Correlation of the Alberta Mathematics Program of Study with Mathology Grade 7 (Number)

Curriculum Outcomes	Grade 7 Mathology.ca	Pearson Canada Grades 4–9 Mathematics Learning Progression
General Outcome Develop number sense.		
Specific Outcomes 1. Determine and explain why a number is divisible by 2, 3, 4, 5, 6, 8, 9 or 10, and why a number cannot be divided by 0.	**Number Unit 1: Number Relationships** 1: Developing Divisibility Rules for 2, 4, 5, 8, and 10 2: Developing Divisibility Rules for 3, 6, and 9 3: Relating Factors, Multiples, and Divisibility	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Investigating number and arithmetic properties** - Examines and classifies whole numbers based on their properties (e.g., even/odd; prime; composite; divisible by 2, 5, 10). - Uses reasoning and knowledge of factors to examine divisibility of numbers (by 4, 8, 3, 6, and 9).
2. Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals to solve problems (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected).	**Number Unit 4: Operations with Decimals, Percents, and Fractions** 16: Multiplying Decimals 17: Dividing Decimals 18: Applying the Order of Operations with Decimals **Number Unit 5: Financial Literacy** 22: Calculating Sales Taxes and Tips 23: Calculating Sales Taxes and Discounts	**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. **Investigating number and arithmetic properties** - Evaluates equations with brackets using order of operations.
3. Solve problems involving percents from 1% to 100%.	**Number Unit 3: Fractions, Decimals, and Percents** 14: Relating Fractions, Decimals, and Percents **Number Unit 4: Operations with Decimals, Percents, and Fractions** 19: Working with Percents	**Big Idea: Numbers are related in many ways.** **Using ratios, rates, proportions, and percents creates a relationship between quantities** - Understands and applies the concept of percentage as a rate per hundred (e.g., calculating sales tax, tips, or discounts).

	Number Unit 5: Financial Literacy 22: Calculating Sales Taxes and Tips 23: Calculating Sales Taxes and Discounts	
4. Demonstrate an understanding of the relationship between positive terminating decimals and positive fractions and between positive repeating decimals and positive fractions.	**Number Unit 3: Fractions, Decimals, and Percents** 12: Converting Between Fractions and Decimals	**Big Idea: Numbers are related in many ways.** **Decomposing and composing numbers to investigate equivalencies** - Understands that all fractions are equivalent to either terminating or repeating decimals. - Models and explains the relationship between a fraction and its equivalent decimal form.
5. Demonstrate an understanding of adding and subtracting positive fractions and mixed numbers, with like and unlike denominators, concretely, pictorially and symbolically (limited to positive sums and differences).	**Number Unit 4: Operations with Decimals, Percents, and Fractions** 20: Adding Fractions and Mixed Numbers 21: Subtracting Fractions and Mixed Numbers	**Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Developing conceptual meaning of operations** - Models and demonstrates an understanding of fraction addition and subtraction. **Developing fluency of operations** - Solves fraction addition and subtraction using efficient strategies.
6. Demonstrate an understanding of addition and subtraction of integers, concretely, pictorially and symbolically.	**Number Unit 2: Fluency with Integers** 5: Representing Integers 6: Adding Integers 7: Subtracting Integers 8: Solving Problems Involving Integers	**Big Idea: The set of real numbers is infinite.** **Extending whole number understanding to the set of real numbers** - Understands that a positive integer and its negative opposite are the same distance from zero (e.g., both 5 and –5 are five units from zero on a number line). **Big Idea: Numbers are related in many ways.** **Comparing and ordering quantities (multitude or magnitude)** - Compares, orders, and locates integers. **Big Idea: Quantities and numbers can be operated on to determine how many and how much.** **Developing conceptual meaning of operations** - Models and demonstrates an understanding of integer addition and subtraction.
7. Compare and order positive fractions, positive decimals (to thousandths) and whole numbers by using: • benchmarks • place value • equivalent fractions and/or decimals.	**Number Unit 3: Fractions, Decimals, and Percents** 13: Comparing and Ordering Fractions and Decimals	**Big Idea: Numbers are related in many ways.** **Comparing and ordering quantities (multitude or magnitude)** - Compares, orders, and locates positive rational numbers using flexible strategies.

