



Correlation of the Yukon Mathematics Curriculum with Mathology Grade 8

Learning Standards	Grade 8 Mathology.ca	Mathology Practice Workbook 8	Pearson Canada Grades 4–9 Mathematics Learning Progression
Content - Elaborations			
<p>Perfect squares and cubes:</p> <ul style="list-style-type: none"> • using colour tiles, pictures, or multi-link cubes • building the number or using prime factorization 	<p>Number Unit 1: Fluency with Whole Numbers and Integers</p> <p>1: Investigating Perfect Squares and Square Roots 2: Investigating Perfect Cubes and Cube Roots</p>	<p>Unit 2 Questions 1-3, 8, 9, 13 (pp. 10–11, 12, 14)</p>	<p>Big Idea: The set of real numbers is infinite. Extending whole number understanding to the set of real numbers</p> <p>- Distinguishes between numbers that do and do not have whole number square roots.</p> <p>Big Idea: Quantities and numbers can be operated on to determine how many and how much. Developing Conceptual Meaning of Operations</p> <p>- Models and demonstrates an understanding of squares and square roots.</p>
<p>Square and cube roots</p> <ul style="list-style-type: none"> • finding the cube root of 125 • finding the square root of 16/169 • estimating the square root of 30 	<p>Number Unit 1: Fluency with Whole Numbers and Integers</p> <p>1: Investigating Perfect Squares and Square Roots 2: Investigating Perfect Cubes and Cube Roots</p>	<p>Unit 2 Questions 4-7, 10-12 (pp. 11–14)</p>	<p>Big Idea: The set of real numbers is infinite. Extending whole number understanding to the set of real numbers</p> <p>- Distinguishes between numbers that do and do not have whole number square roots.</p> <p>Big Idea: Quantities and numbers can be operated on to determine how many and how much. Developing Conceptual Meaning of Operations</p> <p>- Models and demonstrates an understanding of squares and square roots.</p>

<p>Percents less than 1 and greater than 100 (decimal and fractional percents)</p> <ul style="list-style-type: none"> • A worker’s salary increased 122% in three years. If her salary is now \$93,940, what was it originally? • What is $\frac{1}{2}\%$ of 1 billion? • The population of Vancouver increased by 3.25%. What is the population if it was approximately 603,500 people last year? • beading 	<p>Number Unit 2: Proportions, Ratios, Rates, and Percents</p> <p>11: Working with Whole Number Percents</p> <p>12: Working with Fractional Percents</p> <p>13: Solving Percent Problems</p>	<p>Unit 6 Questions 27-31 (pp. 62–64)</p> <p>Unit 10 Questions 3, 4 (p. 98)</p>	<p>Big Idea: Numbers are related in many ways. Using ratios, rates, proportions, and percents creates a relationship between quantities</p> <p>- Understands the meaning of percents greater than 100% and less than 1%.</p>
<p>Numerical proportional reasoning (rates, ratio, proportions, and percent):</p> <ul style="list-style-type: none"> • two-term and three-term ratios, real-life examples and problems • A string is cut into three pieces whose lengths form a ratio of 3:5:7. If the string was 105 cm long, how long are the pieces? • creating a cedar drum box of proportions that use ratios to create differences in pitch and tone • paddle making 	<p>Number Unit 2: Proportions, Ratios, Rates, and Percents</p> <p>7: Exploring Ratios</p> <p>8: Relating Ratio and Proportion</p> <p>9: Exploring Rates</p> <p>10: Solving Problems Involving Ratios, Rate, and Proportions</p>	<p>Unit 3 Questions 13-16 (pp. 25–26)</p> <p>Unit 6 Questions 1-8, 10-13, 18-26 (pp. 52–57, 60–62)</p> <p>Unit 11 Question 23 (p. 115)</p>	<p>Big Idea: Numbers are related in many ways. Using ratios, rates, proportions, and percents creates a relationship between quantities</p> <p>- Solves for missing values and determines equivalent ratios and rates using flexible strategies (e.g., tables, graphing, unit rates, $\frac{a}{b} = \frac{c}{d}$ relationship).</p> <p>- 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?)</p> <p>- 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?).</p> <p>Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically. Generalizing and analyzing patterns, relations, and functions</p> <p>- 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).</p>

