Mathology Grade 6 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 the infinite nature of the number line broaden the perception of number?				
Learning Outcome: Students investigate magnitude with positive and negative numbers.				
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 6 Activities**	**Mathology Practice Workbook 6**
Negative numbers are to the left of zero on the number line visualized horizontally, and below zero on the number line visualized vertically. Positive numbers can be represented symbolically with or without a positive sign (+). Negative numbers are represented symbolically with	Symmetry of the number line extends infinitely to the left and right of zero or above and below zero. Direction relative to zero is indicated symbolically with a positive or negative sign. Magnitude with direction distinguishes between positive	Identify negative numbers in familiar contexts, including contexts that use vertical or horizontal models of the number line.	**Number Unit 2: Integers** 4: Representing Integers 7: Consolidation **Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 3: Introduction to Cartesian Planes	Unit 5 Questions 1, 2 (pp. 30-31) Unit 7 Question 11 (p. 49)
		Express positive and negative numbers symbolically, in context.	**Number Unit 2: Integers** 4: Representing Integers 7: Consolidation **Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 3: Introduction to Cartesian Planes	Unit 5 Questions 1, 2 (pp. 30-31) Unit 7 Question 11 (p. 49)

a negative sign (−). Zero is neither positive nor negative. Negative numbers communicate meaning in context, including • temperature • debt • elevation Magnitude is a number of units counted or measured from zero on the number line. Every positive number has an opposite negative number with the same magnitude. A number and its opposite are called additive inverses.	and negative numbers.	Relate magnitude to the distance from zero on the number line.	**Number Unit 2: Integers** 4: Representing Integers 7: Consolidation **Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 3: Introduction to Cartesian Planes	Unit 5 Questions 1, 2 (pp. 30-31) Unit 7 Question 12, 16 (pp. 50-51)
		Relate positive and negative numbers, including additive inverses, to their positions on horizontal and vertical models of the number line.	**Number Unit 2: Integers** 4: Representing Integers 7: Consolidation **Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 3: Introduction to Cartesian Planes	Unit 5 Questions 1, 2 (pp. 30-31) Unit 7 Questions 12, 15 (p. 50)
		Compare and order positive and negative numbers.	**Number Unit 2: Integers** 5: Comparing and Ordering Integers 7: Consolidation	Unit 2 Questions 3, 6 (pp. 9-10) Unit 7 Questions 13, 15, 16 (pp. 50-51)
		Express the relationship between two numbers, including positive and negative numbers, using <, >, or =.	**Number Unit 2: Integers** 5: Comparing and Ordering Integers 7: Consolidation	Unit 7 Question 14, 16 (pp. 50, 51)

The set of integers includes all natural numbers, their additive inverses, and zero. The sum of any number and its additive inverse is zero. The sum of two positive numbers is a positive number. The sum of two negative numbers is a negative number. The sum of a positive number and a negative number can be interpreted as the sum of zero and another number.	Any number can be expressed as a sum in infinitely many ways.	Investigate addition of an integer and its additive inverse.	**Number Unit 2: Integers** 6: Investigating Addition with Integers 7: Consolidation	Unit 8 Questions 9, 12 (pp. 56-57)
		Express zero as the sum of integers in multiple ways.	**Number Unit 2: Integers** 6: Investigating Addition with Integers 7: Consolidation	Unit 8 Question 9 (p. 56)
		Model the sum of two positive integers.	**Number Unit 2: Integers** 6: Investigating Addition with Integers 7: Consolidation	Unit 8 Questions 8, 12, 13 (pp. 56-58)
		Model the sum of two negative integers.	**Number Unit 2: Integers** 6: Investigating Addition with Integers 7: Consolidation	Unit 8 Questions 8, 12, 13 (pp. 56-58)
		Model the sum of a positive and negative integer as the sum of zero and another integer.	**Number Unit 2: Integers** 6: Investigating Addition with Integers 7: Consolidation	Unit 8 Questions 8, 11, 12, 13 (pp. 56-58)
		Add any two integers.	**Number Unit 2: Integers** 6: Investigating Addition with Integers 7: Consolidation	Unit 8 Questions 8, 9, 10, 11, 12, 13 (pp. 56-58)
Subtracting a number is the same as adding its additive inverse.	The difference of any two numbers can be interpreted as a sum.	Express a difference as a sum.	**Number Unit 2: Integers** 6: Investigating Addition with Integers 7: Consolidation	N/A

Guiding Question: How can the processes of addition and subtraction be applied to problem solving?				
Learning Outcome: Students solve problems using standard algorithms for addition and subtraction.				
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 6 Activities**	**Mathology Practice Workbook 6**
Standard algorithms are reliable procedures for addition and subtraction. Contexts for problems involving addition and subtraction include money and metric measurement.	Addition and subtraction of numbers in problem-solving contexts is facilitated by standard algorithms.	Solve problems in various contexts using standard algorithms for addition and subtraction.	**Number Unit 4: Operations with Fractions, Decimals, and Percents** 18: Problem Solving with Money 19: Consolidation	Unit 8 Questions 1, 2, 3, 13 (pp. 52-53, 58) Unit 11 Question 11 (p. 78)

Guiding Question: How can prime factorization and exponentiation provide new perspectives of numbers?				
Learning Outcome: Students analyze numbers using prime factorization and exponentiation.				
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 6 Activities**	**Mathology Practice Workbook 6**
The order in which three or more numbers are multiplied does not affect the product (associative property). Any composite number can be expressed as a product of smaller numbers (factorization).	A product can be composed in multiple ways.	Compose a product in multiple ways, including with more than two factors.	**Number Unit 1: Number Relationships** 1: Investigating Prime Factorization 3: Consolidation	Unit 2 Questions 7, 13, 16 (pp. 11, 13-14)
	The prime factors of a number provide a picture of its divisibility.	Express the prime factorization of a composite number.	**Number Unit 1: Number Relationships** 1: Investigating Prime Factorization 3: Consolidation	Unit 2 Question 13 (p. 13)
		Determine common factors for two natural numbers, using prime factorization.	**Number Unit 1: Number Relationships** 1: Investigating Prime Factorization 3: Consolidation	Unit 2 Questions 11, 14 (pp. 12-13)

| Prime factorization represents a number as a product of prime numbers.

