Mathology Grade 4 Correlation (Number) – Alberta Curriculum

Note: A Readiness Task precedes each unit and determines students' readiness for the upcoming lessons.

Organizing Idea:
Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.

Guiding Question: How can place value facilitate interpretation of number?
Learning Outcome: Students apply place value to decimal numbers.

Knowledge	Understanding	Skills & Procedures	Mathology Grade 4 Activities	Mathology Practice Workbook 4	Pearson Canada Grades 4–9 Mathematics Learning Progression
For numbers in base-10, each place has one-tenth the value of the place to its left. Multiplying or dividing a number by 10 corresponds to shifting place value one position to the left or right, respectively. The decimal separator is a point in English and a comma in French. Numbers, including decimal numbers, can be composed in various ways using place value.	Decimal numbers are numbers between natural numbers. Decimal numbers are fractions with denominators of 10, 100, etc. The separation between wholes and parts, including dollars and cents can be represented using decimal notation. Patterns in place value are used to read and write numbers, including wholes and parts.	Identify the place value of each digit in a number, including tenths and hundredths.	**Number Unit 1: Number Relationships and Place Value** 1: Representing Numbers to 1 000 000 2: Comparing Numbers to 1 000 000 3: Consolidation **Number Unit 4: Decimals** 13: Exploring Tenths 14: Exploring Hundredths 19: Consolidation	Unit 2 Questions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 (pp. 8-13) Unit 9 Questions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 18 (pp. 56-60, 62)	**Big Idea: The set of real numbers is infinite.** **Extending Whole Number Understanding to the Set of Real Numbers** - Extends whole number understanding to 1 000 000. **Big Idea: 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. - Writes and reads decimal numbers in multiple forms (i.e., numerals, number names, expanded form). **Big Idea: Numbers are related in many ways.** **Comparing and Ordering Quantities (Multitude and Magnitude)** - Compares, orders, and locates whole numbers based on place-value understanding and records using <, =, > symbols. **Estimating Quantities and Numbers** - Estimates the location of decimals and fractions on a number line.
		Relate the values of adjacent places, including tenths and hundredths.	**Number Unit 1: Number Relationships and Place Value** 1: Representing Numbers to 1 000 000 2: Comparing Numbers to 1 000 000 3: Consolidation	Unit 2 Questions 3, 5, 6, 7b, 8, 10, 12, 13, 15 (pp. 9-13) Unit 9 Questions 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 18 (pp. 57-60, 62)	**Big Idea: The set of real numbers is infinite.** **Extending Whole Number Understanding to the Set of Real Numbers** - Extends whole number understanding to 1 000 000. **Big Idea: Quantities and numbers can be grouped by or partitioned into equal-sized units.** **Unitizing Quantities into Base-Ten Units**

A zero placed to the right of the last digit in a decimal number does not change the value of the number. The word *and* is used to indicate the decimal point when reading a number.			**Number Unit 4: Decimals** 13: Exploring Tenths 14: Exploring Hundredths 19: Consolidation		- Understands that the value of a digit is ten times the value of the same digit one place to the right. - Writes and reads decimal numbers in multiple forms (i.e., numerals, number names, expanded form). **Big Idea: Numbers are related in many ways.** **Comparing and Ordering Quantities (Multitude and Magnitude)** - Compares, orders, and locates whole numbers based on place-value understanding and records using <, =, > symbols. **Estimating Quantities and Numbers** - Estimates the location of decimals and fractions on a number line.
		Determine the value of each digit in a number, including tenths and hundredths.	**Number Unit 1: Number Relationships and Place Value** 1: Representing Numbers to 1 000 000 2: Comparing Numbers to 1 000 000 3: Consolidation **Number Unit 4: Decimals** 13: Exploring Tenths 14: Exploring Hundredths 19: Consolidation	Unit 2 Question 2 (p. 8) Unit 9 Question 5 (p. 58)	**Big Idea: The set of real numbers is infinite.** **Extending Whole Number Understanding to the Set of Real Numbers** - Extends whole number understanding to 1 000 000. **Big Idea: 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. - Writes and reads decimal numbers in multiple forms (i.e., numerals, number names, expanded form). **Big Idea: Numbers are related in many ways.** **Comparing and Ordering Quantities (Multitude and Magnitude)** - Compares, orders, and locates whole numbers based on place-value understanding and records using <, =, > symbols. **Estimating Quantities and Numbers** - Estimates the location of decimals and fractions on a number line.

		Express numbers, including decimal numbers, using words and numerals.	**Number Unit 1: Number Relationships and Place Value** 1: Representing Numbers to 1 000 000 2: Comparing Numbers to 1 000 000 3: Consolidation **Number Unit 4: Decimals** 13: Exploring Tenths 14: Exploring Hundredths 19: Consolidation	Unit 2 Questions 1, 4, 7 (pp. 8-10) Unit 9 Questions 3, 4 (p. 57)	**Big Idea: The set of real numbers is infinite.** **Extending Whole Number Understanding to the Set of Real Numbers** - Extends whole number understanding to 1 000 000. **Big Idea: 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. - Writes and reads decimal numbers in multiple forms (i.e., numerals, number names, expanded form). **Big Idea: Numbers are related in many ways.** **Comparing and Ordering Quantities (Multitude and Magnitude)** - Compares, orders, and locates whole numbers based on place-value understanding and records using <, =, > symbols. **Estimating Quantities and Numbers** - Estimates the location of decimals and fractions on a number line.
		Express various compositions of a number, including decimal numbers, using place value.	**Number Unit 1: Number Relationships and Place Value** 1: Representing Numbers to 1 000 000 2: Comparing Numbers to 1 000 000 3: Consolidation **Number Unit 4: Decimals** 13: Exploring Tenths 14: Exploring Hundredths 19: Consolidation	Unit 2 Questions 7, 8, 9 (pp. 10-11) Unit 9 Questions 2, 8, 9 (pp. 57-59)	**Big Idea: The set of real numbers is infinite.** **Extending Whole Number Understanding to the Set of Real Numbers** - Extends whole number understanding to 1 000 000. **Big Idea: 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. - Writes and reads decimal numbers in multiple forms (i.e., numerals, number names, expanded form). **Big Idea: Numbers are related in many ways.** **Comparing and Ordering Quantities (Multitude and Magnitude)** - Compares, orders, and locates whole numbers based on place-value understanding and records using <, =, > symbols. **Estimating Quantities and Numbers** - Estimates the location of decimals and fractions on a number line.
		Recognize decimal notation expressed in English and in French.	**Number Unit 7: Operations with Decimals** 30: Adding and Subtracting Decimals	N/A	**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** - Solves decimal number computation using efficient strategies.

		Round numbers to various places, including tenths.	**Number Unit 1: Number Relationships and Place Value** 1: Representing Numbers to 1 000 000 3: Consolidation **Number Unit 4: Decimals** 16: Rounding Decimals 19: Consolidation	Unit 2 Questions 13, 14 (pp. 12-13) Unit 9 Questions 7, 10 (pp. 58, 59)	**Big Idea: The set of real numbers is infinite.** **Extending Whole Number Understanding to the Set of Real Numbers** - Extends whole number understanding to 1 000 000. **Big Idea: 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. **Big Idea**: **Numbers are related in many ways.** **Estimating Quantities and Numbers** - Provides approximate decimal values using multiple strategies (e.g., estimation, rounding, truncating).
		Compare and order numbers, including decimal numbers.	**Number Unit 1: Number Relationships and Place Value** 2: Comparing Numbers to 1 000 000 3: Consolidation **Number Unit 4: Decimals** 15: Comparing and Ordering Decimals 19: Consolidation	Unit 2 Questions 10, 11, 12, 16 (pp. 11-13) Unit 9 Questions 6, 9, 11, 12, 13, 14, 18 (pp. 58-60, 62)	**Big Idea: The set of real numbers is infinite.** **Extending Whole Number Understanding to the Set of Real Numbers** - Extends whole number understanding to 1 000 000. **Big Idea: Numbers are related in many ways.** **Comparing and Ordering Quantities (Multitude and Magnitude)** - Compares, orders, and locates whole numbers based on place-value understanding and records using <, =, > symbols. - Compares, orders, and locates decimal numbers using place-value understanding. **Big Idea: Quantities and numbers can be grouped by or partitioned into equal-sized units.** **Unitizing Quantities into Base-Ten Units** - Writes and reads decimal numbers in multiple forms (i.e., numerals, number names, expanded form).
		Express the relationship between two numbers, including decimal numbers, using <, >, or =.	**Number Unit 1: Number Relationships and Place Value** 2: Comparing Numbers to 1 000 000 3: Consolidation **Number Unit 4: Decimals** 15: Comparing and Ordering Decimals 19: Consolidation	Unit 2 Question 12 (p. 12) Unit 9 Question 11 (p. 59)	**Big Idea: The set of real numbers is infinite.** **Extending Whole Number Understanding to the Set of Real Numbers** - Extends whole number understanding to 1 000 000. **Big Idea: Numbers are related in many ways.** **Comparing and Ordering Quantities (Multitude and Magnitude)** - Compares, orders, and locates whole numbers based on place-value understanding and records using <, =, > symbols. - Compares, orders, and locates decimal numbers using place-value understanding. **Big Idea: Quantities and numbers can be grouped by or partitioned into equal-sized units.** **Unitizing Quantities into Base-Ten Units**

