Correlation of Nunavut Program of Studies with Mathology Grade 4 (Number)

Curriculum Expectations	Grade 4 Mathology.ca	Pearson Canada Grades 4-6 Mathematics Learning Progression
General Outcome Develop number sense.		
Specific Outcomes 1. Represent and describe whole numbers to 10 000, pictorially and symbolically.	**Number Unit 1: Number Relationships and Place Value** 1: Representing Numbers to 10 000 2: Composing and Decomposing Larger Numbers 6: Consolidation of Number Relationships and Place Value	**Big Idea: Numbers are related in many ways.** **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.
2. Compare and order numbers to 10 000.	**Number Unit 1: Number Relationships and Place Value** 4: Comparing and Ordering Numbers 6: 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.
3. Demonstrate an understanding of addition of numbers with answers to 10 000 and their corresponding subtractions (limited to 3- and 4-digit numerals) by: • using personal strategies for adding and subtracting • estimating sums and differences • solving problems involving addition and subtraction.	**Number Unit 2: Fluency with Addition and Subtraction** 7: Estimating Sums and Differences 8: Modelling Addition and Subtraction 9: Adding and Subtracting Larger Numbers 10: Using Mental Math to Add and Subtract	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating number and arithmetic properties** - Recognizes and generates equivalent numerical expressions using commutative and associative properties. - Understands operation relationships (e.g., inverse relationship between multiplication/division, addition/subtraction).

	11: Creating and Solving Problems 12: Consolidation of Fluency with Addition and Subtraction	- Understands the identity of operations (e.g., 5 + 0 = 5; 7 × 1 = 7). **Developing conceptual meaning of operations** - Models and develops meaning for whole number computation to four digits. **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).
4. Apply the properties of 0 and 1 for multiplication and the property of 1 for division.	**Number Unit 5: Fluency with Multiplication and Division Facts** 24: Strategies for Multiplication 27: Strategies for Division 29: Consolidation of Fluency with Multiplication and Division Facts	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating number and arithmetic properties** - Understands the identity of operations (e.g., 5 + 0 = 5; 7 × 1 = 7).
5. Describe and apply mental mathematics strategies to determine basic multiplication facts to 9 × 9 and related division facts.	**Number Unit 5: Fluency with Multiplication and Division Facts** 24: Strategies for Multiplication 25: Solving Multiplication Problems 26: Relating Multiplication and Division 27: Strategies for Division 29: Consolidation of Fluency with Multiplication and Division Facts **Patterning Unit 1: Patterns and Relations** 4: Investigating Number Relationships	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating number and arithmetic properties** - Recognizes and generates equivalent numerical expressions using commutative and associative properties. - Understands operational relationships (e.g., inverse relationship between multiplication/division, addition/subtraction). **Developing fluency of operations** - Fluently recalls multiplication and division facts to 100.

6. Demonstrate an understanding of multiplication (2- or 3-digit by 1-digit) to solve problems by: • using personal strategies for multiplication with and without concrete materials • using arrays to represent multiplication • connecting concrete representations to symbolic representations • estimating products • applying the distributive property.	**Number Unit 6: Multiplying and Dividing Larger Numbers** 30: Exploring Strategies for Multiplying 31: Estimating Products 35: Consolidation of Multiplying and Dividing Larger Numbers	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Developing conceptual meaning of operations** - Models and develops meaning for whole number computation to four digits. **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).
7. Demonstrate an understanding of division (1-digit divisor and up to 2-digit dividend) to solve problems by: • using personal strategies for dividing with and without concrete materials • estimating quotients • relating division to multiplication.	**Number Unit 5: Fluency with Multiplication and Division Facts** 27: Strategies for Division 29: Consolidation of Fluency with Multiplication and Division Facts **Number Unit 6: Multiplying and Dividing Larger Numbers** 32: Exploring Strategies for Dividing 33: Estimating Quotients 34: Dividing with Remainders 35: Consolidation of Multiplying and Dividing Larger Numbers	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Developing conceptual meaning of operations** - Models and develops meaning for whole number computation to four digits. **Developing fluency of operations** - Estimates the results 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).
8. Demonstrate an understanding of fractions less than or equal to one by using concrete, pictorial and symbolic representations to: • name and record fractions for the parts of a whole or a set • compare and order fractions • model and explain that for different wholes, two identical fractions may not represent the same quantity • provide examples of where fractions are used.	**Number Unit 3: Fractions** 13: What Are Fractions? 14: Counting by Unit Fractions 15: Exploring Different Representations of Fractions 17: Exploring Equivalence in Fractions 18: Comparing and Ordering Fractions 19: Consolidation of Fractions	**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). **Estimating quantities and numbers** - Estimates the size and magnitude of fractions by comparing to benchmarks.