Any composite factor of a number can be determined from its prime factors.		Determine divisibility of a natural number from its prime factorization.	**Number Unit 1: Number Relationships** 1: Investigating Prime Factorization 2: Investigating Powers and Divisibility of Numbers 3: Consolidation	Unit 2 Question 14 (p. 13)
Repeated multiplication of identical factors can be represented symbolically as a power (exponentiation).

A power, A^n, includes a base, A, representing the repeated factor, and an exponent, n, indicating the number of repeated factors.

Any repeated prime factor within a prime factorization can be expressed as a power. | Different representations of a product can provide new perspectives of its divisibility.

A power is divisible by its base. | Identify the base and exponent in a power. | **Number Unit 1: Number Relationships**
2: Investigating Powers and Divisibility of Numbers
3: Consolidation | Unit 2 Question 13 (p. 13) |
| | | Express the product of identical factors as a power, including within a prime factorization. | **Number Unit 1: Number Relationships**
1: Investigating Prime Factorization
2: Investigating Powers and Divisibility of Numbers
3: Consolidation | Unit 2 Question 13 (p. 13) |
| | | Describe the divisibility of numbers represented in various forms. | **Number Unit 1: Number Relationships**
1: Investigating Prime Factorization
2: Investigating Powers and Divisibility of Numbers
3: Consolidation | Unit 2 Question 12, 14, 15, 16 (pp. 12-14) |

Guiding Question: How can the processes of multiplication and division be applied to decimal numbers?				
Learning Outcome: Students apply standard algorithms to multiplication and division of decimal and natural numbers.				
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 6 Activities**	**Mathology Practice Workbook 6**
Standard algorithms are reliable procedures for multiplication and division of numbers, including decimal numbers.

A quotient with a remainder can be expressed as a decimal number. | Multiplication and division of decimal numbers is facilitated by standard algorithms. | Explain the standard algorithms for multiplication and division of decimal numbers. | **Number Unit 4: Operations with Fractions, Decimals, and Percents**
13: Multiplying Decimals by 2-Digit Numbers
14: Dividing Decimals by 2-Digit Numbers
19: Consolidation | Unit 12 Questions 1, 3 (pp. 81-83) |
| | | Multiply and divide up to 3-digit natural or decimal numbers by 2-digit natural numbers, using standard algorithms. | **Number Unit 4: Operations with Fractions, Decimals, and Percents**
13: Multiplying Decimals by 2-Digit Numbers
14: Dividing Decimals by 2-Digit Numbers
19: Consolidation | Unit 12 Questions 1, 3, 5, 14 (pp. 81-84, 87) |
| | | Assess the reasonableness of a product or quotient using estimation. | **Number Unit 4: Operations with Fractions, Decimals, and Percents**
13: Multiplying Decimals by 2-Digit Numbers
14: Dividing Decimals by 2-Digit Numbers
19: Consolidation | Unit 12 Questions 1, 2, 3 (pp. 81-83) |
| | | Solve problems using multiplication and division, including problems involving money. | **Number Unit 4: Operations with Fractions, Decimals, and Percents**
13: Multiplying Decimals by 2-Digit Numbers
14: Dividing Decimals by 2-Digit Numbers
18: Problem Solving with Money
19: Consolidation | Unit 12 Question 4 (p. 83)

Unit 11 Question 11 (p. 78) |

Guiding Question: How can equal sharing contribute meaning to fractions?

Learning Outcome: Students relate fractions to quotients.

Knowledge	Understanding	Skills & Procedures	Mathology Grade 6 Activities	Mathology Practice Workbook 6
An equal-sharing situation can be represented by a fraction in which the numerator represents the quantity to be shared and the denominator represents the number of shares. Division can be used to determine an equal share. Division of the numerator by the denominator of a fraction provides the equivalent decimal number.	Fractions represent quotients in equal-sharing situations. All equivalent fractions represent the same quotient.	Model an equal-sharing situation in more than one way.	**Number Unit 3: Fractions, Decimals, Percents, Ratios, and Rates** 8: Relating Fractions to Quotients 12: Consolidation	Unit 7 Question 4 (p. 46)
		Describe an equal-sharing situation using a fraction.	**Number Unit 3: Fractions, Decimals, Percents, Ratios, and Rates** 8: Relating Fractions to Quotients 12: Consolidation	Unit 7 Question 4 (p. 46)
		Express a fraction as a division statement and vice versa.	**Number Unit 3: Fractions, Decimals, Percents, Ratios, and Rates** 8: Relating Fractions to Quotients 12: Consolidation	Unit 7 Question 4 (p. 46)
		Convert a quotient from fraction to decimal form using division.	**Number Unit 3: Fractions, Decimals, Percents, Ratios, and Rates** 8: Relating Fractions to Quotients 12: Consolidation	Unit 7 Questions 8, 9, 15, 16 (pp. 48, 50-51)

Guiding Question: How can the addition and subtraction of fractions be generalized?			
Learning Outcome: Students add and subtract fractions with denominators within 100.			

