transformations on 2-D shapes.
E2. Measurement compare, estimate, and determine measurements in various contexts		
The Metric System		
E2.1 measure length, area, mass, and capacity using the appropriate metric units, and solve problems that require converting smaller units to larger units, and vice versa	**Measurement Unit 1B: Length, Mass, Capacity, and Area** 1: Relationships Among Metric Units 4. Consolidation of Length, Mass, Capacity, and Area	**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** - 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.
Angles		
E2.2 use a protractor to measure and construct angles up to 360°, and state the relationship between angles that are measured clockwise and those that are measured counterclockwise	**Geometry Unit 1B: 2-D Shapes, Angles** and 3-D Solids 1: Measuring and Constructing Angles 5. 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).
E2.3 use the properties of supplementary angles, complementary angles, opposite angles, and interior and exterior angles to solve for unknown angle measures	**Geometry Unit 1B: 2-D Shapes, Angles** and 3-D Solids 2: Angle Properties and Relationships 5. Consolidation of 2-D Shapes, Angles and 3-D Solids	
Area and Surface Area		
E2.4 determine the areas of trapezoids, rhombuses, kites, and composite polygons by decomposing them into shapes with known areas	**Measurement Unit 1B: Length, Mass, Capacity, and Area** 2: Determining Area 4. Consolidation of Length, Mass, Capacity, and Area	**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 is additive (e.g., the area of an irregular shape can be solved by

		decomposing it into rectangles and adding their areas). **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).
E2.5 create and use nets to demonstrate the relationship between the faces of prisms and pyramids and their surface areas	**Measurement Unit 1B: Length, Mass, Capacity, and Area** 3: Surface Area of Prisms and Pyramids 4. Consolidation of Length, Mass, Capacity, and Area	**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 surface area is an attribute 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.** **Understanding relationships among measured units** - Uses nets to determine the surface area of 3-D objects composed of rectangles and triangles.
E2.6 determine the surface areas of prisms and pyramids by calculating the areas of their two-dimensional faces and adding them together	**Measurement Unit 1B: Length, Mass, Capacity, and Area** 3: Surface Area of Prisms and Pyramids 4. Consolidation of Length, Mass, Capacity, and Area	**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 surface area is an attribute 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.** **Understanding relationships among measured units**

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		- Uses nets to determine the surface area of 3-D objects composed of rectangles and triangles.

Financial Literacy		

F1. Money and Finances
demonstrate the knowledge and skills needed to make informed financial decisions

Money Concepts		
F1.1 describe the advantages and disadvantages of various methods of payment that can be used to purchase goods and services	**Number Unit 5: Financial Literacy** 31: Advantages and Disadvantages of Payment Methods 34. Consolidation of Financial Literacy	

Financial Management		
F1.2 identify different types of financial goals, including earning and saving goals, and outline some key steps in achieving them	**Number Unit 5: Financial Literacy** 33: Planning for Financial Goals 34. 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.
F1.3 identify and describe various factors that may help or interfere with reaching financial goals	**Number Unit 5: Financial Literacy** 33: Planning for Financial Goals 34. Consolidation of Financial Literacy	

Consumer and Civic Awareness		
F1.4 explain the concept of interest rates, and identify types of interest rates and fees associated with different accounts and loans offered by various banks and other financial institutions	**Number Unit 5: Financial Literacy** 32: Interest Rates and Fees 34. 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).
F1.5 describe trading, lending, borrowing, and donating as different ways to distribute financial and other resources among individuals and organizations	**Number Unit 5: Financial Literacy** 31: Advantages and Disadvantages of Payment Methods 34. Consolidation of Financial Literacy	