					- Writes and reads decimal numbers in multiple forms (i.e., numerals, number names, expanded form).
		Express a monetary value in cents as a monetary value in dollars using decimal notation.	**Number Unit 7: Operations with Decimals** 29: Estimating Sums and Differences with Decimals 30: Adding and Subtracting Decimals 31: Consolidation	Unit 9 Question 8 (p. 58)	**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.
Guiding Question: How can understanding of addition and subtraction be extended to decimal numbers? **Learning Outcome:** Students add and subtract within 10 000, including decimal numbers to hundredths.					
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 4 Activities**	**Mathology Practice Workbook 4**	**Pearson Canada Grades 4–9 Mathematics Learning Progression**
Standard algorithms for addition and subtraction of decimal numbers are conventional procedures based on place value. Estimation can be used to check the reasonableness of a sum or difference.	Standard algorithms for addition and subtraction may be used for any decimal numbers.	Add and subtract numbers, including decimal numbers, using standard algorithms.	**Number Unit 2: Fluency with Addition and Subtraction** 5: Modelling Addition and Subtraction 6: Adding and Subtracting Larger Numbers 8: Consolidation **Number Unit 7: Operations with Decimals** 30: Adding and Subtracting Decimals 31: Consolidation **Number Unit 8: Financial Literacy** 32: Using Currency for Financial Transactions 33: Making Good Purchases	Unit 3 Questions 4, 5, 6, 7, 10 (pp. 15-17, 20) Unit 11 Questions 5, 6, 7, 8, 9, 12 (pp. 70-74) Unit 14 Questions 1, 2, 9 (pp. 90-91, 95)	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Developing Conceptual Meaning of Operations** - Models and develops meaning for whole number computation to four digits. - Demonstrates an understanding of decimal number computation through modelling and flexible strategies. **Developing Fluency of Operations** - 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.
		Assess the reasonableness of a sum or difference using estimation.	**Number Unit 2: Fluency with Addition and Subtraction** 4: Estimating Sums and Differences	Unit 3 Questions 1, 2, 3, 6 (pp. 14-17) Unit 11 Questions 1, 2, 3, 4, 8 (pp. 69-70, 72)	**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.

			7: Creating and Solving Problems 8: Consolidation **Number Unit 7: Operations with Decimals** 29: Estimating Sums and Differences with Decimals 30: Adding and Subtracting Decimals 31: Consolidation **Number Unit 8: Financial Literacy** 32: Using Currency for Financial Transactions 33: Making Good Purchases	Unit 14 Question 1 (pp. 90-91)	- 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?). - Estimates sums and differences of decimal numbers (e.g., calculating cost of transactions involving dollars and cents). - Solves decimal number computation using efficient strategies.
		Solve problems using addition and subtraction, including problems involving money.	**Number Unit 2: Fluency with Addition and Subtraction** 7: Creating and Solving Problems 8: Consolidation **Number Unit 7: Operations with Decimals** 29: Estimating Sums and Differences with Decimals 30: Adding and Subtracting Decimals 31: Consolidation **Number Unit 8: Financial Literacy** 32: Using Currency for Financial Transactions 33: Making Good Purchases	Unit 3 Questions 2, 3, 6, 8, 9 (pp. 15-19) Unit 11 Questions 4, 8, 9, 12 (pp. 70, 72-74) Unit 14 Questions 1, 2, 9 (pp. 90-91, 95)	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Developing Conceptual Meaning of Operations** - Models and develops meaning for whole number computation to four digits. - Demonstrates an understanding of decimal number computation through modelling and flexible strategies. **Developing Fluency of Operations** - Estimates the result of whole number operations using contextually relevant strategies (e.g., How many buses are needed to take the Grade 8 classes to the museum?). - Estimates sums and differences of decimal numbers (e.g., calculating cost of transactions involving dollars and cents). - Solves decimal number computation using efficient strategies.

Guiding Question: How can multiplication and division characterize the composition of numbers? **Learning Outcome:** Students explain properties of prime and composite numbers using multiplication and division.					
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 4 Activities**	**Mathology Practice Workbook 4**	**Pearson Canada Grades 4–9 Mathematics Learning Progression**
A factor of a number is a divisor of that number. A number is a multiple of any of its factors. A prime number has factors of only itself and one. A composite number has factors other than one and itself. Zero and one are neither prime nor composite.	Different factors can compose the same product. Different products can share factors. A number divided by one of its factors will result in a remainder of 0.	Determine the factors of a number within 100.	**Number Unit 5: Fluency with Multiplication and Division** 20: Factors and Multiples, and Prime and Composite Numbers 22: Consolidation	Unit 15 Question 8 (p. 101)	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating Number and Arithmetic Properties** - Determines whether one number is a multiple of any one-digit number. - 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. - Develops exponent notation as a compressed form of repeated multiplication for powers of 10 (e.g., 10 000 = 10 × 10 × 10 × 10 = 10^4).
		Describe a number as prime or composite.	**Number Unit 5: Fluency with Multiplication and Division** 20: Factors and Multiples, and Prime and Composite Numbers 22: Consolidation	Unit 15 Question 9 (p. 102)	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating Number and Arithmetic Properties** - Determines whether one number is a multiple of any one-digit number. - 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. - Develops exponent notation as a compressed form of repeated multiplication for powers of 10 (e.g., 10 000 = 10 × 10 × 10 × 10 = 10^4).
		Determine the first five multiples of a given number within 100.	**Number Unit 5: Fluency with Multiplication and Division** 20: Factors and Multiples, and Prime and Composite Numbers 22: Consolidation	Unit 15 Questions 6, 7, 9 (pp. 101-102)	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating Number and Arithmetic Properties** - Determines whether one number is a multiple of any one-digit number. - 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. - Develops exponent notation as a compressed form of repeated multiplication for powers of 10 (e.g., 10 000 = 10 × 10 × 10 × 10 = 10^4).