Knowledge	Understanding	Skills & Procedures	Mathology Grade 6 Activities	Mathology Practice Workbook 6
Addition and subtraction of fractions is facilitated by representing the fractions with common denominators.

Denominators are related if one is a multiple of the other.

Multiplication of one denominator by the factor that relates it to another denominator achieves common denominators.

The product of the denominators of two fractions provides a common denominator. | Fractions with common denominators have the same units.

Any numbers with the same unit can be compared, added, or subtracted. | Recognize two fractions with related denominators. | **Number Unit 4: Operations with Fractions, Decimals, and Percents**
15: Adding and Subtracting Fractions
19: Consolidation | Unit 7 Questions 3, 5, 15 (p. 46, 50)

Unit 8 Questions 5, 13 (pp. 54, 58) |
| | | Determine the factor that relates one denominator to another. | **Number Unit 4: Operations with Fractions, Decimals, and Percents**
15: Adding and Subtracting Fractions
19: Consolidation | Unit 7 Questions 3, 5, 15 (p. 46, 50)

Unit 8 Questions 5, 13 (pp. 54, 58) |
| | | Express two fractions with common denominators. | **Number Unit 4: Operations with Fractions, Decimals, and Percents**
15: Adding and Subtracting Fractions
19: Consolidation | Unit 7 Questions 3, 5, 15 (p. 46, 50)

Unit 8 Questions 5, 13 (pp. 54, 58) |
| | | Add and subtract fractions. | **Number Unit 4: Operations with Fractions, Decimals, and Percents**
15: Adding and Subtracting Fractions
19: Consolidation | Unit 8 Questions 4, 5, 6, 7, 13 (pp. 54-55, 58) |
| | | Solve problems involving addition and subtraction of fractions. | **Number Unit 4: Operations with Fractions, Decimals, and Percents**
15: Adding and Subtracting Fractions
19: Consolidation | Unit 8 Questions 6, 7 (p. 55) |

Guiding Question: How can an understanding of multiplication be extended to fractions?				
Learning Outcome: Students interpret the multiplication of natural numbers by fractions.				
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 6 Activities**	**Mathology Practice Workbook 6**
Multiplication of a natural number by a fraction is equivalent to multiplication by the fraction's numerator and division by its denominator. $a \times \dfrac{b}{c} = \dfrac{ab}{c}$ Multiplication by a unit fraction is equivalent to division by its denominator. $a \times \dfrac{1}{b} = \dfrac{a}{b}$ The product of a fraction and a natural number is the fraction with • a numerator that is the product of the numerator of the given fraction and the natural number • a denominator that is the denominator of the given fraction $\dfrac{a}{b} \times c = \dfrac{ac}{b}$	Multiplication does not always result in a larger number. Multiplication of a natural number by a fraction can be interpreted as repeated addition of the fraction. Multiplication of a fraction by a natural number can be interpreted as taking part of a quantity.	Relate multiplication of a natural number by a fraction to repeated addition of the fraction.	**Number Unit 4: Operations with Fractions, Decimals, and Percents** 16: Multiplying Natural Numbers by Proper Fractions 19: Consolidation	Unit 12 Question 11 (p. 86)
		Multiply a natural number by a fraction.	**Number Unit 4: Operations with Fractions, Decimals, and Percents** 16: Multiplying Natural Numbers by Proper Fractions 19: Consolidation	Unit 12 Questions 11, 12, 14 (pp. 86-87)
		Relate multiplication by a unit fraction to division.	**Number Unit 4: Operations with Fractions, Decimals, and Percents** 16: Multiplying Natural Numbers by Proper Fractions 19: Consolidation	Unit 12 Question 12 (p. 86)
		Multiply a natural number by a unit fraction.	**Number Unit 4: Operations with Fractions, Decimals, and Percents** 16: Multiplying Natural Numbers by Proper Fractions 19: Consolidation	Unit 12 Question 12 (p. 86)
		Model a fraction of a natural number.	**Number Unit 4: Operations with Fractions, Decimals, and Percents** 16: Multiplying Natural Numbers by Proper Fractions 19: Consolidation	Unit 12 Question 11 (p. 86)
		Multiply a fraction by a natural number.	**Number Unit 4: Operations with Fractions, Decimals, and Percents** 16: Multiplying Natural Numbers by Proper Fractions 19: Consolidation	Unit 12 Questions 11, 12, 14 (pp. 86-87)

		Solve problems using multiplication of a fraction and a natural number.	**Number Unit 4: Operations with Fractions, Decimals, and Percents** 16: Multiplying Natural Numbers by Proper Fractions 19: Consolidation	Unit 12 Question 12 (p. 86)

Guiding Question: In what ways can equivalent ratios support proportional reasoning?

Learning Outcome: Students apply equivalence to the interpretation of ratios and rates.

