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
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 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	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)
		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 **Number Unit 4: Decimals** 13: Exploring Tenths 14: Exploring Hundredths 19: 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)

decimal numbers, can be composed in various ways using place value. 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.	read and write numbers, including wholes and parts.	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)
		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)
		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)
		Recognize decimal notation expressed in English and in French.	**Number Unit 7: Operations with Decimals** 30: Adding and Subtracting Decimals	N/A

		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)
		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)
		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)
		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)

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**
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)
		Assess the reasonableness of a sum or difference using estimation.	**Number Unit 2: Fluency with Addition and Subtraction** 4: Estimating Sums and Differences 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 1, 2, 3, 6 (pp. 14-17) Unit 11 Questions 1, 2, 3, 4, 8 (pp. 69-70, 72) Unit 14 Question 1 (pp. 90-91)

		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)

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**
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)
		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)
		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)
		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)

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**
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)
		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)
		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)
		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)
		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)

		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)
		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)
		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)
		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)

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**
Equivalent fractions are associated with the same point on the number line. 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.	There are infinitely many equivalent fractions that represent the same number. Exactly one of infinitely many equivalent fractions is in simplest form.	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)
		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)
		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)
		Identify fractions in which the numerator and denominator have a common factor.	**Number Unit 3: Fractions** 10: Equivalent Fractions 11: Comparing and Ordering Fractions Consolidation	Unit 8 Questions 4, 5, 7 (pp. 51-53)
		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)
		Express a fraction in simplest form.	**Number Unit 3: Fractions** 10: Equivalent Fractions 12: Consolidation	Unit 8 Questions 4, 5, 7 (pp. 51-53)
		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)

Fractions and decimal numbers can represent the same number. Decimals can be expressed as fractions with a denominator that is equivalent to the place value of the last non-zero digit of the decimal number.	Decimal numbers that terminate (do not repeat) are fractions with denominators of 10, 100, etc. Fractions and decimal numbers that represent the same number are associated with the same point on the number line.	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
		Express fractions as decimal numbers and vice versa, limited to tenths and hundredths.	**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)

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**
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)
		Compare percentages within 100%.	**Number Unit 4: Decimals** 18: Investigating Percents 19: Consolidation	Unit 9 Questions 16, 17 (pp. 61-62)
		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)

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**
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)
		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)

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 11: Using Equations to Solve Problems 9: Solving Addition and Subtraction Equations 10: Solving Multiplication and Division Equations 12: Consolidation	Unit 17 Questions 1, 6 (pp. 111-112, 114)
		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 11: Using Equations to Solve Problems 9: Solving Addition and Subtraction Equations 10: Solving Multiplication and Division Equations 12: Consolidation	Unit 17 Question 2 (p. 112)
		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)
		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)

		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)

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**
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	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)
		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 6: Coding: Classifying Triangles Using Algorithms 7: Consolidation	Unit 5 Questions 10, 11, 14 (pp. 32-34)
		Identify relationships between the faces of three-dimensional models of prisms,	**Geometry Unit 1: Shapes, Prisms, and Angles** 1: Properties of Polygons and Prisms	Unit 5 Questions 3, 4, 14 (pp. 28-29, 34)

• rhombuses Side length can be used to describe triangles as • equilateral • isosceles • scalene Triangles can be classified according to angle as • right • obtuse • acute		including parallel or perpendicular, by measuring.	7: Consolidation	
		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)
		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 7: Consolidation	Unit 5 Questions 13, 14 (pp. 33-34)
		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)
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)
		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)

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**
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	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
		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
		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)
		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)
		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)

	with equal-sized units that themselves have area and do not 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.	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)
		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)
		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)
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)
		Estimate an area by visualizing the iteration of a referent 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)
		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)

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**
C ıe 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 between 90° and 180°. • Straight angles measure 180°. A benchmark is a known angle to which another angle can be compared.	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)
		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)
		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
		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)

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**
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)
		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)
		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)

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)
		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)
		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)
		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)
		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

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**
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)
		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)
		Determine duration in minutes using a clock.	**Measurement Unit 2: Time** 6: Exploring Duration 8: Consolidation	Unit 10 Question 7 (p. 65)
		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)
		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)

		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)
		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)

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**
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)
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)
		Represent data in a graph using many-to-one correspondence.	**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 2, 3, 6, 9 (pp. 78-79, 81, 83)

		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)
		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)
		Compare different graphs of the same data.	**Data Unit 1: Data Management** 3: Comparing Graphs 4: Consolidation	Unit 12 Question 2 (p. 78)
		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)

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**
Money is commonly exchanged in the form of • currency • credit cards • debit cards • electronic transfer • prepaid cards Currency includes coins and paper money.	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)
		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)

Credit cards enable individuals to borrow money from banks or financial institutions. Credit cards • have a spending 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)
		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)

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**
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.	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)

Artifacts are objects or products made by humans, machines, or computers through the process of design. Design can produce many artifacts, including • algorithms • models • prototypes • blueprints • programs • experiments • objects Design can deal with complex problems. Availability of materials and costs are considerations in design.				