		Recognize the greatest common factor (greatest common divisor) of two numbers within 100.	**Number Unit 5: Fluency with Multiplication and Division** 20: Factors and Multiples, and Prime and Composite Numbers 22: Consolidation	Unit 15 Question 8 (p. 101)	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating Number and Arithmetic Properties** - Determines whether one number is a multiple of any one-digit number. - 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. - Develops exponent notation as a compressed form of repeated multiplication for powers of 10 (e.g., 10 000 = 10 × 10 × 10 × 10 = 10^4).
Guiding Question: How can multiplication and division be interpreted? **Learning Outcome:** Students multiply and divide natural numbers within 10 000.					
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 4 Activities**	**Mathology Practice Workbook 4**	**Pearson Canada Grades 4–9 Mathematics Learning Progression**
Recall of multiplication and division number facts facilitates multiplication and division strategies. Standard algorithms facilitate multiplication and division of natural numbers that have multiple digits. Estimation can be used to check the reasonableness of a product or quotient.	Multiplication and division strategies can be chosen based on the nature of the numbers.	Recall and apply multiplication number facts, with factors to 12, and related division number facts.	**Number Unit 5: Fluency with Multiplication and Division** 21: Relating Multiplication and Division Facts 22: Consolidation	Unit 15 Questions 1, 2, 3, 4, 5, 11 (pp. 98-100, 103)	**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). **Developing Fluency of Operations** - Fluently recalls multiplication and division facts to 100.
		Investigate patterns in multiplication and division of natural numbers by 10, 100, and 1000.	**Number Unit 6: Multiplying and Dividing Larger Numbers** 23: Exploring Strategies for Multiplying 25: Exploring Strategies for Dividing 28: Consolidation	Unit 15 Questions 1e, 11 (pp. 98, 103) Unit 18 Question 5 (p. 119)	**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. - Understands and explains the effect of multiplying and dividing whole numbers by powers of 10. **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).
		Multiply and divide 3-digit natural numbers by 1-digit natural numbers using personal strategies.	**Number Unit 6: Multiplying and Dividing Larger Numbers** 23: Exploring Strategies for Multiplying 25: Exploring Strategies for Dividing 28: Consolidation	Unit 18 Questions 4c-e, g, h, 5, 7, 9, 10, 11c-d, 13 (pp. 118-121)	**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. - Understands and explains the effect of multiplying and dividing whole numbers by powers of 10. **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).
		Examine standard algorithms for multiplication and division.	**Number Unit 6: Multiplying and Dividing Larger Numbers** 23: Exploring Strategies for Multiplying 25: Exploring Strategies for Dividing 28: Consolidation	Unit 18 Questions 4c-e, g, h, 7, 9, 10, 11c-d, 13 (pp. 118-121)	**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. - Understands and explains the effect of multiplying and dividing whole numbers by powers of 10. **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).
		Multiply and divide 3-digit natural numbers by 1-digit natural numbers using standard algorithms.	**Number Unit 6: Multiplying and Dividing Larger Numbers** 23: Exploring Strategies for Multiplying 25: Exploring Strategies for Dividing 28: Consolidation	Unit 18 Questions 4c-e, g, h, 5, 7, 9, 10, 11c-d, 13 (pp. 118-121)	**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. - Understands and explains the effect of multiplying and dividing whole numbers by powers of 10. **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).
		Divide and express a quotient with or without a remainder.	**Number Unit 6: Multiplying and Dividing Larger Numbers** 25: Exploring Strategies for Dividing 27: Dividing with Remainders 28: Consolidation	Unit 18 Questions 4, 7, 8, 11, 12, 13, 14 (pp. 118-122)	**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. - 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).
		Investigate strategies for estimation of products and quotients.	**Number Unit 6: Multiplying and Dividing Larger Numbers** 24: Estimating Products 26: Estimating Quotients 28: Consolidation	Unit 18 Questions 1, 2, 3, 6, 7 (pp. 117-119)	**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 whole numbers by powers of 10. **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).
		Assess the reasonableness of a product or quotient using estimation.	**Number Unit 6: Multiplying and Dividing Larger Numbers** 24: Estimating Products 26: Estimating Quotients 28: Consolidation	Unit 18 Questions 6, 7 (p. 119)	**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 whole numbers by powers of 10. **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).
		Solve problems using multiplication and division.	**Number Unit 6: Multiplying and Dividing Larger Numbers** 23: Exploring Strategies for Multiplying 24: Estimating Products 25: Exploring Strategies for Dividing 26: Estimating Quotients 27: Dividing with Remainders 28: Consolidation	Unit 18 Questions 2, 3, 6, 7, 8, 9, 12 (pp. 118-121)	**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. - Understands and explains the effect of multiplying and dividing whole numbers by powers of 10. - Models and develops meanings for division of whole numbers that result in fractions. **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).
Guiding Question: How can fractions be characterized in different ways? **Learning Outcome:** Students apply equivalence to the interpretation of fractions.					
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 4 Activities**	**Mathology Practice Workbook 4**	**Pearson Canada Grades 4–9 Mathematics Learning Progression**
Equivalent fractions are associated with the same point on the number line.	There are infinitely many equivalent fractions that represent the same number.	Model equivalent fractions by partitioning a whole in multiple ways.	**Number Unit 3: Fractions** 9: Exploring Equivalence in Fractions 10: Equivalent Fractions 12: Consolidation	Unit 8 Questions 3, 4, 13 (pp. 51, 55)	**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 units (e.g., partitions halves into thirds to create sixths).

Equivalent fractions can be created by partitioning each equal part of a fraction in the same way. Partitioning a fraction can be interpreted as multiplying the numerator and denominator of a fraction by the same number. A fraction can be simplified to an equivalent form by dividing the numerator and denominator by a common factor. The numerator and denominator of a fraction in simplest form have no common factors. Dividing the numerator and denominator of a fraction by their greatest common factor will achieve simplest form.	Exactly one of infinitely many equivalent fractions is in simplest form.				- Explains that two equivalent fractions represent the same part of a whole, but not necessarily equal quantities (e.g., 1/2 of a set of 12 and 1/2 of a set of 6 are equal fractions, but unequal quantities). **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).
		Determine fractions equivalent to a given fraction.	**Number Unit 3: Fractions** 10: Equivalent Fractions 12: Consolidation	Unit 8 Questions 4, 5, 6, 7, 8, 11, 13 (pp. 51-55)	**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 units (e.g., partitions halves into thirds to create sixths). **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).
		Relate the position of equivalent fractions on the number line.	**Number Unit 3: Fractions** 10: Equivalent Fractions 11: Comparing and Ordering Fractions 12: Consolidation	Unit 8 Question 4 (p. 51)	**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 units (e.g., partitions halves into thirds to create sixths). **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). **Comparing and Ordering Quantities (Multitude and Magnitude)** - Compares, orders, and locates fractions using flexible strategies (e.g., comparing models; creating common denominators or numerators).
		Identify fractions in which the numerator and denominator have a common factor.	**Number Unit 3: Fractions** 10: Equivalent Fractions 11: Comparing and Ordering Fractions 12: Consolidation	Unit 8 Questions 4, 5, 7 (pp. 51-53)	**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 units (e.g., partitions halves into thirds to create sixths). **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). **Comparing and Ordering Quantities (Multitude and Magnitude)** - Compares, orders, and locates fractions using flexible strategies (e.g., comparing models; creating common denominators or numerators).
		Simplify a given fraction by dividing the numerator and denominator by a common factor.	**Number Unit 3: Fractions** 10: Equivalent Fractions 12: Consolidation	Unit 8 Questions 4, 5, 7 (pp. 51-53)	**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 units (e.g., partitions halves into thirds to create sixths). **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).
		Express a fraction in simplest form.	**Number Unit 3: Fractions** 10: Equivalent Fractions 12: Consolidation	Unit 8 Questions 4, 5, 7 (pp. 51-53)	**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 units (e.g., partitions halves into thirds to create sixths). **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).
		Compare and order fractions.	**Number Unit 3: Fractions** 11: Comparing and Ordering Fractions 12: Consolidation	Unit 8 Questions 8, 9, 10, 11, 13 (pp. 53-55)	**Big Idea: Numbers are related in many ways.** **Comparing and Ordering Quantities (Multitude and Magnitude)** - Compares, orders, and locates fractions using flexible strategies (e.g., comparing models; creating common denominators or numerators).
Fractions and decimal numbers can represent the same number. Decimals can be expressed as fractions with a	Decimal numbers that terminate (do not repeat) are fractions with denominators of 10, 100, etc. Fractions and decimal numbers	Relate fractions and equivalent decimal numbers to their positions on the number line.	**Number Unit 4: Decimals** 13: Exploring Tenths 14: Exploring Hundredths 17: Relating Fractions and Decimals 19: Consolidation	N/A	**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 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). **Big Idea: Numbers are related in many ways.** **Estimating Quantities and Numbers**