Knowledge	Understanding	Skills & Procedures	Mathology Grade 6 Activities	Mathology Practice Workbook 6
A proportional relationship exists when one quantity is a multiple of the other. Equivalent ratios can be created by multiplying or dividing both terms of a given ratio by the same number. A proportion is an expression of equivalence between two ratios. A rate describes the proportional relationship represented by a set of equivalent ratios.	All equivalent ratios express the same proportional relationship. A rate can be used to extend a given proportional relationship to different quantities.	Determine whether two ratios are equivalent.	**Number Unit 3: Fractions, Decimals, Percents, Ratios, and Rates** 10: Equivalent Ratios and Rates 12: Consolidation	Unit 3 Questions 12, 13, 14 (pp. 19-20)
		Determine an equivalent ratio using a proportion.	**Number Unit 3: Fractions, Decimals, Percents, Ratios, and Rates** 10: Equivalent Ratios and Rates 12: Consolidation	Unit 3 Questions 10, 11, 13, 14 (pp. 18-20)
		Express a unit rate to represent a given rate, including unit price and speed.	**Number Unit 3: Fractions, Decimals, Percents, Ratios, and Rates** 11: Unit Rates 12: Consolidation	Unit 3 Question 5, 6, 7, 8 (pp. 17-18) Unit 13 Question 2 (p. 89)
		Relate percentage of a number to a proportion.	**Number Unit 3: Fractions, Decimals, Percents, Ratios, and Rates** 9: Relating Fractions, Decimals, and Percents 12: Consolidation **Number Unit 4: Operations with Fractions, Decimals, and Percents** 17: Using Mental Math to Calculate Percents	Unit 7 Questions 9, 10 (pp. 48-49) Unit 12 Question 7 (p. 84)

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A unit rate expresses a proportional relationship as a rate with a second term of 1. A percentage describes a proportional relationship between a quantity and 100.		Determine a percent of a number, limited to percentages within 100%	**Number Unit 3: Fractions, Decimals, Percents, Ratios, and Rates** 9: Relating Fractions, Decimals, and Percents 12: Consolidation **Number Unit 4: Operations with Fractions, Decimals, and Percents** 17: Using Mental Math to Calculate Percents 18: Problem Solving with Money	Unit 12 Questions 7, 8, 9, 14 (pp. 84-85, 87)
Percent of a number can be determined by multiplying the number by the percent and dividing by 100.		Solve problems involving ratios, rates, and proportions.	**Number Unit 3: Fractions, Decimals, Percents, Ratios, and Rates** 10: Equivalent Ratios and Rates 11: Unit Rates 12: Consolidation	Unit 3 Questions 8, 10, 13 (pp. 18-19) Unit 12 Questions 7, 9, 10 (pp. 84-85)

Mathology Grade 6 Correlation (Algebra) – Alberta Curriculum

Organizing Idea:

Algebra: Equations express relationships between quantities.

Guiding Question: How can expressions support a generalized interpretation of number?				
Learning Outcome: Students analyze expressions and solve algebraic equations.				
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 6 Activities**	**Mathology Practice Workbook 6**
Numerical expressions can include powers. The conventional order of operations includes performing operations in parentheses, followed by evaluating powers before other operations.	The conventional order of operations can be applied to simplify or evaluate expressions.	Evaluate numerical expressions involving operations in parentheses and powers according to the order of operations.	**Patterning Unit 2: Variables and Equations** 5: Order of Operations 9: Consolidation	Unit 3 Questions 1, 2, 3, 4, 14 (pp. 15-16, 20) Unit 14 Questions 7, 13 (pp. 99, 102)
Algebraic terms with exactly the same variable are like terms. Constant terms are like terms. Like terms can be combined through addition or subtraction.	Algebraic properties ensure equivalence of algebraic expressions.	Investigate like terms by modelling an algebraic expression.	**Patterning Unit 2: Variables and Equations** 6: Investigating Algebraic Expressions 7: Investigating Algebraic Properties 9: Consolidation	Unit 14 Question 1 (p. 96)

The terms of an algebraic expression can be rearranged according to algebraic properties. Algebraic properties include • commutative property of addition: $a + b = b + a$, for any two numbers a and b • commutative property of multiplication: $ab = ba$, for any two numbers a and b • associative property of addition: $(a + b) + c = a + (b + c)$ • associative property of multiplication: $a(bc) = b(ac)$ • distributive property: $a(b + c) = ab + ac$		Simplify algebraic expressions by combining like terms.	**Patterning Unit 2: Variables and Equations** 6: Investigating Algebraic Expressions 7: Investigating Algebraic Properties 9: Consolidation	Unit 14 Questions 2, 3 (p. 97)
		Express the terms of an algebraic expression in a different order in accordance with algebraic properties.	**Patterning Unit 2: Variables and Equations** 6: Investigating Algebraic Expressions 7: Investigating Algebraic Properties 9: Consolidation	Unit 14 Question 2 (p. 97)
All simplified forms of an equation have the same solution.	Algebraic expressions on each side of an equation can be simplified into equivalent expressions to facilitate equation solving.	Simplify algebraic expressions on both sides of an equation.	**Patterning Unit 2: Variables and Equations** 8: Writing and Solving Equations 9: Consolidation	Unit 14 Questions 4, 5, 13 (p. 98, 102)
		Solve equations, limited to equations with one or two operations.	**Patterning Unit 2: Variables and Equations** 8: Writing and Solving Equations 9: Consolidation	Unit 14 Questions 6, 8, 9, 10, 11, 13 (pp. 99-102)

		Determine different strategies for solving equations.	**Patterning Unit 2: Variables and Equations** 8: Writing and Solving Equations 9: Consolidation	Unit 14 Questions 6, 8, 9, 10, 11, 13 (pp. 99-102)
		Verify the solution to an equation by evaluating expressions on each side of the equation.	**Patterning Unit 2: Variables and Equations** 8: Writing and Solving Equations 9: Consolidation	Unit 14 Questions 9, 10 (p. 100)
		Solve problems using equations, limited to equations with one or two operations.	**Patterning Unit 2: Variables and Equations** 8: Writing and Solving Equations 9: Consolidation	Unit 14 Questions 9, 10, 11 (pp. 100-101)

Mathology Grade 6 Correlation (Geometry) – Alberta Curriculum

Organizing Idea:

Geometry: Shapes are defined and related by geometric attributes.

