



## Correlation of the Alberta Mathematics Program of Study with Mathology Grade 8 (Number)

Curriculum Outcomes	Grade 8 Mathology.ca	Mathology Practice Workbook 8	Pearson Canada Grades 4–9 Mathematics Learning Progression
<b>General Outcome</b> Develop number sense.			
<b>Specific Outcomes</b> 1. Demonstrate an understanding of perfect squares and square roots, concretely, pictorially and symbolically (limited to whole numbers).	<b>Number Unit 1: Fluency with Whole Numbers and Integers</b> 1: Investigating Perfect Squares and Square Roots	Unit 2 Questions 1-3, 5, 8, 9, 11 (pp. 10-13)	<b>Big Idea: Numbers are related in many ways. Decomposing and composing numbers to investigate equivalencies</b> - Models and expresses the inverse relationship between perfect squares and square roots. <b>Big Idea: Quantities and numbers can be operated on to determine how many and how much. Developing conceptual meaning of operations</b> - Models and demonstrates an understanding of squares and square roots.
2. Determine the approximate square root of numbers that are not perfect squares (limited to whole numbers).	<b>Number Unit 1: Fluency with Whole Numbers and Integers</b> 1: Investigating Perfect Squares and Square Roots	Unit 2 Questions 4, 6, 7, 22, 23, 26, 27 (pp. 11, 12, 16-18)	<b>Big Idea: Numbers are related in many ways. Decomposing and composing numbers to investigate equivalencies</b> - Models and expresses the inverse relationship between perfect squares and square roots. <b>Big Idea: Quantities and numbers can be operated on to determine how many and how much. Developing conceptual meaning of operations</b> - Models and demonstrates an understanding of squares and square roots.

<p>3. Demonstrate an understanding of percents greater than or equal to 0%, including greater than 100%.</p>	<p><b>Number Unit 2: Proportions, Ratios, Rates, and Percent</b>  11: Working with Whole Number Percents  12: Working with Fractional Percents  13: Solving Percent Problems</p> <p><b>Number Unit 4: Financial Literacy</b>  20: Solving Problems Involving Coupons and Discounts</p>	<p>Unit 6 Question 4, 25, 28, 29, 30, 32, 33 (p. 54, 62-64)</p> <p>Unit 10 Questions 5, 7 (pp. 99-100)</p>	<p><b>Big Idea: Numbers are related in many ways. Using ratios, rates, proportions, and percents creates a relationship between quantities</b></p> <ul style="list-style-type: none"> <li>- Understands and applies the concept of percentage as a rate per 100 (e.g., calculating sales tax, tips, or discount).</li> <li>- Understands the meaning of percents greater than 100% and less than 1%</li> </ul>
<p>4. Demonstrate an understanding of ratio and rate.</p>	<p><b>Number Unit 2: Proportions, Ratios, Rates, and Percent</b>  7: Exploring Ratios  8: Relating Ratio and Proportion  9: Exploring Rates</p>	<p>Unit 6 Questions 1, 2, 5, 21, 22 (pp. 52-54, 60-62)</p>	<p><b>Big Idea: Numbers are related in many ways. Using ratios, rates, proportions, and percents creates a relationship between quantities</b></p> <ul style="list-style-type: none"> <li>- Solves for missing values and determines equivalent ratios and rates using flexible strategies (e.g., tables, graphing, unit rates, <math>\frac{a}{b} = \frac{c}{d}</math> relationship).</li> <li>- Demonstrates multiplicative reasoning by applying unit rates in whole number contexts (e.g., If she earns \$12 per hour, how much will she earn for 5 h of work?).</li> <li>- Understands and applies the concept of unit rates (e.g., If 3 kg is \$5, how much is 1 kg or how many kg for \$1?).</li> </ul> <p><b>Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically. Generalizing and analyzing patterns, relations, and functions</b></p> <ul style="list-style-type: none"> <li>- Analyzes the relationship between values of two linear number patterns (e.g., P1 is 2, 4, 6, 8, ...; and P2 is 3, 6, 9, 12, ...; as P1 goes up by 1, P2 goes up by 3).</li> </ul>