denominator that is equivalent to the place value of the last non-zero digit of the decimal number.	that represent the same number are associated with the same point on the number line.				- Estimates the location of decimals and fractions on a number line. **Decomposing and Composing Numbers to Investigate Equivalencies** - Models and explains the relationship between a fraction and its equivalent decimal form (e.g., 2/5 = 4/10 = 0.4).
		Express fractions as decimal numbers and vice versa, limited to denominators that are 10 or 100.	**Number Unit 4: Decimals** 13: Exploring Tenths 14: Exploring Hundredths 17: Relating Fractions and Decimals 19: Consolidation	Unit 9 Questions 2, 3, 15 (pp. 57, 61)	**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 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). **Big Idea: Numbers are related in many ways.** **Estimating Quantities and Numbers** - Estimates the location of decimals and fractions on a number line. **Decomposing and Composing Numbers to Investigate Equivalencies** - Models and explains the relationship between a fraction and its equivalent decimal form (e.g., 2/5 = 4/10 = 0.4).
Guiding Question: How can percentages standardize part-whole relationships? **Learning Outcome:** Students interpret percentages.					
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 4 Activities**	**Mathology Practice Workbook 4**	**Pearson Canada Grades 4–9 Mathematics Learning Progression**
Percentage is represented symbolically with %. Decimals can be expressed as percentages by multiplying by 100. Percentages can be expressed as decimals by dividing by 100. One percent represents one hundredth of a whole.	Fractions, decimals, and percentages can represent the same part-whole relationship.	Investigate percentage in familiar situations.	**Number Unit 4: Decimals** 18: Investigating Percents 19: Consolidation	Unit 9 Questions 16, 17 (pp. 61-62)	**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.
		Compare percentages within 100%.	**Number Unit 4: Decimals** 18: Investigating Percents 19: Consolidation	Unit 9 Questions 16, 17 (pp. 61-62)	**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.
		Express the fraction, decimal, and percentage representations of the same part-whole relationship.	**Number Unit 4: Decimals** 18: Investigating Percents 19: Consolidation	Unit 9 Question 15 (p. 61)	**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.

Mathology Grade 4 Correlation (Algebra) – Alberta Curriculum

Organizing Idea:
Algebra: Equations express relationships between quantities.

Guiding Question: How can equality create opportunities to reimagine number? **Learning Outcome:** Students represent and apply equality in multiple ways.					
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 4 Activities**	**Mathology Practice Workbook 4**	**Pearson Canada Grades 4–9 Mathematics Learning Progression**
An expression can include multiple operations. The conventional order of operations provides a set of rules for evaluating expressions, including the following: • Multiplication and division are performed before addition and subtraction. • Multiplication and division are performed in order from left to right. • Addition and subtraction are performed in order from left to right.	There are infinitely many expressions that represent the same number. The order in which operations are performed can affect the value of an expression.	Evaluate expressions according to the order of operations.	**Patterning Unit 2: Variables and Equations** 6: Investigating Equality and the Order of Operations 12: Consolidation	Unit 17 Questions 9, 10, 11 (pp. 115-116)	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating Number and Arithmetic Properties** - Applies order of operations for whole numbers and explains the effect when order is not followed. **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** - Recognizes that an equal sign between two expressions with variables indicates that the expressions are equivalent (e.g., $5n - 4 = 3n$; $3r = 2 + s$).
		Create various expressions of the same number using one or more operations.	**Patterning Unit 2: Variables and Equations** 6: Investigating Equality and the Order of Operations 12: Consolidation	Unit 17 Question 10 (p. 115)	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating Number and Arithmetic Properties** - Applies order of operations for whole numbers and explains the effect when order is not followed. **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** - Recognizes that an equal sign between two expressions with variables indicates that the expressions are equivalent (e.g., $5n - 4 = 3n$; $3r = 2 + s$).

Equations can be solved through a process of adding, subtracting, multiplying, or dividing the same number on both sides of the equation (preservation of equality).	An equation is solved by determining an unknown value that makes the left and right sides of the equation equal.	Write equations involving one operation to represent a solution.	**Patterning Unit 2: Variables and Equations** 7: Using Symbols 8: Solving Equations Concretely 9: Solving Addition and Subtraction Equations 10: Solving Multiplication and Division Equations 11: Using Equations to Solve Problems 12: Consolidation	Unit 17 Questions 1, 6 (pp. 111-112, 114)	**Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.** **Representing Patterns, Relations, and Functions** - Represents a mathematical context or problem with expressions and equations using variables to represent unknowns. **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*). **Understanding Equality and Inequality, Building on Generalized Properties of Numbers and Operations** - Investigates and models the meaning of preservation of equality of single variable equations (e.g., 3*x* = 12).
		Investigate preservation of equality using a balance model.	**Patterning Unit 2: Variables and Equations** 6: Investigating Equality and the Order of Operations 7: Using Symbols 8: Solving Equations Concretely 9: Solving Addition and Subtraction Equations 10: Solving Multiplication and Division Equations 11: Using Equations to Solve Problems 12: Consolidation	Unit 17 Question 2 (p. 112)	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating Number and Arithmetic Properties** - Applies order of operations for whole numbers and explains the effect when order is not followed. **Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.** **Representing Patterns, Relations, and Functions** - Represents a mathematical context or problem with expressions and equations using variables to represent unknowns. **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*).

					Understanding Equality and Inequality, Building on Generalized Properties of Numbers and Operations - Recognizes that an equal sign between two expressions with variables indicates that the expressions are equivalent (e.g., $5n - 4 = 3n$; $3r = 2 + s$). - Investigates and models the meaning of preservation of equality of single variable equations (e.g., $3x = 12$).
		Investigate preservation of equality using an equation without an unknown value	**Patterning Unit 2: Variables and Equations** 6: Investigating Equality and the Order of Operations 9: Solving Addition and Subtraction Equations 10: Solving Multiplication and Division Equations 12: Consolidation	Unit 17 Question 2 (p. 112)	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating Number and Arithmetic Properties** - Applies order of operations for whole numbers and explains the effect when order is not followed. **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** - Recognizes that an equal sign between two expressions with variables indicates that the expressions are equivalent (e.g., $5n - 4 = 3n$; $3r = 2 + s$). - Investigates and models the meaning of preservation of equality of single variable equations (e.g., $3x = 12$). **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., $5s = t$).
		Apply preservation of equality to determine an unknown value in an equation, limited to equations with one operation.	**Patterning Unit 2: Variables and Equations** 8: Solving Equations Concretely 9: Solving Addition and Subtraction Equations 10: Solving Multiplication and Division Equations 11: Using Equations to Solve Problems 12: Consolidation	Unit 17 Questions 3, 4, 5, 7, 11 (pp. 113-114, 116)	**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., $5s = t$). **Understanding Equality and Inequality, Building on Generalized Properties of Numbers and Operations**

					- Investigates and models the meaning of preservation of equality of single variable equations (e.g., 3*x* = 12).
		Solve problems using equations, limited to equations with one operation.	**Patterning Unit 2: Variables and Equations** 11: Using Equations to Solve Problems 9: Solving Addition and Subtraction Equations 10: Solving Multiplication and Division Equations 12: Consolidation	Unit 17 Questions 4, 5, 7, 11 (pp. 113-114, 116)	**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*). **Understanding Equality and Inequality, Building on Generalized Properties of Numbers and Operations** - Investigates and models the meaning of preservation of equality of single variable equations (e.g., 3*x* = 12).

Mathology Grade 4 Correlation (Geometry) – Alberta Curriculum

Organizing Idea:
Geometry: Shapes are defined and related by geometric attributes.

Guiding Question: In what ways can geometric properties define space?
Learning Outcome: Students analyze and explain geometric properties.