Guiding Question: How can congruence support interpretation of symmetry?					
Learning Outcome: Students analyze shapes through symmetry and congruence.				
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 6 Activities**	**Mathology Practice Workbook 6**
Symmetrical shapes can be mapped by any combination of reflections and rotations. A tessellation is the tiling of a plane with symmetrical shapes. Tessellations are evident in First Nations and Métis star blanket designs that	Symmetry is a relationship between two shapes that can be mapped exactly onto each other through reflection or rotation.	Verify symmetry of two shapes by reflecting or rotating one shape onto another.	**Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 1: Exploring Congruence and Symmetry 2: Investigating Tessellations 6: Consolidation	Unit 4 Question 11 (p. 28)
		Describe the symmetry between two shapes as reflection symmetry or rotation symmetry.	**Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 1: Exploring Congruence and Symmetry 2: Investigating Tessellations 6: Consolidation	Unit 4 Question 11 (p. 28) Unit 5 Questions 6, 7, 8, 9 (pp. 33-36)
		Visualize and describe a combination of two transformations that relate symmetrical shapes.	**Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 1: Exploring Congruence and Symmetry 2: Investigating Tessellations 6: Consolidation	Unit 5 Questions 4, 9 (pp. 32, 36)

convey a specific purpose.		Describe the symmetry modelled in a tessellation.	**Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 1: Exploring Congruence and Symmetry 2: Investigating Tessellations 6: Consolidation	N/A
		Investigate tessellations found in objects, art, or architecture.	**Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 2: Investigating Tessellations 6: Consolidation	N/A
Shapes related by symmetry are congruent to each other. Congruent shapes may not be related by symmetry.	Congruence is a relationship between two shapes of identical size and shape. Congruence is not dependent on orientation or location of the shapes.	Demonstrate congruence between two shapes in any orientation by superimposing using hands-on materials or digital applications.	**Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 1: Exploring Congruence and Symmetry 6: Consolidation	Unit 4 Question 11 (p. 28)
		Describe symmetrical shapes as congruent.	**Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 1: Exploring Congruence and Symmetry 2: Investigating Tessellations 6: Consolidation	Unit 4 Question 11 (p. 28) Unit 5 Questions 3, 4, 6, 7, 8 (pp. 31-35)

Mathology Grade 6 Correlation (Coordinate Geometry) – Alberta Curriculum

Organizing Idea:

Coordinate Geometry: Location and movement of objects in space can be communicated using a coordinate grid.

Guiding Question: In what ways can location be communicated?				
Learning Outcome: Students explain location and movement in relation to position in the Cartesian plane.				
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 6 Activities**	**Mathology Practice Workbook 6**
The Cartesian plane is named after French mathematician René Descartes.

The Cartesian plane uses coordinates, (x, y), to indicate the location of the point where the vertical line passing through $(x, 0)$ and the horizontal line passing through $(0, y)$ intersect.

The x-axis consists of those points whose y-coordinate is zero and the y-axis consists of | Location can be described using the Cartesian plane.

The Cartesian plane is the two-dimensional equivalent of the number line. | Relate the axes of the Cartesian plane to intersecting horizontal and vertical representations of the number line. | **Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane**
3: Introduction to Cartesian Planes
6: Consolidation | Unit 5 Questions 1, 2 (pp. 30-31) |
| | | Locate a point in the Cartesian plane given the coordinates of the point. | **Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane**
3: Introduction to Cartesian Planes
6: Consolidation | Unit 5 Question 1, 2 (pp. 30-31)

Unit 6 Question 3 (pp. 39-40) |
| | | Describe the location of a point in the Cartesian plane using coordinates. | **Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane**
3: Introduction to Cartesian Planes
6: Consolidation | Unit 5 Questions 2, 5, 6 (pp. 31, 33) |

those points whose *x*-coordinate is zero. The *x*-axis and the *y*-axis intersect at the origin, (0, 0). An ordered pair is represented symbolically as (*x*, *y*). An ordered pair indicates the horizontal distance from the *y*-axis with the *x*-coordinate and the vertical distance from the *x*-axis with the *y*-coordinate.		Model a polygon in the Cartesian plane using coordinates to indicate the vertices.	**Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 3: Introduction to Cartesian Planes 4: Translating Polygons on a Cartesian Plane 5: Reflecting and Rotating Polygons on a Cartesian Plane 6: Consolidation	Unit 5 Question 6 (p. 33) Unit 6 Question 3 (pp. 39-40)
		Describe the location of the vertices of a polygon in the Cartesian plane using coordinates.	**Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 3: Introduction to Cartesian Planes 4: Translating Polygons on a Cartesian Plane 5: Reflecting and Rotating Polygons on a Cartesian Plane 6: Consolidation	Unit 5 Questions 6, 7 (pp. 33-35)
A translation describes a combination of horizontal and vertical movements as a single movement. A reflection describes movement across a line of reflection. A rotation describes an amount of movement around a turn centre along a circular path in either a clockwise or counter-clockwise direction.	Location can change as a result of movement in space. Change in location does not imply change in orientation.	Create an image of a polygon in the Cartesian plane by translating the polygon.	**Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 4: Translating Polygons on a Cartesian Plane 6: Consolidation	Unit 5 Questions 6, 7 (pp. 33-35)
		Describe the horizontal and vertical components of a given translation.	**Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 4: Translating Polygons on a Cartesian Plane 6: Consolidation	Unit 5 Questions 6, 7 (pp. 33-35) Unit 6 Question 3 (pp. 39-40)
		Create an image of a polygon in the Cartesian plane by reflecting the polygon over the *x*-axis or *y*-axis.	**Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 5: Reflecting and Rotating Polygons on a Cartesian Plane 6: Consolidation	Unit 5 Question 7 (p. 34)