Correlation of the Alberta Mathematics Program of Study with Mathology Grade 7 (Patterns and Relations: Patterns)

Curriculum Outcomes	Grade 7 Mathology.ca	Pearson Canada Grades 4–9 Mathematics Learning Progression
General Outcome Use patterns to describe the world and to solve problems.		
Specific Outcomes 1. Demonstrate an understanding of oral and written patterns and their equivalent linear relations.	**Patterning Unit 1: Linear Patterns and Equations** 2: Writing an Expression to Describe a Linear Pattern	**Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.** **Representing patterns, relations, and functions** - Matches different representations of the same linear relation (e.g., graph, equation, table of values). **Using variables, algebraic expressions, and equations to represent mathematical relations** - Identifies and describes the meaning of parts of an equation using mathematical terms (e.g., sum, coefficient, factor, variable, constant). - Writes expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as $3n + 2$).
2. Create a table of values from a linear relation, graph the table of values, and analyze the graph to draw conclusions and solve problems.	**Patterning Unit 1: Linear Patterns and Equations** 1: Representing Patterns 6: Writing and Solving Patterns Involving Linear Relations	**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. - Generates ordered pairs for a linear relation and plots the coordinates on a graph. (Limited to integer values on four quadrants.) - Matches different representations of the same linear relation (e.g., graph, equation, table of values) - Differentiates between linear and non-linear relations by their graphical representation.

		- Models and solves problems with integers using linear equations in different forms (e.g., $ax = b$; $ax + b = c$; $a(x + b) = c$). **Big Idea: Patterns and relations can be represented with symbols, equations, and expressions.** **Using variables, algebraic expressions, and equations to represent mathematical relations** - Evaluates algebraic expressions, including formulas, given specific values for the variables (e.g., evaluate $3r - 12$, when $r = 3$; $\frac{1}{2}bh$, when base is 12 cm and height is 5 cm). - Writes expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as $3n + 2$).

Correlation of the Alberta Mathematics Program of Study with Mathology Grade 7 (Patterns and Relations: Variables and Equations)

Curriculum Outcomes	Grade 7 Mathology.ca	Pearson Canada Grades 4–9 Mathematics Learning Progression
General Outcome Represent algebraic expressions in multiple ways.		
Specific Outcomes 3. Demonstrate an understanding of preservation of equality by: • modelling preservation of equality, concretely, pictorially and symbolically • applying preservation of equality to solve equations.	**Patterning Unit 1: Linear Patterns and Equations** 4: Modelling and Solving One-Step Equations 6: Writing and Solving Problems Involving Linear Relations	**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.** - Investigates and models the meaning of preservation of equality of single variable equations (e.g., $3x = 12$). - Applies arithmetic properties (e.g., distributive, commutative, identities) to identify, transform, and generate equivalent numeric expressions (e.g., $3(2 + 5) = (2 + 5) + (2 + 5) + (2 + 5)$). - Models the preservation of equality to solve equations involving integer coefficients (e.g., $-4m + 16 = -12$). **Using variables, algebraic expressions, and equations to represent mathematical relations** - Evaluates algebraic expressions, including formulas, given specific values for the variables (e.g., evaluate $3r - 12$, when $r = 3$; $\frac{1}{2}bh$, when base is 12 cm and height is 5 cm). - Writes expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as $3n + 2$). **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. - Models and solves problems with integers using linear equations in different forms (e.g., $ax = b$; $ax + b = c$; $a(x + b) = c$).

4. Explain the difference between an expression and an equation.	**Patterning Unit 1: Linear Patterns and Equations** 3: Evaluating Expressions and Writing Equations	**Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.** **Representing patterns, relations, and functions** - Matches different representations of the same linear relation (e.g., graph, equation, table of values) **Big Idea: Patterns and relations can be represented with symbols, equations, and expressions.** **Using variables, algebraic expressions, and equations to represent mathematical relations** - Evaluates algebraic expressions, including formulas, given specific values for the variables (e.g., evaluate $3r - 12$, when $r = 3$; $\frac{1}{2}bh$, when base is 12 cm and height is 5 cm). - Writes expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as $3n + 2$).
5. Evaluate an expression, given the value of the variable(s).	**Patterning Unit 1: Linear Patterns and Equations** 3: Evaluating Expressions and Writing Equations	**Big Idea**: **Regularity and repetition form patterns that can be generalized and predicted mathematically.** **Representing patterns, relations, and functions** - Matches different representations of the same linear relation (e.g., graph, equation, table of values) **Big Idea: Patterns and relations can be represented with symbols, equations, and expressions.** **Using variables, algebraic expressions, and equations to represent mathematical relations** - Evaluates algebraic expressions, including formulas, given specific values for the variables (e.g., evaluate $3r - 12$, when $r = 3$; $\frac{1}{2}bh$, when base is 12 cm and height is 5 cm). - Writes expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as $3n + 2$).
6. Model and solve, concretely, pictorially and symbolically, problems that can be represented by one-step linear equations of the form $x + a = b$, where a and b are integers.	**Patterning Unit 1: Linear Patterns and Equations** 4: Modelling and Solving One-Step Equations	**Big Idea: Patterns and relations can be represented with symbols, equations, and expressions.** **Understanding equality and inequality, building on generalized properties of numbers and operations.** - Investigates and models the meaning of preservation of equality of single variable equations (e.g., $3x = 12$). - Applies arithmetic properties (e.g., distributive, commutative, identities) to identify, transform, and generate equivalent numeric expressions (e.g., $3(2 + 5) = (2 + 5) + (2 + 5) + (2 + 5)$). - Models the preservation of equality to solve equations involving integer coefficients (e.g., $-4m + 16 = -12$).