		Big Idea: Quantities and numbers can be grouped by or partitioned into equal-sized units. **Partitioning quantities to form fractions** - Partitions fractional parts into smaller fractional parts (e.g., partitions halves into thirds to create sixths). - Uses models to describe, name, and count forward and backward by unit fractions. - Explains that two equivalent fractions represent the same part of a whole, but not necessarily equal quantities (e.g., $\frac{1}{2}$ of a set of 12 and $\frac{1}{2}$ of a set of 6 are equal fractions, but unequal quantities).
9. Represent and describe decimals (tenths and hundredths), concretely, pictorially and symbolically.	**Number Unit 4: Decimals** 20: Exploring Tenths 21: Exploring Hundredths 23: Consolidation of Decimals	**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.** **Estimating quantities and numbers** - Estimates the location of decimals and fractions on a number line. **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). - Counts forwards and backwards by decimal units (e.g., 0.1, 0.2, … 0.9, 1.0). - 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).

10. Relate decimals to fractions and fractions to decimals (to hundredths).	**Number Unit 4: Decimals** 20: Exploring Tenths 21: Exploring Hundredths 23: Consolidation of Decimals	**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).
11. Demonstrate an understanding of addition and subtraction of decimals (limited to hundredths) by: • using personal strategies to determine sums and differences • estimating sums and differences • using mental math strategies to solve problems.	**Number Unit 7: Operations with Fractions and Decimals** 36: Estimating Sums and Differences with Decimals 37: Adding and Subtracting Decimals 38: Using Mental Math to Add and Subtract Decimals 39: Consolidation of Operations with Fractions and Decimals	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Developing conceptual meaning of operations** - Demonstrates an understanding of decimal number computation through modelling and flexible strategies. **Developing fluency of operations** - Estimates sums and differences of decimal numbers (e.g., calculating cost of transactions involving dollars and cents). - Solves decimal number computation using efficient strategies.

Correlation of Nunavut Program of Studies with Mathology Grade 4 (Patterns and Relations: Patterns)

Curriculum Expectations	Grade 4 Mathology.ca	Pearson Canada Grades 4-6 Mathematics Learning Progression
General Outcome Use patterns to describe the world and to solve problems.		
Specific Outcomes 1. Identify and describe patterns found in tables and charts.	**Patterning Unit 1: Patterns and Relations** 2: Investigating Increasing and Decreasing Patterns 3: Representing Patterns 4: Investigating Number Relationships 6: Consolidation of Patterns and Relations	**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.
2. Translate among different representations of a pattern, such as a table, a chart or concrete materials.	**Patterning Unit 1: Patterns and Relations** 3: Representing Patterns 6: Consolidation of Patterns and Relations	**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). **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.
3. Represent, describe and extend patterns and relationships, using charts and tables, to solve problems.	**Patterning Unit 1: Patterns and Relations** 2: Investigating Increasing and Decreasing Patterns 3: Representing Patterns 6: Consolidation of Patterns and Relations	**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.
4. Identify and explain mathematical relationships, using charts and diagrams, to solve problems.	**Pattern Unit 1: Patterns and Relations** 4: Investigating Number Relationships 5: Sorting in Venn Diagrams and Carroll Diagrams 6: Consolidation of Patterns and Relations	**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.

Correlation of Nunavut Program of Studies with Mathology Grade 4 (Patterns and Relations: Variables and Equations)

Curriculum Expectations	Grade 4 Mathology.ca	Pearson Canada Grades 4-6 Mathematics Learning Progression
General Outcome Represent algebraic expressions in multiple ways.		
Specific Outcomes 5. Express a given problem as an equation in which a symbol is used to represent an unknown number.	**Patterning Unit 2: Variables and Equations** 7: Using Symbols 8: Solving Equations Concretely 9: Solving Addition and Subtraction Equations 11: Solving Multiplication and Division Equations 12: Using Equations to Solve Problems 13: 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: □ – 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 – □ = 8; 4*n* = 12). - Flexibly uses symbols and letters to represent unknown quantities in equations (e.g., knows that 4 + □ = 7; 4 + *x* = 7; and 4 + *y* = 7 all represent the same equation with □, *x*, and *y* representing the same value). - Interprets and writes algebraic expressions (e.g., 2*n* means two times a number; subtracting a number from 7 can be written as 7 – *n*). - Understands a variable as a changing quantity (e.g., 5*s*, where *s* can be any value).

6. Solve one-step equations involving a symbol to represent an unknown number.	**Patterning Unit 2: Variables and Equations** 8: Solving Equations Concretely 9: Solving Addition and Subtraction Equations 11: Solving Multiplication and Division Equations 12: Using Equations to Solve Problems 13: 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 $12 - 7 = b$).