		Describe the line of reflection of a given reflection.	**Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 5: Reflecting and Rotating Polygons on a Cartesian Plane 6: Consolidation	Unit 6 Question 3 (pp. 39-40)
		Create an image of a polygon in the Cartesian plane by rotating the polygon 90°, 180°, or 270° about one of its vertices, clockwise or counter-clockwise.	**Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 5: Reflecting and Rotating Polygons on a Cartesian Plane 6: Consolidation	Unit 5 Questions 6, 7 (pp. 33-35)
		Describe the angle and direction of a given rotation.	**Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 5: Reflecting and Rotating Polygons on a Cartesian Plane 6: Consolidation	Unit 5 Question 8 (p. 35)
		Relate the coordinates of a polygon and its image after translation, reflection, or rotation in the Cartesian plane.	**Geometry Unit 1: 2-D Shapes, Transformations, and the Cartesian Plane** 4: Translating Polygons on a Cartesian Plane 5: Reflecting and Rotating Polygons on a Cartesian Plane 6: Consolidation	Unit 5 Question 7 (pp. 34-35)

Mathology Grade 6 Correlation (Measurement) – Alberta Curriculum

Organizing Idea:

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

Guiding Question: In what ways can shapes be related using conservation of area?				
Learning Outcome: Students analyze areas of parallelograms and triangles.				
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 6 Activities**	**Mathology Practice Workbook 6**
A parallelogram is any quadrilateral with two pairs of parallel and equal sides. Any side of a parallelogram can be interpreted as the base. The height of a parallelogram is the perpendicular distance from its base to its opposite side. The area of a	The area of a parallelogram can be generalized as the product of the perpendicular base and height. The area of a triangle can be interpreted relative to the area of a parallelogram.	Rearrange the area of a parallelogram to form a rectangular area using hands-on materials or digital applications.	**Measurement Unit 1: Area and Volume** 1: Areas of Parallelograms and Triangles 5: Consolidation	N/A
		Determine the area of a parallelogram using multiplication.	**Measurement Unit 1: Area and Volume** 1: Areas of Parallelograms and Triangles 5: Consolidation	Unit 13 Questions 3, 5, 7 (pp. 89, 91-92)
		Determine the base or height of a parallelogram using division.	**Measurement Unit 1: Area and Volume** 1: Areas of Parallelograms and Triangles 5: Consolidation	Unit 13 Question 6 (p. 91)

		Model the area of a parallelogram as two congruent triangles.	**Measurement Unit 1: Area and Volume** 1: Areas of Parallelograms and Triangles 5: Consolidation	Unit 13 Question 7 (p. 92)
triangle is half of the area of a parallelogram with the same base and height. Two triangles with the same base and height must have the same area.		Describe the relationship between the area of a triangle and the area of a parallelogram with the same base and height.	**Measurement Unit 1: Area and Volume** 1: Areas of Parallelograms and Triangles 5: Consolidation	Unit 13 Question 7 (p. 92)
		Determine the area of a triangle, including various triangles with the same base and height.	**Measurement Unit 1: Area and Volume,** 1: Areas of Parallelograms and Triangles 5: Consolidation	Unit 13 Questions 3, 4, 5, 12 (pp. 89-91, 94)
		Solve problems involving the areas of parallelograms and triangles.	**Measurement Unit 1: Area and Volume** 1: Areas of Parallelograms and Triangles 5: Consolidation	Unit 13 Question 6 (p. 91)
Area of composite shapes can be interpreted as the sum of the areas of multiple shapes, such as triangles and parallelograms.	An area can be decomposed in infinitely many ways.	Visualize the decomposition of composite areas in various ways.	**Measurement Unit 1: Area and Volume** 2: Determining Area of Composite Shapes 5: Consolidation	Unit 13 Questions 4, 5 (p. 90-91)
		Determine the area of composite shapes using the areas of triangles and parallelograms.	**Measurement Unit 1: Area and Volume** 2: Determining Area of Composite Shapes 5: Consolidation	Unit 13 Questions 4, 5 (p. 90-91)

Guiding Question: How can volume characterize space?				
Learning Outcome: Students interpret and express volume.				
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 6 Activities**	**Mathology Practice Workbook 6**
Volume can be measured in non-standard units or standard units. Volume is expressed in the following standard units, derived from standard units of length: • cubic centimetres • cubic metres A cubic centimetre (cm^3) is a volume equivalent to the volume of a cube measuring 1 centimetre by 1 centimetre by 1 centimetre. A cubic metre (m^3) is a volume equivalent to the volume of a cube measuring 1 metre by 1 metre by	Volume is a measurable attribute that describes the amount of three-dimensional space occupied by a three-dimensional shape. The volume of a prism can be interpreted as the result of perpendicular motion of an area. Volume remains the same when decomposed or rearranged. Volume is quantified by measurement. Volume is measured with congruent units that themselves	Recognize volume in familiar contexts.	**Measurement Unit 1: Area and Volume** 3: Investigating Volume 4: Investigating Volume with Rectangular Prisms 5: Consolidation	Unit 13 Questions 9, 10, 11 (pp. 92-93)
		Model volume of prisms by dragging or iterating an area using hands-on materials or digital applications.	**Measurement Unit 1: Area and Volume** 4: Investigating Volume with Rectangular Prisms 5: Consolidation	N/A
		Create a model of a three-dimensional shape by stacking congruent non-standard units or cubic centimetres without gaps or overlaps.	**Measurement Unit 1: Area and Volume** 3: Investigating Volume 4: Investigating Volume with Rectangular Prisms 5: Consolidation	N/A
		Express volume in non-standard units or cubic centimetres.	**Measurement Unit 1: Area and Volume** 3: Investigating Volume 4: Investigating Volume with Rectangular Prisms 5: Consolidation	Unit 13 Questions 8, 9, 10, 11 (pp. 92-93)
		Visualize and model the volume of various right rectangular prisms as three-dimensional arrays of cube-shaped units.	**Measurement Unit 1: Area and Volume** 4: Investigating Volume with Rectangular Prisms 5: Consolidation	Unit 13 Question 9 (p. 92)