Knowledge	Understanding	Skills & Procedures	Mathology Grade 4 Activities	Mathology Practice Workbook 4	Pearson Canada Grades 4–9 Mathematics Learning Progression
Angle relationships, including supplementary and complementary, are geometric properties. Two angles that compose 90° are complementary angles. Two angles that compose 180° are supplementary angles. Quadrilaterals include • squares • rectangles • parallelograms • trapezoids • rhombuses	Geometric properties are measurable. Geometric properties define a hierarchy for classifying shapes.	Identify relationships between the sides of a polygon, including parallel, equal length, or perpendicular, by measuring.	**Geometry Unit 1: Shapes, Prisms, and Angles** 1: Properties of Polygons and Prisms 3: Investigating Quadrilaterals 4: Classifying Triangles 6: Coding: Classifying Triangles Using Algorithms 7: Consolidation	Unit 5 Questions 10, 12, 14 (pp. 32-34)	**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, 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). **Investigating 2-D Shapes, 3-D Solids, and Their Attributes Through Composition and Decomposition** - Investigates 2-D shapes that do or do not have parallel and perpendicular lines. **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. - Investigates and generalizes sum of interior angles of triangles (i.e., sum of angles of a triangle is 180°).
		Identify relationships between angles at vertices of a polygon, including equal, supplementary, and complementary, by measuring.	**Geometry Unit 1: Shapes, Prisms, and Angles** 3: Investigating Quadrilaterals 4: Classifying Triangles	Unit 5 Questions 10, 11, 14 (pp. 32-34)	**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, and classifies 2-D shapes based on their geometric properties (e.g., side lengths, angles, diagonals).

Side length can be used to describe triangles as • equilateral • isosceles • scalene Triangles can be classified according to angle as • right • obtuse • acute			6: Coding: Classifying Triangles Using Algorithms 7: Consolidation		- Classifies 2-D shapes within a hierarchy based on their properties (e.g., rectangles are a subset of parallelograms). **Investigating 2-D Shapes, 3-D Solids, and Their Attributes Through Composition and Decomposition** - Investigates 2-D shapes that do or do not have parallel and perpendicular lines. **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. - Investigates and generalizes sum of interior angles of triangles (i.e., sum of angles of a triangle is 180°).
		Identify relationships between the faces of three-dimensional models of prisms, including parallel or perpendicular, by measuring.	**Geometry Unit 1: Shapes, Prisms, and Angles** 1: Properties of Polygons and Prisms 7: Consolidation	Unit 5 Questions 3, 4, 14 (pp. 28-29, 34)	**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, and classifies 2-D shapes based on their geometric properties (e.g., side lengths, angles, diagonals). **Investigating 2-D Shapes, 3-D Solids, and Their Attributes Through Composition and Decomposition** - Investigates 2-D shapes that do or do not have parallel and perpendicular lines.
		Describe triangles according to side length.	**Geometry Unit 1: Shapes, Prisms, and Angles** 4: Classifying Triangles 6: Coding: Classifying Triangles Using Algorithms 7: Consolidation	Unit 5 Questions 13, 14 (pp. 33-34)	**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. - Investigates and generalizes sum of interior angles of triangles (i.e., sum of angles of a triangle is 180°). **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, and classifies 2-D shapes based on their geometric properties (e.g., side lengths, angles, diagonals).
		Classify triangles as right, acute, or obtuse using geometric properties related to angles.	**Geometry Unit 1: Shapes, Prisms, and Angles** 4: Classifying Triangles 6: Coding: Classifying Triangles Using Algorithms	Unit 5 Questions 13, 14 (pp. 33-34)	**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. - Investigates and generalizes sum of interior angles of triangles (i.e., sum of angles of a triangle is 180°).

			7: Consolidation		**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, and classifies 2-D shapes based on their geometric properties (e.g., side lengths, angles, diagonals).
		Classify quadrilaterals in a hierarchy according to geometric properties.	**Geometry Unit 1: Shapes, Prisms, and Angles** 3: Investigating Quadrilaterals 7: Consolidation	Unit 5 Question 12 (p. 33)	**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** - Classifies 2-D shapes within a hierarchy based on their properties (e.g., rectangles are a subset of parallelograms). **Investigating 2-D Shapes, 3-D Solids, and Their Attributes Through Composition and Decomposition** - Investigates 2-D shapes that do or do not have parallel and perpendicular lines.
Many shapes in the environment resemble polygons. Transformations can be used to illustrate geometric properties of a polygon.	A shape resembling a polygon that does not share the defining geometric properties of the polygon is a close approximation.	Show, using geometric properties, that a close approximation of a polygon is not the same as the polygon.	**Geometry Unit 1: Shapes, Prisms, and Angles** 1: Properties of Polygons and Prisms 5: Investigating Geometric Properties through Transformations 7: Consolidation	Unit 5 Questions 10, 14 (pp. 32, 34)	**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, and classifies 2-D shapes based on their geometric properties (e.g., side lengths, angles, diagonals). **Investigating 2-D Shapes, 3-D Solids, and Their Attributes Through Composition and Decomposition** - Investigates 2-D shapes that do or do not have parallel and perpendicular lines. **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. - Verifies congruency of shapes under rigid transformations (i.e., translation, reflection, rotation) based on side and angle measures.
		Verify geometric properties of polygons by translating, rotating, or reflecting using hands-on materials or digital applications.	**Geometry Unit 1: Shapes, Prisms, and Angles** 5: Investigating Geometric Properties through Transformations 7: Consolidation	Unit 6 Questions 5, 8, 9 (pp. 37-39)	**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. - Verifies congruency of shapes under rigid transformations (i.e., translation, reflection, rotation) based on side and angle measures.

Mathology Grade 4 Correlation (Measurement) – Alberta Curriculum

Organizing Idea:
Measurement: Attributes such as length, area, volume, and angle are quantified by measurement.

Guiding Question: How can area characterize space? **Learning Outcome:** Students interpret and express area.					
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 4 Activities**	**Mathology Practice Workbook 4**	**Pearson Canada Grades 4-9 Mathematics Learning Progression**
Tiling is the process of measuring an area with many copies of a unit, without gaps or overlaps. The unit can be chosen based on the area to be measured. Area can be measured with non-standard units or standard units. The area of a rectangle equals the product of its perpendicular side lengths.	Area is a measurable attribute that describes the amount of two-dimensional space contained within a region. Area may be interpreted as the result of motion of a length. An area remains the same when decomposed or rearranged. Area is measured with equal-sized units that themselves have area and do not	Model area by dragging a length using hands-on materials or digital applications.	**Measurement Unit 1: Area** 2: Measuring Area Using Non-Standard Units 4: Exploring Area of Rectangles 5: Consolidation	N/A	**Big Idea K-3: Many things in our world (e.g., objects, spaces, events) have attributes that can be measured and compared.** **Directly and Indirectly Comparing and Ordering Objects with the Same Measurable Attribute** - Directly compares and orders objects by length (e.g., by aligning ends), mass (e.g., using a balance scale), and area (e.g., by covering). - Compares objects indirectly by using an intermediary object. - Uses relative attributes to compare and order (e.g., longer/longest, taller/tallest, shorter/shortest). **Big Idea K-3: Assigning a unit to a continuous attribute allows us to measure and make comparisons.** **Selecting and Using Non-standard Units to Estimate, Measure, and Make Comparisons** - Uses whole number measures to estimate, measure, and compare (e.g., this book is 8 cubes long and my pencil is 5 cubes long). - Demonstrates ways to estimate, measure, compare, and order objects by length, area, capacity, and mass with non-standard units by • using an intermediary object • using multiple copies of a unit • iterating a single unit - Selects and uses appropriate non-standard units to estimate, measure, and compare length, area, capacity, and mass.

	need to resemble the region being measured. The area of a rectangle can be perceived as square-shaped units structured in a two-dimensional array.				- Uses non-standard units as referents to estimate length (e.g., paper clips), area (e.g., square tiles), mass (e.g., cubes), and capacity (e.g., cups). **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. **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.
		Recognize the rearrangement of area in First Nations, Métis, or Inuit design.	**Measurement Unit 1: Area** 1: Investigating Area in First Nations, Métis, and Inuit Designs	N/A	**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).
		Compare non-standard units that tile to non-standard units that do not tile.	**Measurement Unit 1: Area** 2: Measuring Area Using Non-Standard Units 5: Consolidation	Unit 16 Question 5 (p. 106)	**Big Idea K-3: Many things in our world (e.g., objects, spaces, events) have attributes that can be measured and compared.** **Directly and Indirectly Comparing and Ordering Objects with the Same Measurable Attribute** - Directly compares and orders objects by length (e.g., by aligning ends), mass (e.g., using a balance scale), and area (e.g., by covering). - Compares objects indirectly by using an intermediary object. - Uses relative attributes to compare and order (e.g., longer/longest, taller/tallest, shorter/shortest). **Big Idea K-3: Assigning a unit to a continuous attribute allows us to measure and make comparisons.** **Selecting and Using Non-standard Units to Estimate, Measure, and Make Comparisons** - Uses whole number measures to estimate, measure, and compare (e.g., this book is 8 cubes long and my pencil is 5 cubes long). - Demonstrates ways to estimate, measure, compare, and order objects by length, area, capacity, and mass with non-standard units by • using an intermediary object • using multiple copies of a unit • iterating a single unit - Selects and uses appropriate non-standard units to estimate, measure, and compare length, area, capacity, and mass.