<p>5. Solve problems that involve rates, ratios and proportional reasoning.</p>	<p><b>Number Unit 2: Proportions, Ratios, Rates, and Percent</b>  7: Exploring Ratios  8: Relating Ratio and Proportion  9: Exploring Rates  10: Solving Problems Involving Proportions, Ratios, and Rate</p> <p><b>Number Unit 4: Financial Literacy</b>  21: Calculating the Best Buy</p>	<p>Unit 3 Questions 13-16, (pp. 25-26)</p> <p>Unit 6 Questions 3, 4, 6-14, 16-20, 24, 34 (pp. 53-62, 65)</p> <p>Unit 10 Questions 11-14 (pp. 101-103)</p> <p>Unit 11 Question 21a, 23 (pp. 114, 115)</p>	<p><b>Big Idea: Numbers are related in many ways. Using ratios, rates, proportions, and percents creates a relationship between quantities</b></p> <ul style="list-style-type: none"> <li>- Solves for missing values and determines equivalent ratios and rates using flexible strategies (e.g., tables, graphing, unit rates, <math>\frac{a}{b} = \frac{c}{d}</math> relationship).</li> <li>- Demonstrates multiplicative reasoning by applying unit rates in whole number contexts. (e.g., If she earns \$12 per hour, how much will she earn for 5 h of work?)</li> <li>- Understands and applies the concept of unit rates (e.g., If 3 kg is \$5, how much is 1 kg or how many kg for \$1?).</li> </ul> <p><b>Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically. Generalizing and analyzing patterns, relations, and functions</b></p> <ul style="list-style-type: none"> <li>- Analyzes the relationship between values of two linear number patterns (e.g., P1 is 2, 4, 6, 8, ...; and P2 is 3, 6, 9, 12, ...; as P1 goes up by 1, P2 goes up by 3).</li> </ul>
<p>6. Demonstrate an understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially and symbolically.</p>	<p><b>Number Unit 3: Operations with Fractions and Mixed Numbers</b>  16: Multiplying Fractions and Mixed Numbers  17: Dividing Fractions and Mixed Numbers</p>	<p>Unit 7 Questions 6-13, 15, 18, 19 (pp. 68-73)</p>	<p><b>Big Idea: Quantities and numbers can be operated on to determine how many and how much. Developing Conceptual Meaning of Operations</b></p> <ul style="list-style-type: none"> <li>- Models and demonstrates an understanding of multiplication and division of fractions.</li> </ul>
<p>7. Demonstrate an understanding of multiplication and division of integers, concretely, pictorially and symbolically.</p>	<p><b>Number Unit 1: Fluency with Whole Numbers and Integers</b>  4: Multiplying Integers  5: Dividing Integers  6: Order of Operations with Integers</p>	<p>Unit 11 Questions 10-19, 25 (pp. 111-113, 116)</p>	<p><b>Big Idea: Quantities and numbers can be operated on to determine how many and how much. Developing conceptual meaning of operations</b></p> <ul style="list-style-type: none"> <li>- Models and demonstrates an understanding of integer addition and subtraction.</li> <li>- Models and demonstrates an understanding of integer multiplication and division.</li> </ul> <p><b>Developing fluency of operations</b></p> <ul style="list-style-type: none"> <li>- Estimates and solves integer addition and subtraction using efficient strategies.</li> <li>- Solves integer multiplication and division using efficient strategies.</li> </ul>



**Correlation of the Alberta Mathematics Program of Study  
with Mathology Grade 8 (Patterns and Relations: Patterns)**

Curriculum Outcomes	Grade 8 Mathology.ca	Mathology Practice Workbook 8	Pearson Canada Grades 4–9 Mathematics Learning Progression
<b>General Outcome</b> Use patterns to describe the world and to solve problems.			
<b>Specific Outcomes</b> 1. Graph and analyze two-variable linear relations.	<b>Patterning Unit 1: Linear Relations and Equations</b> 2: Representing Linear Relations 3: Determining if a Relationship is Linear	Unit 1 Questions 2, 4-7, 9-12, 17 (pp. 2-9)  Unit 6 Questions 14, 15, 17 (pp. 57-59)  Unit 12 Question 13 (p. 122)	<b>Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically. Representing patterns, relations, and functions</b> <ul style="list-style-type: none"> <li>- Represents a mathematical context or problem with expressions and equations using variables to represent unknowns.</li> <li>- 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).</li> <li>- Differentiates between linear and non-linear relations by their graphical representation.</li> </ul>



**Correlation of the Alberta Mathematics Program of Study  
with Mathology Grade 8 (Patterns and Relations: Variables and Equations)**