7. Model and solve, concretely, pictorially and symbolically, problems that can be represented by linear equations of the form: • $ax + b = c$ • $ax = b$ • $\frac{x}{a} = b$, a ≠ 0 where a, b and c are whole numbers.	**Patterning Unit 1: Linear Patterns and Equations** 5: Modelling and Solving Multi-Step Equations 6: Writing and Solving Problems Involving Linear Relations	**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.** - Investigates and models the meaning of preservation of equality of single variable equations (e.g., $3x = 12$). - Models the preservation of equality to solve equations involving integer coefficients (e.g., $–4m + 16 = –12$). **Using variables, algebraic expressions, and equations to represent mathematical relations** - Evaluates algebraic expressions, including formulas, given specific values for the variables (e.g., evaluate $3r = 12$, when $r = 3$; $\frac{1}{2}bh$, when base is 12 cm and height is 5 cm). - Writes expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as $3n + 2$). **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. - Models and solves problems with integers using linear equations in different forms (e.g., $ax = b$; $ax + b = c$; $a(x + b) = c$).

Correlation of the Alberta Mathematics Program of Study with Mathology Grade 7 (Shape and Space: Measurement)

Curriculum Outcomes	Grade 7 Mathology.ca	Pearson Canada Grades 4–9 Mathematics Learning Progression
General Outcome Use direct and indirect measurement to solve problems.		
Specific Outcomes 1. Demonstrate an understanding of circles by: • describing the relationships among radius, diameter and circumference • relating circumference to pi • determining the sum of the central angles • constructing circles with a given radius or diameter • solving problems involving the radii, diameters and circumferences of circles.	**Measurement Unit 1:** **2-D Shapes and 3-D Solids** 1: Exploring Circles 2: Calculating Circumference 3: Exploring Central Angles	**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, or ordered** - Understands circumference as the measure around a circle. **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** - Relates angle measures to arcs and sectors of a circle. - Constructs circles based on radius and diameter measures. **Understanding relationships among measured units** - Develops and generalizes strategies to compute the circumference and area of circles.
2. Develop and apply a formula for determining the area of: • triangles • parallelograms • circles.	**Measurement Unit 1:** **2-D Shapes and 3-D Solids** 4: Determining the Area of Triangles and Parallelograms 5: Estimating and Determining the Area of a Circle	**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 the circumference and area of circles. **Big Idea: 2-D shapes and 3-D solids can be analyzed and classified in different ways by their attributes.** **Investigating 2-D shapes, 3-D solids, and their attributes through composition and decomposition**

		- Constructs and decomposes polygons into shapes with known areas (e.g., triangles, rectangles). **Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.** **Understanding relationships among measured units** - Develops and generalizes strategies to compute area of triangles, quadrilaterals, and other polygons (e.g., decomposing a parallelogram and rearranging to form a rectangle).

Correlation of the Alberta Mathematics Program of Study with Mathology Grade 7 (Shape and Space: 3-D Objects and 2-D Shapes)

Curriculum Outcomes	Grade 7 Mathology.ca	Pearson Canada Grades 4–9 Mathematics Learning Progression
General Outcome Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.		
Specific Outcomes 3. Perform geometric constructions, including: • perpendicular line segments • parallel line segments • perpendicular bisectors • angle bisectors.	**Measurement Unit 1:** **2-D Shapes and 3-D Solids** 6: Constructing Lines 7: Constructing Bisectors	**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** - Identifies and draws parallel, intersecting, and perpendicular lines. - Performs geometric constructions to gain insight into properties of lines, angles, and polygons (e.g., constructs perpendicular bisectors, 45° angles, angle bisectors, equilateral triangle).