					- Uses non-standard units as referents to estimate length (e.g., paper clips), area (e.g., square tiles), mass (e.g., cubes), and capacity (e.g., cups).
		Measure area with non-standard units by tiling.	**Measurement Unit 1: Area** 2: Measuring Area Using Non-Standard Units 5: Consolidation	Unit 16 Question 5 (p. 106)	**Big Idea K-3: Many things in our world (e.g., objects, spaces, events) have attributes that can be measured and compared.** **Directly and Indirectly Comparing and Ordering Objects with the Same Measurable Attribute** - Directly compares and orders objects by length (e.g., by aligning ends), mass (e.g., using a balance scale), and area (e.g., by covering). - Compares objects indirectly by using an intermediary object. - Uses relative attributes to compare and order (e.g., longer/longest, taller/tallest, shorter/shortest). **Big Idea K-3: Assigning a unit to a continuous attribute allows us to measure and make comparisons.** **Selecting and Using Non-standard Units to Estimate, Measure, and Make Comparisons** - Uses whole number measures to estimate, measure, and compare (e.g., this book is 8 cubes long and my pencil is 5 cubes long). - Demonstrates ways to estimate, measure, compare, and order objects by length, area, capacity, and mass with non-standard units by • using an intermediary object • using multiple copies of a unit • iterating a single unit - Selects and uses appropriate non-standard units to estimate, measure, and compare length, area, capacity, and mass. - Uses non-standard units as referents to estimate length (e.g., paper clips), area (e.g., square tiles), mass (e.g., cubes), and capacity (e.g., cups).
		Measure area with standard units by tiling with square centimetres.	**Measurement Unit 1: Area** 3: Estimating and Measuring Area in Square Centimetres 5: Consolidation	Unit 16 Question 5 (p. 106)	**Big Idea: Many things in our world (e.g., objects, spaces, events) have attributes that can be measured and compared.** **Understanding Attributes That Can Be Measured, Compared, and Ordered** - Understands area as an attribute of 2-D shapes that can be measured and compared. **Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.** **Selecting and Using Units to Estimate, Measure, Construct, and Make Comparisons** - Develops understanding of square units (e.g., square unit, square cm, square m) to measure area of 2-D shapes.

		Visualize and model the area of various rectangles as two-dimensional arrays of square shaped units.	**Measurement Unit 1: Area** 4: Exploring Area of Rectangles 5: Consolidation	Unit 16 Questions 6, 7 (pp. 107-108)	**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. **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.
		Determine the area of a rectangle using multiplication.	**Measurement Unit 1: Area** 4: Exploring Area of Rectangles 5: Consolidation	Unit 16 Questions 7, 8, 9, 11 (pp. 108-110)	**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. **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.
		Solve problems involving area of rectangles.	**Measurement Unit 1: Area** 4: Exploring Area of Rectangles 5: Consolidation	Unit 16 Questions 8, 9, 10, 11 (pp. 108-110)	**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. **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.
Area can be estimated using a referent for a square centimetre.	Area can be estimated when less accuracy is required.	Identify referents for a square centimetre.	**Measurement Unit 1: Area** 3: Estimating and Measuring Area in Square Centimetres 5: Consolidation	Unit 16 Questions 5, 6 (pp. 106-107)	**Big Idea: Many things in our world (e.g., objects, spaces, events) have attributes that can be measured and compared.** **Understanding Attributes That Can Be Measured, Compared, and Ordered** - Understands area as an attribute of 2-D shapes that can be measured and compared. **Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.** **Selecting and Using Units to Estimate, Measure, Construct, and Make Comparisons** - Develops understanding of square units (e.g., square unit, square cm, square m) to measure area of 2-D shapes.
		Estimate an area by visualizing the iteration of a	**Measurement Unit 1: Area**	Unit 16 Questions 5, 6 (pp. 106-107)	**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**

		referent for a square centimetre.	3: Estimating and Measuring Area in Square Centimetres 5: Consolidation		- Understands area as an attribute of 2-D shapes that can be measured and compared. **Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.** **Selecting and Using Units to Estimate, Measure, Construct, and Make Comparisons** - Develops understanding of square units (e.g., square unit, square cm, square m) to measure area of 2-D shapes.
		Estimate an area by rearranging or combining partial units.	**Measurement Unit 1: Area** 3: Estimating and Measuring Area in Square Centimetres 5: Consolidation	Unit 16 Questions 5, 6 (pp. 106-107)	**Big Idea: Many things in our world (e.g., objects, spaces, events) have attributes that can be measured and compared.** **Understanding Attributes That Can Be Measured, Compared, and Ordered** - Understands area as an attribute of 2-D shapes that can be measured and compared. **Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.** **Selecting and Using Units to Estimate, Measure, Construct, and Make Comparisons** - Develops understanding of square units (e.g., square unit, square cm, square m) to measure area of 2-D shapes.
Guiding Question: In what ways can angles be described? **Learning Outcome:** Students determine and express angles using standard units.					
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 4 Activities**	**Mathology Practice Workbook 4**	**Pearson Canada Grades 4–9 Mathematics Learning Progression**
One degree represents $\frac{1}{360}$ of the rotation of a full circle. Angles can be classified according to their measure: • Acute angles measure less than 90°. • Right angles measure 90°. • Obtuse angles measure	Angles are quantified by measurement and based on the division of a circle. An angle is measured with equal-sized units that themselves are angles.	Measure an angle with degrees using a protractor.	**Geometry Unit 1: Shapes, Prisms, and Angles** 2: Classifying and Measuring Angles 3: Investigating Quadrilaterals 4: Classifying Triangles	Unit 5 Questions 9, 11 (pp. 31-33)	**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 angle as an attribute 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 angles using degrees. **Understanding Relationships Among Measured Units** - Uses nets to determine the surface area of 3-D objects composed of rectangles and triangles. - Investigates and generalizes sum of interior angles of triangles (i.e., sum of angles of a triangle is 180°). **Big Idea: 2-D shapes and 3-D solids can be analyzed and classified in different ways by their attributes.**

between 90° and 180°. • Straight angles measure 180°. A benchmark is a known angle to which another angle can be compared.					**Investigating Geometric Attributes and Properties of 2-D Shapes and 3-D Solids** - 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). **Investigating 2-D Shapes, 3-D Solids, and Their Attributes Through Composition and Decomposition** - Investigates 2-D shapes that do or do not have parallel and perpendicular lines.
		Describe an angle as acute, right, obtuse, or straight.	**Geometry Unit 1: Shapes, Prisms, and Angles** 2: Classifying and Measuring Angles	Unit 5 Questions 8, 13, 14 (pp. 31, 33-34)	**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 angle as an attribute 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 angles using degrees.
		Relate angles of 90°, 180°, 270°, and 360° to fractions of a circle.	**Geometry Unit 1: Shapes, Prisms, and Angles** 2: Classifying and Measuring Angles	N/A	**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 angle as an attribute 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 angles using degrees.
		Estimate angles by comparing to benchmarks of 45°, 90°, 180°, 270°, and 360°.	**Geometry Unit 1: Shapes, Prisms, and Angles** 2: Classifying and Measuring Angles	Unit 5 Questions 9, 14 (pp. 31, 34)	**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 angle as an attribute 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 angles using degrees.

Mathology Grade 4 Correlation (Patterns) – Alberta Curriculum

Organizing Idea:
Patterns: Awareness of patterns supports problem solving in various situations.