Correlation of Nunavut Program of Studies with Mathology Grade 4 (Shape and Space: Measurement)

Curriculum Expectations	Grade 4 Mathology.ca	Pearson Canada Grades 4-6 Mathematics Learning Progression
General Outcome Use direct and indirect measurement to solve problems.		
Specific Outcomes 1. Read and record time, using digital and analog clocks, including 24-hour clocks.	**Measurement Unit 3: Time** 12: Exploring Time 13: Telling Time in One- and Five-Minute Intervals 14: Telling Time on a 24-Hour Clock 18: Consolidation of Time	**Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.** **Selecting and using units to estimate, measure, construct, and make comparisons** - Reads and records time (i.e., digital and analogue) and calendar dates. **Understanding relationships among measured units** - Understands relationship among different measures of time (e.g., seconds, minutes, hours, days, decades).
2. Read and record calendar dates in a variety of formats.	**Measurement Unit 3: Time** 17: Exploring Calendar Dates 18: Consolidation of Time	**Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.** **Selecting and using units to estimate, measure, construct, and make comparisons** - Reads and records time (i.e., digital and analogue) and calendar dates. **Understanding relationships among measured units** - Understands relationship among different measures of time (e.g., seconds, minutes, hours, days, decades).
3. Demonstrate an understanding of area of regular and irregular 2-D shapes by: • recognizing that area is measured in square units • selecting and justifying referents for the units cm^2 or m^2 • estimating area, using referents for cm^2 or m^2 • determining and recording area (cm^2 or m^2)	**Measurement Unit 1: Length, Perimeter, and Area** 4: Estimating and Measuring Area in Square Metres 5: Estimating and Measuring Area in Square Centimetres 6: Exploring the Area of Rectangles	**Big Idea: Many things in our world (e.g., objects, spaces, events) have attributes that can be measured and compared.** **Understanding attributes that can be measured, compared, and ordered** - Understands area as an attribute of 2-D shapes that can be measured and

• constructing different rectangles for a given area (cm^2 or m^2) in order to demonstrate that many different rectangles may have the same area.	7: Consolidation of Length, Perimeter, and Area	compared. **Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons. Selecting and using units to estimate, measure, construct, and make comparisons** - Develops understanding of square units (e.g., square unit, square cm, square m) to measure area of 2-D shapes.

Correlation of Nunavut Program of Studies with Mathology Grade 4 (Shape and Space: 3-D Objects and 2-D Shapes)

Curriculum Expectations	Grade 4 Mathology.ca	Pearson Canada Grades 4-6 Mathematics Learning Progression
General Outcome Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.		
Specific Outcomes 4. Describe and construct right rectangular and right triangular prisms.	**Geometry Unit 1A: 2-D Shapes and 3-D Solids** 2: Identifying and Describing Prisms 3: Constructing Models of Prisms 5: Consolidation of 2-D Shapes and 3-D Solids	**Big Ideas: 2-D shapes and 3-D solids can be analyzed and classified in different ways by their attributes.** **Investigating geometric attributes and properties of 2-D shapes and 3-D solids** - Sorts, describes, constructs, and classifies 3-D objects based on edges, faces, vertices, and angles (e.g., prisms, pyramids). **Investigating 2-D shapes, 3-D solids, and their attributes through composition and decomposition** - Identifies and constructs nets for 3-D objects made from triangles and rectangles.

Correlation of Nunavut Program of Studies with Mathology Grade 4 (Shape and Space: Transformations)

Curriculum Expectations	Grade 4 Mathology.ca	Pearson Canada Grades 4-6 Mathematics Learning Progression
General Outcome Describe and analyze position and motion of objects and shapes.		
Specific Outcomes 5. Demonstrate an understanding of congruency, concretely and pictorially.	**Geometry Unit 1A: 2-D Shapes and 3-D Solids** 1: Exploring Congruence 5: Consolidation of 2-D Shapes 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).
6. Demonstrate an understanding of line symmetry by: • identifying symmetrical 2-D shapes • creating symmetrical 2-D shapes • drawing one or more lines of symmetry in a 2-D shape.	**Geometry Unit 1A: 2-D Shapes and 3-D Solids** 4: Understanding Line Symmetry 5: Consolidation of 2-D Shapes and 3-D Solids	**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** - Draws and identifies lines of symmetry (i.e., vertical, horizontal, diagonal, oblique) in 2-D shapes and designs.

Correlation of Nunavut Program of Studies with Mathology Grade 4 (Statistics and Probability: Data Analysis)

Curriculum Expectations	Grade 4 Mathology.ca	Pearson Canada Grades 4-6 Mathematics Learning Progression
General Outcome Collect, display and analyze data to solve problems.		
Specific Outcomes 1. Demonstrate an understanding of many-to-one correspondence.	**Data Management Unit 1A: Data Management** 1: Interpreting and Drawing Pictographs 2: Interpreting and Drawing Bar Graphs 3: Comparing Graphs 4: 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** - Reads and interprets data displays using many-to-one correspondence.
2. Construct and interpret pictographs and bar graphs involving many-to-one correspondence to draw conclusions.	**Data Management Unit 1A: Data Management** 1: Interpreting and Drawing Pictographs 2: Interpreting and Drawing Bar Graphs 3: Comparing Graphs 4: 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** - Represents data graphically using many-to-one correspondence with appropriate scales and intervals (e.g., each symbol on pictograph represents 10 people). **Reading and interpreting data displays and analyzing variability** - Reads and interprets data displays using many-to-one correspondence. **Drawing conclusions by making inferences and justifying decisions based on data collected.** - Draws conclusions based on data presented.