Correlation of the Alberta Mathematics Program of Study with Mathology Grade 7 (Shape and Space: Transformations)

Curriculum Outcomes	Grade 7 Mathology.ca	Pearson Canada Grades 4–9 Mathematics Learning Progression
General Outcome Describe and analyze position and motion of objects and shapes.		
Specific Outcomes 4. Identify and plot points in the four quadrants of a Cartesian plane, using integral ordered pairs.	**Geometry Unit 1: Transformations on a Cartesian Plane** 1: Exploring the Cartesian Plane	**Big Idea: Objects can be located in space and viewed from multiple perspectives.** **Locating and mapping objects in space** - Identifies, locates, and plots points, polygon vertices, and lines on a Cartesian plane in all four quadrants. (Limited to integers.)
5. Perform and describe transformations (translations, rotations or reflections) of a 2-D shape in all four quadrants of a Cartesian plane (limited to integral number vertices).	**Geometry Unit 1: Transformations on a Cartesian Plane** 2: Translating 2-D Shapes on a Cartesian Plane 3: Reflecting and Rotating 2-D Shapes on a Cartesian Plane 4: Combining Transformations	**Big Idea: Objects can be located in space and viewed from multiple perspectives.** **Locating and mapping objects in space** - Analyzes and predicts the location of 2-D shapes under transformation on a Cartesian plane. - Analyzes and locates points, lines, and shapes on a Cartesian plane after successive transformations.

Correlation of the Alberta Mathematics Program of Study with Mathology Grade 7 (Statistics and Probability: Data Analysis)

Curriculum Outcomes	Grade 7 Mathology.ca	Pearson Canada Grades 4–9 Mathematics Learning Progression
General Outcome Collect, display and analyze data to solve problems.		
Specific Outcomes 1. Demonstrate an understanding of central tendency and range by: • determining the measures of central tendency (mean, median, mode) and range • determining the most appropriate measures of central tendency to report findings.	**Data Management Unit 1: Data Management** 1: Exploring Measures of Data 2: Determining Mean and Mode 3: Determining Median and Range 4: Comparing Measures of Central Tendency	**Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphic displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.** **Creating graphical displays of collected data** - Creates charts and graphs with appropriate titles and labels to represent data collected. - Represents data graphically using many -to-one correspondence with appropriate scales and intervals. **Reading and interpreting data displays and analyzing variability** - Reads and interprets data displays using many-to-one correspondence. - Visualizes and determines the mean of a data set. - Visualizes and determines the median value as a middle measure representing a whole data set. - Understands and describes the differences between the central tendency values (i.e., mode, median, mean) and explores which measure is most appropriate for the data collected. **Using the language and tools of chance to describe and predict events** - Describes data using frequency counts (e.g., 5 people chose peppermint) and modal value (e.g., dogs are the most common pets).

2. Determine the effect on the mean, median and mode when an outlier is included in a data set.	**Data Management Unit 1: Data Management** 5: Exploring the Impact of Outliers on Mean, Median, and Mode	**Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphic displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.** **Reading and interpreting data displays and analyzing variability** - Explains the effect of removing or changing values (including outliers) on measures of central tendency.
3. Construct, label and interpret circle graphs to solve problems.	**Data Management Unit 1: Data Management** 6: Exploring Circle Graphs 7: Constructing Circle Graphs	**Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphic displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.** **Creating graphical displays of collected data** - Creates graphical representations to illustrate parts of a whole (e.g., circle graph) **Drawing conclusions by making inferences and justifying decisions based on data collected** - Draw conclusions based on data presented.

Correlation of the Alberta Mathematics Program of Study with Mathology Grade 7 (Statistics and Probability: Chance and Uncertainty)

Curriculum Outcomes	Grade 7 Mathology.ca	Pearson Canada Grades 4–9 Mathematics Learning Progression
General Outcome Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.		
Specific Outcomes 4. Express probabilities as ratios, fractions and percents.	**Data Management Unit 2: Probability** 8: Writing Experimental Probabilities	**Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphic displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.** **Using the language and tools of chance to describe and predict events** - Determines the relative frequency of each outcome in an experiment involving two independent events by performing multiple trials.
5. Identify the sample space (where the combined sample space has 36 or fewer elements) for a probability experiment involving two independent events.	**Data Management Unit 2: Probability** 9: Identifying and Representing Sample Spaces	**Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphic displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.** **Using the language and tools of chance to describe and predict events** - Determines and represents theoretical probability of outcomes for two independent events (e.g., rolling a die and tossing a coin) using graphical tools (e.g., tree diagram, lists, matrix).

6. Conduct a probability experiment to compare the theoretical probability (determined using a tree diagram, table or other graphic organizer) and experimental probability of two independent events.	**Data Management Unit 2: Probability** 10: Exploring Theoretical and Experimental Probability	**Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphic displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.** **Using the language and tools of chance to describe and predict events** - Determines and represents theoretical probability of outcomes for two independent events (e.g., rolling a die and tossing a coin) using graphical tools (e.g., tree diagram, lists, matrix).