Guiding Question: How can sequence provide insight into change? **Learning Outcome:** Students interpret and explain arithmetic and geometric sequences.					
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 4 Activities**	**Mathology Practice Workbook 4**	**Pearson Canada Grades 4–9 Mathematics Learning Progression**
The sequences of triangular and square numbers are examples of increasing sequences. The Fibonacci sequence is an increasing sequence that occurs in nature.	Sequences may increase or decrease. Different representations can provide new perspectives of the increase or decrease of a sequence.	Investigate increasing sequences, including the Fibonacci sequence, in multiple representations.	**Patterning Unit 1: Increasing and Decreasing Sequences** 1: Investigating Unique Sequences 2: Investigating Increasing and Decreasing Arithmetic Sequences 5: Consolidation	Unit 1 Questions 1, 3, 5, 6, 9, 12 (pp. 2-6, 7)	**Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.** **Generalizing and Analyzing Patterns, Relations, and Functions** - Describes numeric and shape patterns using words and numbers. - Investigates and generalizes linear numeric and shape patterns using recursive rules (e.g., add 3 to the previous term) in relation to multiplication tables (e.g., How is 4, 7, 10, 13 similar to 3, 6, 9, 12?). **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.
		Create and explain increasing or decreasing sequences, including numerical sequences.	**Patterning Unit 1: Increasing and Decreasing Sequences** 1: Investigating Unique Sequences 2: Investigating Increasing and Decreasing Arithmetic Sequences 3: Representing Arithmetic Sequences 5: Consolidation	Unit 1 Questions 4, 6, 12 (pp. 4-5, 7)	**Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.** **Generalizing and Analyzing Patterns, Relations, and Functions** - Describes numeric and shape patterns using words and numbers. - Investigates and generalizes linear numeric and shape patterns using recursive rules (e.g., add 3 to the previous term) in relation to multiplication tables (e.g., How is 4, 7, 10, 13 similar to 3, 6, 9, 12?). **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.

		Express a numerical sequence to represent a concrete or pictorial sequence.	**Patterning Unit 1: Increasing and Decreasing Sequences** 1: Investigating Unique Sequences 2: Investigating Increasing and Decreasing Arithmetic Sequences 3: Representing Arithmetic Sequences 5: Consolidation	Unit 1 Questions 1, 6, 12 (pp. 2, 5, 7)	**Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.** **Generalizing and Analyzing Patterns, Relations, and Functions** - Describes numeric and shape patterns using words and numbers. - Investigates and generalizes linear numeric and shape patterns using recursive rules (e.g., add 3 to the previous term) in relation to multiplication tables (e.g., How is 4, 7, 10, 13 similar to 3, 6, 9, 12?). **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.
An arithmetic sequence progresses through addition or subtraction. A skip-counting sequence is an example of an arithmetic sequence. A geometric sequence progresses through multiplication. A geometric sequence begins at a number other than zero.	An arithmetic sequence has a constant difference between consecutive terms. A geometric sequence has a constant multiplicative change between consecutive terms.	Recognize arithmetic and geometric sequences.	**Patterning Unit 1: Patterns and Relations** 2: Investigating Increasing and Decreasing Arithmetic Sequences 3: Representing Arithmetic Sequences 4: Investigating Increasing and Decreasing Geometric Sequences 5: Consolidation	Unit 1 Questions 9, 11, 12 (pp. 5-7)	**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. **Generalizing and Analyzing Patterns, Relations, and Functions** - Generates terms of a pattern based on a given starting point and rule (limited to addition, subtraction, multiplication: e.g., start at 4 and add 5 each time creates the pattern 4, 9, 4, 19, etc.; writing or altering code to generate patterns). - Investigates and generalizes linear numeric and shape patterns using recursive rules (e.g., add 3 to the previous term) in relation to multiplication tables (e.g., How is 4, 7, 10, 13 similar to 3, 6, 9, 12?).
		Describe the initial term and the constant change in an arithmetic sequence.	**Patterning Unit 1: Increasing and Decreasing Sequences** 2: Investigating Increasing and Decreasing Arithmetic Sequences 3: Representing Arithmetic Sequences 4: Investigating Increasing and Decreasing Geometric Sequences 5: Consolidation	Unit 1 Questions 1, 3, 6, 11b, 12 (pp. 2-3, 5-7)	**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. **Generalizing and Analyzing Patterns, Relations, and Functions** - Generates terms of a pattern based on a given starting point and rule (limited to addition, subtraction, multiplication: e.g., start at 4 and add 5 each time creates the pattern 4, 9, 4, 19, etc.; writing or altering code to generate patterns). - Investigates and generalizes linear numeric and shape patterns using recursive rules (e.g., add 3 to the previous term) in relation to multiplication tables (e.g., How is 4, 7, 10, 13 similar to 3, 6, 9, 12?).

		Express the first five terms of an arithmetic sequence related to a given initial term and constant change.	**Patterning Unit 1: Increasing and Decreasing Sequences** 2: Investigating Increasing and Decreasing Arithmetic Sequences 3: Representing Arithmetic Sequences 4: Investigating Increasing and Decreasing Geometric Sequences 5: Consolidation	Unit 1 Question 5 (p. 4)	**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. **Generalizing and Analyzing Patterns, Relations, and Functions** - Generates terms of a pattern based on a given starting point and rule (limited to addition, subtraction, multiplication: e.g., start at 4 and add 5 each time creates the pattern 4, 9, 4, 19, etc.; writing or altering code to generate patterns). - Investigates and generalizes linear numeric and shape patterns using recursive rules (e.g., add 3 to the previous term) in relation to multiplication tables (e.g., How is 4, 7, 10, 13 similar to 3, 6, 9, 12?).
		Describe the initial term and the constant change in a geometric sequence.	**Patterning Unit 1: Increasing and Decreasing Sequences** 4: Investigating Increasing and Decreasing Geometric Sequences 5: Consolidation	Unit 1 Questions 9a-b, 11a, 11e, 12 (pp. 5-7)	**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. **Generalizing and Analyzing Patterns, Relations, and Functions** - Generates terms of a pattern based on a given starting point and rule (limited to addition, subtraction, multiplication: e.g., start at 4 and add 5 each time creates the pattern 4, 9, 4, 19, etc.; writing or altering code to generate patterns).
		Express the first five terms of a geometric sequence related to a given initial term and constant change.	**Patterning Unit 1: Increasing and Decreasing Sequences** 4: Investigating Increasing and Decreasing Geometric Sequences 5: Consolidation	N/A	**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. **Generalizing and Analyzing Patterns, Relations, and Functions** - Generates terms of a pattern based on a given starting point and rule (limited to addition, subtraction, multiplication: e.g., start at 4 and add 5 each time creates the pattern 4, 9, 4, 19, etc.; writing or altering code to generate patterns).

Mathology Grade 4 Correlation (Time) – Alberta Curriculum

Organizing Idea:
Time: Duration is described and quantified by time.

Guiding Question: What might be the relevance of duration to daily living?
Learning Outcome: Students communicate duration with standard units of time.

Knowledge	Understanding	Skills & Procedures	Mathology Grade 4 Activities	Mathology Practice Workbook 4	Pearson Canada Grades 4–9 Mathematics Learning Progression
Time of day can be expressed with fractions of a circle, including • quarter past the hour • half past the hour • quarter to the hour Duration can be determined by finding the difference between a start time and an end time.	Analog clocks can relate duration to a circle.	Relate durations of 15 minutes, 20 minutes, 30 minutes, 40 minutes, and 45 minutes to fractions of a circle.	**Measurement Unit 2: Time** 6: Exploring Duration 7: Solving Problems Involving Duration 8: Consolidation	Unit 10 Questions 7, 8, 13 (pp. 65-66, 68)	**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).
		Express time of day using fractions.	**Measurement Unit 2: Time** 6: Exploring Duration 8: Consolidation	Unit 10 Questions 6, 7, 8, 13 (pp. 65-66, 68)	**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).
		Determine duration in minutes using a clock.	**Measurement Unit 2: Time** 6: Exploring Duration 8: Consolidation	Unit 10 Question 7 (p. 65)	**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).