<p>Operations with fractions (addition, subtraction, multiplication, division, and order operations):</p> <ul style="list-style-type: none"> includes the use of brackets, but excludes exponents using pattern blocks or Cuisenaire Rods simplifying $\frac{1}{2} \div \frac{9}{6} \times (7 - \frac{4}{5})$ drumming and song: $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, whole notes, dot bars, rests = one beat changing tempos of traditional songs dependent on context of use proportional sharing of harvests based on family size 	<p>Number Unit 3: Operations with Fractions and Mixed Numbers</p> <p>14. Adding Fractions and Mixed Numbers</p> <p>15. Subtracting Fractions and Mixed Numbers</p> <p>16. Multiplying Fractions and Mixed Numbers</p> <p>17. Dividing Fractions and Mixed Numbers</p> <p>18. Applying the Order of Operations with Fractions and Mixed Numbers</p>	<p>Unit 7 Questions 1-13, 15, 17 (pp. 66–72)</p>	<p>Big Idea: Quantities and numbers can be operated on to determine how many and how much.</p> <p>Developing Conceptual Meaning of Operations</p> <ul style="list-style-type: none"> Models and demonstrates an understanding of fraction addition and subtraction. Models and demonstrates an understanding of multiplication and division of fractions. <p>Developing Fluency of Operations</p> <ul style="list-style-type: none"> Solves fraction addition and subtraction using efficient strategies.
<p>Discrete linear relations (extended to larger numbers, limited to integers):</p> <ul style="list-style-type: none"> two-variable discrete linear relations expressions, table of values, and graphs scale values (e.g., tick marks on axis represent 5 units instead of 1) four quadrants, integral coordinates 	<p>Patterning Unit 1: Linear Relations and Equations</p> <p>2: Representing Linear Relations</p> <p>3: Determining if a Relationship is Linear</p>	<p>Unit 1 Questions 1, 3, 5-8, 10-12 (pp. 2–7)</p> <p>Unit 6 Questions 14-17 (pp. 57–59)</p>	<p>Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.</p> <p>Representing patterns, relations, and functions</p> <ul style="list-style-type: none"> 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.

<p>Expressions – writing and evaluating using substitution:</p> <ul style="list-style-type: none"> • using an expression to describe a relationship • evaluating $0.5n - 3n + 25$, if $n = 14$ 	<p>Patterning Unit 1: Linear Relations and Equations 1: Writing and Evaluating Algebraic Expressions</p>	<p>Unit 1 Questions 2, 4, 8, 9, 13-17 (pp. 3–5, 7–9)</p> <p>Unit 12 Questions 1-7 (pp. 117–119)</p>	<p>Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically. Representing patterns, relations, and functions</p> <ul style="list-style-type: none"> - Represents a mathematical context or problem with expressions and equations using variables to represent unknowns. <p>Big Idea: Patterns and relations can be represented with symbols, equations, and expressions. Using variables, algebraic expressions, and equations to represent mathematical relations</p> <ul style="list-style-type: none"> - 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). - Write expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as $3n + 2$).
<p>Two-step equations with integer coefficients, constants, and solutions:</p> <ul style="list-style-type: none"> • solving and verifying $3x - 4 = -12$ • modelling the preservation of equality (e.g., using a balance, manipulatives, algebra tiles, diagrams) • spirit canoe journey calculations 	<p>Patterning Unit 1: Linear Relations and Equations 4: Solving Linear Equations Using Models 5: Solving Linear Equations Algebraically 6: Solving Linear Equations Using the Distributive Property 7: Solving Problems Using Linear Equations</p>	<p>Unit 12 Questions 8-15 (pp. 119–123)</p>	<p>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</p> <ul style="list-style-type: none"> - 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., $-4m + 16 = -12$). - Applies arithmetic properties to transform, simplify, and identify equivalent linear expressions (e.g., $x(4 + 5) = 4x + 5x = 9x$). - Applies the distributive property to expressions and identifies common factors to create equivalent expressions (e.g., $4a + 12 = 4(a + 3)$). <p>Using variables, algebraic expressions, and equations to represent mathematical relations</p> <ul style="list-style-type: none"> - 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). - Write expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as $3n + 2$).