Curriculum Outcomes	Grade 8 Mathology.ca	Mathology Practice Workbook 8	Pearson Canada Grades 4–9 Mathematics Learning Progression
<b>General Outcome</b> Represent algebraic expressions in multiple ways.			
<p><b>Specific Outcomes</b> 2. Model and solve problems concretely, pictorially and symbolically, using linear equations of the form:</p> <ul style="list-style-type: none"> <li>• <math>ax = b</math></li> <li>• <math>\frac{x}{a} = b</math>, <math>a \neq 0</math></li> <li>• <math>ax + b = c</math></li> <li>• <math>\frac{x}{a} + b = c</math>, <math>a \neq 0</math></li> <li>• <math>a(x + b) = c</math></li> </ul> <p>where <math>a</math>, <math>b</math> and <math>c</math> are integers.</p>	<p><b>Patterning Unit 1: Linear Relations and Equations</b></p> <p>4: Solving Linear Equations Using Models</p> <p>5: Solving Linear Equations Algebraically</p> <p>6: Solving Equations Involving the Distributive Property</p> <p>7: Solving Problems Using Linear Equations</p>	<p>Unit 1 Questions 1, 2, 7, 8, 9, 13, 14, 15, 16 (pp. 2-9)</p> <p>Unit 11 Questions 20, 22 (pp. 113-115)</p> <p>Unit 12 Questions 2, 3, 9, 10, 11, 12, 14, 15, 20 (pp. 117-126)</p>	<p><b>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.</b></p> <ul style="list-style-type: none"> <li>- Investigates and models the meaning of preservation of equality of single variable equations (e.g., <math>3x = 12</math>).</li> <li>- Models the preservation of equality to solve equations involving integer coefficients (e.g., <math>-4m + 16 = -12</math>).</li> <li>- Applies arithmetic properties to transform, simplify, and identify equivalent linear expressions (e.g., <math>x(4 + 5) = 4x + 5x = 9x</math>).</li> <li>- Applies the distributive property to expressions and identifies common factors to create equivalent expressions (e.g., <math>4a + 12 = 4(a + 3)</math>).</li> </ul> <p><b>Using variables, algebraic expressions, and equations to represent mathematical relations.</b></p> <ul style="list-style-type: none"> <li>- Evaluates algebraic expressions, including formulas, given specific values for the variables (e.g., evaluate <math>3r - 12</math>, when <math>r = 3</math>; <math>\frac{1}{2}(bh)</math>, when base is 12 cm and height is 5 cm).</li> <li>- Writes expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as <math>3n + 2</math>).</li> </ul>



## Correlation of the Alberta Mathematics Program of Study with Mathology Grade 8 (Shape and Space: Measurement)

Curriculum Outcomes	Grade 8 Mathology.ca	Mathology Practice Workbook 8	Pearson Canada Grades 4–9 Mathematics Learning Progression
<b>General Outcome</b> Use direct and indirect measurement to solve problems.			
<b>Specific Outcomes</b> 1. Develop and apply the Pythagorean theorem to solve problems.	<b>Measurement Unit 1: 2-D Shapes and 3-D Solids</b> 1: Exploring the Pythagorean Theorem 2: Applying the Pythagorean Theorem to Solve Problems	Unit 3 Questions 1-12, 24 (pp. 21-25, 31)  Unit 4 Questions 14, 15 (pp. 40-41)	<b>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</b> <ul style="list-style-type: none"> <li>- Applies Pythagorean Theorem to find unknown side lengths and distance between points on a Cartesian plane.</li> </ul> <b>Understanding relationships among measured units</b> <ul style="list-style-type: none"> <li>- Develops and generalizes strategies to construct, compute, and apply the Pythagorean Theorem.</li> </ul>
2. Draw and construct nets for 3-D objects.	<b>Measurement Unit 1: 2-D Shapes and 3-D Solids</b> 3: Exploring Nets of Prisms and Cylinders	Unit 4 Questions 6, 7, 13 (pp. 35-39)	<b>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</b> <ul style="list-style-type: none"> <li>- Identifies and constructs nets for 3-D objects made from polygons (e.g., cylinder, hexagonal prism)</li> </ul>
3. Determine the surface area of: <ul style="list-style-type: none"> <li>• right rectangular prisms</li> <li>• right triangular prisms</li> <li>• right cylinders to solve problems.</li> </ul>	<b>Measurement Unit 1: 2-D Shapes and 3-D Solids</b> 4: Determining the Surface Area of Prisms and Cylinders	Unit 2 Question 13 (p. 14)  Unit 4 Questions 7, 8, 10-15 (pp. 36-41)  Unit 11 Question 21b (p. 114)  Unit 13 Question 4 (p. 131)	<b>Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons. Understanding relationships among measured units</b> <ul style="list-style-type: none"> <li>- Develops and generalizes strategies and formulas to compute volume and surface area of regular solids (e.g., cones, cylinders, and spheres).</li> </ul>