1 metre. The volume of a right rectangular prism can be interpreted as the product of the two-dimensional base area and the perpendicular height of the prism.	have volume and do not need to resemble the shape being measured. The volume of a right rectangular prism can be perceived as cube-shaped units structured in a three-dimensional array.	Determine the volume of a right rectangular prism using multiplication.	**Measurement Unit 1: Area and Volume** 4: Investigating Volume with Rectangular Prisms 5: Consolidation	Unit 13 Questions 8, 9, 10, 11 (pp. 92-93)
		Solve problems involving volume of right rectangular prisms.	**Measurement Unit 1: Area and Volume** 4: Investigating Volume with Rectangular Prisms 5: Consolidation	Unit 13 Questions 9, 10, 11 (pp. 92-93)

Mathology Grade 6 Correlation (Patterns) – Alberta Curriculum

Organizing Idea:

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

Guiding Question: How can a function enhance interpretation of change?				
Learning Outcome: Students investigate functions to enhance understanding of change.				
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 6 Activities**	**Mathology Practice Workbook 6**
A variable can be interpreted as the values of a changing quantity. A function can involve quantities that change over time, such as • height of a person or plant • temperature • distance travelled A table of values lists the values of the independent variable in the first column or row and the values of the	A function is a correspondence between two changing quantities represented by independent and dependent variables. Each value of the independent variable in a function corresponds to exactly one value of the dependent	Identify the dependent and independent variables in a given situation, including situations involving change over time.	**Patterning Unit 1: Functions** 1: Investigating Functions 2: Representing Functions Algebraically 3: Solving Problems Involving Functions 4: Consolidation	Unit 1 Questions 2, 3 (pp. 3-4)
		Describe the rule that determines the values of the dependent variable from values of the independent variable.	**Patterning Unit 1: Functions** 1: Investigating Functions 2: Representing Functions Algebraically 3: Solving Problems Involving Functions 4: Consolidation	Unit 1 Questions 1, 2, 3, 7, 8 (pp. 2-4, 7-8)

dependent variable in the second column or row to represent a function at certain points. The values of the independent variable are represented by *x*-coordinates in the Cartesian plane. The values of the dependent variable are represented by *y*-coordinates in the Cartesian plane.	variable.	Represent corresponding values of the independent and dependent variables of a function in a table of values and as points in the Cartesian plane.	**Patterning Unit 1: Functions** 1: Investigating Functions 4: Consolidation	Unit 1 Questions 1, 2, 3, 5, 8 (pp. 2-4, 6, 8)
		Write an algebraic expression that represents a function.	**Patterning Unit 1: Functions** 2: Representing Functions Algebraically 3: Solving Problems Involving Functions 4: Consolidation	Unit 1 Questions 1, 2, 3, 7, 8 (pp. 2-4, 7-8)
		Recognize various representations of the same function.	**Patterning Unit 1: Functions** 1: Investigating Functions 4: Consolidation	Unit 1 Questions 5, 8 (pp. 6, 8)
		Determine a value of the dependent variable of a function given the corresponding value of the independent variable.	**Patterning Unit 1: Functions** 2: Representing Functions Algebraically 3: Solving Problems Involving Functions 4: Consolidation	Unit 1 Questions 1, 2, 3, 7 (pp. 2-4, 7)
		Investigate strategies for determining a value of the independent variable of a function given the corresponding value of the dependent variable.	**Patterning Unit 1: Functions** 3: Solving Problems Involving Functions 4: Consolidation	Unit 1 Question 7 (p. 7)
		Solve problems involving a function.	**Patterning Unit 1: Functions** 3: Solving Problems Involving Functions 4: Consolidation	Unit 1 Question 4 (p. 5)

Mathology Grade 6 Correlation (Statistics) – Alberta Curriculum

Organizing Idea:

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

Guiding Question: How can frequency support communication?				
Learning Outcome: Students investigate relative frequency using experimental data.				
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 6 Activities**	**Mathology Practice Workbook 6**
Relative frequency can be used to compare the same category of data across multiple data sets. Relative frequency can be represented in various forms.	Relative frequency expresses the frequency of a category of data as a fraction of the total number of data values.	Interpret frequency of categorized data as relative frequency.	**Data Management Unit 1: Statistics** 2: Exploring Relative Frequency 6: Consolidation	Unit 10 Questions 1, 2, 3, 4, 5, 6, 7, 8 (pp. 67-72)
		Express relative frequencies as decimals, fractions, or percentages.	**Data Management Unit 1: Statistics** 2: Exploring Relative Frequency 3: Conducting Experiments 4: Analyzing Relative Frequency 6: Consolidation	Unit 10 Questions 1, 3, 4, 5, 7, 8 (pp. 67-72)
Equally likely outcomes of an experiment have the same chance of occurring. An event can be described as a	Frequency can be a count of categorized observations or trials in an experiment.	Identify the possible outcomes of an experiment involving equally likely outcomes.	**Data Management Unit 1: Statistics** 1: Describing the Likelihood of Events 3: Conducting Experiments 4: Analyzing Relative Frequency 5: Coding: Exploring Statistics with Coding 6: Consolidation	Unit 10 Questions 3, 4, 7, 8 (pp. 68-69, 71-72)

combination of potential outcomes of an experiment, including • heads or tails from a coin toss • any roll of a die • the result of spinning a spinner The law of large numbers states that more independent trials of an experiment result in a better estimate of the expected likelihood of an event.	Relative frequency of outcomes can be used to estimate the likelihood of an event. Relative frequency varies between sets of collected data. Relative frequency provides a better estimate of the likelihood of an event with larger amounts of data.	Collect categorized data through experiments.	**Data Management Unit 1: Statistics** 3: Conducting Experiments 4: Analyzing Relative Frequency 5: Coding: Exploring Statistics with Coding 6: Consolidation	Unit 10 Questions 5, 7, 8 (pp. 70-72)
		Predict the likelihood of an event based on the possible outcomes of an experiment.	**Data Management Unit 1: Statistics** 1: Describing the Likelihood of Events 3: Conducting Experiments 4: Analyzing Relative Frequency 5: Coding: Exploring Statistics with Coding 6: Consolidation	Unit 10 Questions 1, 3, 4, 5, 7, 8 (pp. 67-72)
		Determine relative frequency for categories of a sample of data.	**Data Management Unit 1: Statistics** 2: Exploring Relative Frequency 5: Coding: Exploring Statistics with Coding 6: Consolidation	Unit 10 Questions 5, 7, 8 (pp. 70-72)
		Describe the likelihood of an outcome in an experiment using relative frequency.	**Data Management Unit 1: Statistics** 3: Conducting Experiments 4: Analyzing Relative Frequency 5: Coding: Exploring Statistics with Coding 6: Consolidation	Unit 10 Questions 1, 3, 4, 5, 7, 8 (pp. 67-72)
		Analyze relative frequency statistics from experiments with different sample sizes.	**Data Management Unit 1: Statistics** 3: Conducting Experiments 4: Analyzing Relative Frequency 5: Coding: Exploring Statistics with Coding 6: Consolidation	Unit 10 Questions 5, 7, 8 (pp. 70-72)

Mathology Grade 6 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: How can personal finances be enhanced?				
Learning Outcome: Students investigate borrowing and investing in a variety of situations.				
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 6 Activities**	**Mathology Practice Workbook 6**
A loan is money that is borrowed with an agreement to pay it back. A loan can come from a variety of sources, such as • banks • financial institutions • family • friends The decision to borrow money may be based on • ability to repay • intended purpose • additional costs • short-term and long-term goals • impact on budget	Borrowing money to buy goods and services can have financial risks and benefits. Borrowing money can support financial goals if done appropriately.	Analyze the risks and benefits of borrowing money in a variety of situations.	**Number Unit 5: Financial Literacy** 20: Borrowing Money 22: Consolidation	Unit 11 Questions 5, 6 (p. 75)
		Identify situations where an individual can responsibly take on debt.	**Number Unit 5: Financial Literacy** 20: Borrowing Money 22: Consolidation	Unit 11 Questions 3, 6 (pp. 74-75)

Decisions by banks or financial institutions to loan money may be based on • ability to repay • previous loan history • other existing debts • intended purpose Borrowing money through loans can cost money in the form of interest on the amount borrowed and over the term of the agreement. Interest is a fee paid to the bank or financial institution that loaned the money.				
Investing is purchasing something that is expected to earn additional money or increase in value. Individuals can make a variety of investments, such as • real estate • stocks • digital currencies • bonds • mutual funds	Investing money can have financial risks and benefits.	Analyze the risks and benefits of investing in a variety of situations.	**Number Unit 5: Financial Literacy** 21: Investing Money 22: Consolidation	Unit 11 Question 7 (p. 76)

Mathology Grade 6 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: In what ways are abstraction, design, and coding related?				
Learning Outcome: Students examine abstraction in relation to design and coding, and describe impacts of technologies.				
Knowledge	**Understanding**	**Skills & Procedures**	**Mathology Grade 6 Activities**	**Mathology Practice Workbook 6**
The process of abstraction includes • determining what details to keep and what to ignore • removing unnecessary details • identifying important information • generalizing patterns Information is data that is organized to be more useful. An abstraction is a simplified version of something complex. Abstractions can make daily life easier; e.g.,	Abstraction is used in design and coding of computational artifacts to make problems easier to think about.	Apply abstraction during the design process. Identify examples of abstractions encountered in daily life. Discuss the role of design and coding in society. Use a visual block-based language to design code that includes relevant design structures.	**Data Management Unit 1: Statistics** 5: Coding: Exploring Statistics with Coding	Unit 6 Questions 4, 5, 6 (pp. 41-42)

• simple controls on appliances • light switches • steering wheels • apps Computational artifacts can be designed to address societal needs and wants; e.g., • weather modelling • communications • automotive controls • medical research • apps Structures used in coding include • sequences • conditionals (if-then-else statements) • loops Sequence structures are ordered sets of instructions within code. Conditional structures are statements that tell computers to complete different actions based on different situations.			