		Apply addition and subtraction strategies to the calculation of duration.	**Measurement Unit 2: Time** 7: Solving Problems Involving Duration 8: Consolidation	Unit 10 Questions 6, 7, 8, 9, 13 (pp. 65-66, 68)	**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).
		Convert between hours, minutes, and seconds.	**Measurement Unit 2: Time** 6: Exploring Duration 7: Solving Problems Involving Duration 8: Consolidation	Unit 10 Questions 10, 11, 12 (p. 67)	**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).
		Compare the duration of events using standard units.	**Measurement Unit 2: Time** 7: Solving Problems Involving Duration 8: Consolidation	Unit 10 Questions 6, 10 (pp. 65, 67)	**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).
		Solve problems involving duration.	**Measurement Unit 2: Time** 7: Solving Problems Involving Duration 8: Consolidation	Unit 10 Questions 6, 8, 9, 10, 13 (pp. 65-67, 68)	**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).

Mathology Grade 4 Correlation (Statistics) – Alberta Curriculum

Organizing Idea:
Statistics: The science of collecting, analyzing, visualizing, and interpreting data can inform understanding and decision making.

Guiding Question: In what ways can communication be shaped by the choice of representation? **Learning Outcome:** Students evaluate the use of scale in graphical representation of data.					
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 4 Activities**	**Mathology Practice Workbook 4**	**Pearson Canada Grades 4–9 Mathematics Learning Progression**
A statistical problem-solving process includes • formulating statistical questions • collecting data • representing data • interpreting data	Representation is part of a statistical problem-solving process.	Engage in a statistical problem-solving process.	**Data Unit 1: Data Management** 1: Interpreting and Drawing Pictographs and Dot Plots 2: Interpreting and Drawing Bar Graphs 3: Comparing Graphs 4: Consolidation	Unit 12 Questions 1, 2, 3, 4, 6, 9 (pp. 77-81, 83)	**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. **Drawing Conclusions by Making Inferences and Justifying Decisions Based on Data Collected** - Draws conclusions based on data presented.
Many-to-one correspondence is the representation of many objects using one object or interval on a graph. Common graphs include • pictographs • bar graphs • dot plots	Representation can express many-to-one correspondence by defining a scale. Different representations tell different stories about the same data.	Select an appropriate scale to represent data.	**Data Unit 1: Data Management** 3: Comparing Graphs 4: Consolidation	Unit 12 Questions 2, 3, 6, 9 (pp. 78-79, 81, 83)	**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. **Drawing Conclusions by Making Inferences and Justifying Decisions Based on Data Collected** - Draws conclusions based on data presented.
		Represent data in a graph using many-to-one	**Data Unit 1: Data Management**	Unit 12 Questions 2, 3, 6, 9 (pp. 78-79, 81, 83)	**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.**

		correspondence.	1: Interpreting and Drawing Pictographs and Dot Plots 2: Interpreting and Drawing Bar Graphs 3: Comparing Graphs 4: Consolidation		**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.
		Describe the effect of scale on representation.	**Data Unit 1: Data Management** 1: Interpreting and Drawing Pictographs and Dot Plots 2: Interpreting and Drawing Bar Graphs 3: Comparing Graphs 4: Consolidation	Unit 12 What I Learned (p. 83)	**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. **Drawing Conclusions by Making Inferences and Justifying Decisions Based on Data Collected** - Draws conclusions based on data presented.
		Justify the choice of graph used to represent certain data.	**Data Unit 1: Data Management** 3: Comparing Graphs 4: Consolidation	Unit 12 Question 3 (p. 79)	**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. **Drawing Conclusions by Making Inferences and Justifying Decisions Based on Data Collected** - Draws conclusions based on data presented.
		Compare different graphs of the same data.	**Data Unit 1: Data Management** 3: Comparing Graphs 4: Consolidation	Unit 12 Question 2 (p. 78)	**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. **Drawing Conclusions by Making Inferences and Justifying Decisions Based on Data Collected** - Draws conclusions based on data presented.

		Interpret data represented in various graphs.	**Data Unit 1: Data Management** 1: Interpreting and Drawing Pictographs and Dot Plots 2: Interpreting and Drawing Bar Graphs 4: Consolidation	Unit 12 Questions 1, 2, 3, 4, 6, 9 (pp. 77-81, 83)	**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. **Drawing Conclusions by Making Inferences and Justifying Decisions Based on Data Collected** - Draws conclusions based on data presented.

Mathology Grade 4 Correlation (Financial Literacy) – Alberta Curriculum

Organizing Idea:
Financial Literacy: Informed financial decision making contributes to the well-being of individuals, groups, and communities.

Guiding Question: What is personal finance? **Learning Outcome:** Students examine factors that influence spending.					
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 4 Activities**	**Mathology Practice Workbook 4**	**Pearson Canada Grades 4–9 Mathematics Learning Progression**
Money is commonly exchanged in the form of • currency • credit cards • debit cards • electronic transfer • prepaid cards Currency includes coins and paper money. Credit cards enable individuals to borrow money from banks or financial institutions. Credit cards • have a spending	Goods and services can be purchased in a variety of ways.	Identify a variety of situations that would use different forms of money.	**Number Unit 8: Financial Literacy** 32: Using Currency for Financial Transactions 33: Making Good Purchases 34: Exploring Banking Practices 35: Consolidation	Unit 14 Questions 2, 5 (pp. 91, 93)	**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** - Solves decimal number computation using efficient strategies.
		Consider a variety of factors when making decisions about spending money.	**Number Unit 8: Financial Literacy** 32: Using Currency for Financial Transactions 33: Making Good Purchases 35: Consolidation	Unit 14 Questions 3, 4, 7 (pp. 92, 94)	**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** - Solves decimal number computation using efficient strategies.

limit • must be repaid on time • have penalties if payment is not paid on time • are issued by a bank or financial institution Debit cards enable individuals to access money from a personal bank account. Prepaid cards have a fixed amount of money that can be spent. Factors to consider when spending include • budget • price comparison • quality and quantity • needs and wants					
Managing personal finances involves understanding banking practices, such as • bank accounts • deposits • withdrawals • service fees • interest • e-transfers • online banking Canada's first bank was the Bank of Montreal, founded in 1817.	Banking practices play a significant role in managing personal finances.	Describe the purpose of various banking practices.	**Number Unit 8: Financial Literacy** 34: Exploring Banking Practices 35: Consolidation	Unit 14 Questions 6, 8 (pp. 93-94)	N/A
		Apply various banking practices in a variety of contexts.	**Number Unit 8: Financial Literacy** 34: Exploring Banking Practices 35: Consolidation	Unit 14 Questions 6, 7, 8 (pp. 93-94)	N/A

Mathology Grade 4 Correlation (Computer Science) – Alberta Curriculum

Organizing Idea:
Computer Science: Problem solving and scientific inquiry are developed through the knowledgeable application of creativity, design, and computational thinking.

Guiding Question: How can design meet needs? **Learning Outcome:** Students examine and apply design processes to meet needs.					
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 4 Activities**	**Mathology Practice Workbook 4**	**Pearson Canada Grades 4–9 Mathematics Learning Progression**
Design processes include • understanding the problem • forming ideas (ideating) • planning • creating • analyzing • testing • troubleshooting Feedback helps to ensure all needs are considered during the design process. An algorithm is a sequence of instructions. Artifacts are objects or products made by humans, machines, or computers through the process of design. Design can produce many artifacts, including • algorithms	Design involves processes that can transform ideas into artifacts that meet needs.	Plan and create an artifact to meet a need. Provide feedback to others during the design process. Test an artifact to confirm that it meets intended needs. Collaborate to design an algorithm to solve a problem. Examine availability and cost of materials during design.	**Geometry Unit 1: Shapes, Prisms, and Angles** 6: Coding: Classifying Triangles Using Algorithms	Unit 7 Questions 1, 3-8 (pp. 42-44, 47)	**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. - Investigates and generalizes sum of interior angles of triangles (i.e., sum of angles of a triangle is 180°). **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, and classifies 2-D shapes based on their geometric properties (e.g., side lengths, angles, diagonals).

• models • prototypes • blueprints • programs • experiments • objects Design can deal with complex problems. Availability of materials and costs are considerations in design.					