<p>4. Develop and apply formulas for determining the volume of right rectangular prisms, right triangular prisms and right cylinders.</p>	<p><b>Measurement Unit 1: 2-D Shapes and 3-D Solids</b> 5: Determining the Volume of Prisms and Cylinders</p>	<p>Unit 2 Question 13 (p. 14) Unit 4 Questions 9, 11, 13, 14, 15 (pp. 36-41) Unit 13 Question 4 (p. 131)</p>	<p><b>Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.</b> <b>Understanding relationships among measured units</b></p> <ul style="list-style-type: none"> <li>- Develops and generalizes strategies and formulas to compute volume and surface area of regular solids (e.g., cones, cylinders, and spheres).</li> </ul>
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**Correlation of the Alberta Mathematics Program of Study  
with Mathology Grade 8 (Shape and Space: 3-D Objects and 2-D Shapes)**

Curriculum Outcomes	Grade 8 Mathology.ca	Mathology Practice Workbook 8	Pearson Canada Grades 4–9 Mathematics Learning Progression
<b>General Outcome</b> Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.			
<b>Specific Outcomes</b> 5. Draw and interpret top, front and side views of 3-D objects composed of right rectangular prisms.	<b>Measurement Unit 1: 2-D Shapes and 3-D Solids</b> 6: Sketching Views of 3-D Objects 7: Building 3-D Objects from their Views 8: Exploring Rotations of 3-D Objects	Unit 4 Questions 1-5 (pp. 32-34)	<b>Big Idea: Objects can be located in space and viewed from multiple perspectives.</b> <b>Viewing and representing objects from multiple perspectives</b> <ul style="list-style-type: none"> <li>- Designs and represents compound 3-D objects using 2-D representations from multiple perspectives (e.g., isometric sketches, orthographic sketches, nets).</li> <li>- Interprets and creates coded plans, and constructs objects from plans (e.g., uses linking cubes to build 3-D object from plan).</li> </ul>





**Correlation of the Alberta Mathematics Program of Study  
with Mathology Grade 8 (Shape and Space: Transformations)**

Curriculum Outcomes	Grade 8 Mathology.ca	Mathology Practice Workbook 8	Pearson Canada Grades 4–9 Mathematics Learning Progression
<b>General Outcome</b> Describe and analyze position and motion of objects and shapes.			
<b>Specific Outcomes</b> 6. Demonstrate an understanding of the congruence of polygons.	<b>Geometry Unit 1: Tessellations</b> 1: Exploring Tessellations 2: Using Transformations to Describe Tessellations	Unit 5 Questions 1-14, 16 (pp. 42-49)	<b>Big Idea: 2-D shapes and 3-D solids can be transformed in many ways and analyzed for change.</b> <b>Exploring 2-D shapes and 3-D solids by applying and visualizing transformations</b> - Uses properties of shapes and transformations to design tessellations.



**Correlation of the Alberta Mathematics Program of Study  
with Mathology Grade 8 (Statistics and Probability: Data Analysis)**

Curriculum Outcomes	Grade 8 Mathology.ca	Mathology Practice Workbook 8	Pearson Canada Grades 4–9 Mathematics Learning Progression
<b>General Outcome</b> Collect, display and analyze data to solve problems.			
<b>Specific Outcomes</b> 1. Critique ways in which data is presented in circle graphs, line graphs, bar graphs and pictographs.	<b>Data Management Unit 1: Data Management</b> 4: Presenting Data Graphically 5: Analyzing and Critiquing Given Data	Unit 9 Questions 7-9, 13-17 (pp. 89-91, 93-96)	<b>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.</b> <b>Creating graphical displays of collected data</b> <ul style="list-style-type: none"> <li>- Chooses and justifies appropriate visual representations for displaying discrete (e.g., bar graphs) and continuous (e.g., line graph) data.</li> </ul> <b>Reading and interpreting data displays and analyzing variability</b> <ul style="list-style-type: none"> <li>- Critiques the ways in which data are presented in graphs and tables (e.g., misleading graphs, changing scale).</li> </ul>



**Correlation of the Alberta Mathematics Program of Study  
with Mathology Grade 8 (Statistics and Probability: Chance and Uncertainty)**

Curriculum Outcomes	Grade 8 Mathology.ca	Mathology Practice Workbook 8	Pearson Canada Grades 4–9 Mathematics Learning Progression
<b>General Outcome</b> Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.			
<b>Specific Outcomes</b> 2. Solve problems involving the probability of independent events.	<b>Data Management Unit 2: Probability</b> 6: Determining the Probability of Events 7: Comparing Theoretical and Experimental Probability of Two Independent Events 8: Determining the Probability of Three Independent Events	Unit 8 Questions 1-17 (pp. 76-84)	<b>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.</b> <b>Using the language and tools of chance to describe and predict events</b> - Generalizes the multiplication rule of probability for independent events (e.g., probability of tossing two heads is $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ ).

**Mathology 8 Practice Workbook Unit 10: Financial Literacy**  
**Mathology 8 Practice Workbook Unit 13: Coding**

Not required, but recommended  
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