<p>Surface area and volume of regular solids, including triangular and other right prisms and cylinders:</p> <ul style="list-style-type: none"> exploring strategies to determine the surface area and volume of a regular solid using objects, a net, 3-D design software volume = area of the base x height surface area = sum of the areas of each side 	<p>Measurement Unit 1: 2-D Shapes and 3-D Solids</p> <p>3: Exploring Nets of Prisms and Cylinders 4: Determining the Surface Area of Prisms and Cylinders 5: Determining the Volume of Prisms and Cylinders</p>	<p>Unit 4 Questions 8-14 (pp. 36–40)</p> <p>Unit 11 Question 21b (p. 114)</p>	<p>Big Idea: 2-D Shapes and 3-D solids can be analyzed and classified in different ways by their attributes.</p> <p>Investigating 2-D shapes, 3-D solids, and their attributes through composition and decomposition</p> <ul style="list-style-type: none"> Identifies and constructs nets for 3-D objects made from polygons (e.g. cylinder, hexagonal prism) <p>Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.</p> <p>Understanding relationships among measured units</p> <ul style="list-style-type: none"> Develops and generalizes strategies and formulas to compute volume and surface area of regular solids (e.g., cones, cylinders, and spheres).
<p>Pythagorean theorem:</p> <ul style="list-style-type: none"> modelling the Pythagorean theorem finding a missing side of a right triangle deriving the Pythagorean theorem constructing canoe paths and landings given current on a river First Peoples constellations 	<p>Measurement Unit 1: 2-D Shapes and 3-D Solids</p> <p>1: Exploring the Pythagorean Theorem 2: Applying the Pythagorean Theorem to Solve Problems</p>	<p>Unit 3 Questions 1-12 (pp. 21–25)</p>	<p>Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.</p> <p>Selecting and using units to estimate, measure, construct, and make comparisons</p> <ul style="list-style-type: none"> Applies Pythagorean Theorem to find unknown side lengths and distance between points on a Cartesian plane. <p>Understanding relationships among measured units</p> <ul style="list-style-type: none"> Develops and generalizes strategies to construct, compute, and apply the Pythagorean Theorem.
<p>Construction, views, and nets of 3-D objects:</p> <ul style="list-style-type: none"> top, front, and side views of 3D objects matching a given net to the 3D object it represents drawing and interpreting top, front, and side views of 3D objects constructing 3D objects with nets 	<p>Measurement Unit 1: 2-D Shapes and 3-D Solids</p> <p>3: Exploring Nets of Prisms and Cylinders 6: Sketching Views of 3-D Objects 7: Building 3-D Objects from their Views</p>	<p>Unit 4 Questions 1-7, 13a (pp. 32–36, 39)</p>	<p>Big Idea: 2-D Shapes and 3-D solids can be analyzed and classified in different ways by their attributes.</p> <p>Investigating 2-D shapes, 3-D solids, and their attributes through composition and decomposition</p> <ul style="list-style-type: none"> Identifies and constructs nets for 3-D objects made from polygons (e.g. cylinder, hexagonal prism) <p>Big Idea: Objects can be located in space and viewed from multiple perspectives.</p> <p>Viewing and representing objects from multiple perspectives</p> <ul style="list-style-type: none"> Designs and represents compound 3-D objects using 2-D representations from multiple perspectives (e.g., isometric sketches, orthographic sketches, nets).

<ul style="list-style-type: none"> • using design software to create 3D objects from nets • bentwood boxes, lidded baskets, packs 			<ul style="list-style-type: none"> - Interprets and creates coded plans, and constructs objects from plans (e.g., uses linking cubes to build 3-D object from plan).
<p>Central tendency:</p> <ul style="list-style-type: none"> • mean, median, and mode 	<p>Data Management Unit 1: Data Management</p> <p>1: Determining Mean and Mode 2: Determining Median and Range 3: Comparing Measures of Central Tendency</p>	<p>Unit 7 Question 16 (p. 72)</p> <p>Unit 9 Questions 3-6 (pp. 87–88)</p>	<p>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.</p> <p>Reading and Interpreting Data Displays and Analyzing Variability</p> <ul style="list-style-type: none"> - Determines range values (e.g., maximum, minimum, difference) and relates values to the variability of data collected. - Visualizes and determines the median value as a middle measure representing a whole data set. - Visualizes and determines the mean of a 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. <p>Using the language and tools of chance to describe and predict events</p> <ul style="list-style-type: none"> - Describes data using frequency counts (e.g., 5 people chose peppermint) and modal value (e.g., dogs are the most common pet).
<p>Theoretical probability: with two independent events</p> <ul style="list-style-type: none"> • with two independent events: sample space (e.g., using tree diagram, table, graphic organizer) • rolling a 5 on a fair die and flipping a head on a fair coin is $\frac{1}{6} \times \frac{1}{2} = \frac{1}{12}$ • deciding whether a spinner in a game is fair 	<p>Data Management Unit 2: Probability</p> <p>6: Determining the Probability of Events 7: Comparing Theoretical and Experimental Probability of Two Independent Events</p>	<p>Unit 8 Questions 1-12 (pp. 76–81)</p>	<p>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.</p> <p>Using the language and tools of chance to describe and predict events</p> <ul style="list-style-type: none"> - Generalizes the multiplication rule of probability for independent events (e.g., probability of tossing two heads is $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$).

<p>Financial literacy – best buys</p> <ul style="list-style-type: none"> • coupons, proportions, unit price, products and services • proportional reasoning strategies (e.g., unit rate, equivalent fractions given prices and quantities) 	<p>Number Unit 4: Financial Literacy</p> <p>20: Solving Problems Involving Coupons and Discounts</p> <p>21: Calculating The Best Buy</p>	<p>Unit 6 Questions 21, 27, 28, 32, 33 (pp. 60, 62–64)</p> <p>Unit 7 Question 14 (p. 71)</p> <p>Unit 10 Questions 1-7, 11-15 (pp. 97–104)</p> <p>Unit 11 Question 21a (p. 114)</p>	<p>Big Idea: Numbers are related in many ways. Using ratios, rates, proportions, and percents creates a relationship between quantities</p> <ul style="list-style-type: none"> - Understands and applies the concept of percentage as a rate per 100 (e.g., calculating sales tax, tips, or discount) - 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?).
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Mathology 8 Practice Workbook Unit 13: Coding

Not required, but recommended