**Correlation of the Ontario Mathematics Curriculum with Mathology Grade 8 **

|  |
| --- |
| **Overall Expectation A1. Social-Emotional Learning (SEL) Skills and the Mathematical Processes** |
| Mathology provides teachers with a flexible framework for Social Emotional Learning Skills, by including:   * **Diverse resources** in real-world contexts, so students can see themselves and others while positively engaging in mathematical activities * **Differentiated support** to cope with challenges, meet students where they are and move them forward * **Learning opportunities** (small group, pair, whole class), to work collaboratively on math problems, share thinking, and listen to the thinking of others * **Digital** (e.g., virtual tools) and **printable resources** (e.g., lesson slides and line masters), which allow students to reveal their mathematical thinking in a risk-free environment * **A variety of voices** (built by and for Canadian learners) and opportunities to support **local contexts (**modifiable resources) |

|  |  |  |
| --- | --- | --- |
| **Curriculum Expectations** | **Grade 8 Mathology.ca** | **Pearson Canada Grades 4–9 Mathematics Learning Progression** |
| **B. Number** | | |
| **B1. Number Sense**  demonstrate an understanding of numbers and make connections to the way numbers are used in everyday life | | |
| **Rational Numbers** | | |
| B1.1 [represent](https://www.dcp.edu.gov.on.ca/en/) and compare very large and very small numbers, including through the use of [scientific notation](https://www.dcp.edu.gov.on.ca/en/), and describe various ways they are used in everyday life | **Number Unit 1: Number Relationships**  3: Very Large and Very Small Numbers Around Us | **Big Idea:** **Numbers are related in many ways.**  **Estimating Quantities and Numbers**  - Uses scientiﬁc notation to approximate large and small values (e.g., 395 674 213 is approximately 4.0 × 108).  **Big Idea:** **Quantities and numbers can be grouped by or partitioned into equal-sized units.**  **Unitizing Quantities into Base-Ten Units**  - Uses place value, rounding, and powers of 10 to represent very large and very small numbers using scientific notation (e.g., 3 241 782 can be represented as 3.24 × 106). |
| B1.2 describe, compare, and order numbers in the [real number](https://www.dcp.edu.gov.on.ca/en/) system (rational and irrational numbers), separately and in combination, in various contexts | **Number Unit 1: Number Relationships**  4: Irrational Numbers around Us  5: Real Numbers around Us | **Big Idea:** **The set of real numbers is infinite.**  **Extending Whole Number Understanding to the Set of Real Numbers**  - Explores irrational numbers (e.g., and π are numbers that cannot be expressed as ratios, but have unique locations on the number line). |
| B1.3 estimate and calculate [square roots](https://www.dcp.edu.gov.on.ca/en/), in various contexts | **Number Unit 1: Number Relationships**  1: Estimating and Calculating Square Roots | **Big Idea:** **The set of real numbers is infinite.**  **Extending Whole Number Understanding to the Set of Real Numbers**  - Explores irrational numbers (e.g., and π are numbers that cannot be expressed as ratios, but have unique locations on the number line).  **Big Idea:** **Numbers are related in many ways.**  **Estimating Quantities and Numbers**  - Estimates square roots of numbers that are imperfect squares (e.g., is between 5 and 6, and closer to 5). |
| **Fractions, Decimals, and Percents** | | |
| B1.4 use [fractions](https://www.dcp.edu.gov.on.ca/en/), [decimal numbers](https://www.dcp.edu.gov.on.ca/en/), and [percents](https://www.dcp.edu.gov.on.ca/en/), including percents of more than 100% or less than 1%, interchangeably and flexibly to solve a variety of problems | **Number Unit 3: Proportional Reasoning**  19: Solving Problems Involving Percents, Fractions, and Decimals  **Algebra Unit 3: Coding** 12: Using Code to Explore Volume and Surface Area | **Big Idea:** **Numbers are related in many ways.**  **Using Ratios, Rates, Proportions, and Percents Creates a Relationship Between Quantities**  - Understands the meaning of percents greater than 100% and less than 1%.  **Big Idea:** **Quantities and numbers can be operated on to determine how many and how much.**  **Developing Fluency of Operations**  - Solves decimal number computation using efficient strategies.  **Big Idea:** **Numbers are related in many ways.**  **Estimating Quantities and Numbers**  - Estimates square roots of numbers that are imperfect squares (e.g., is between 5 and 6, and closer to 5). |
| **B2. Operations**  use knowledge of numbers and operations to solve mathematical problems encountered in everyday life | | |
| **Properties and Relationships** | | |
| B2.1 use the properties and [order of operations](https://www.dcp.edu.gov.on.ca/en/), and the [relationships](https://www.dcp.edu.gov.on.ca/en/) between operations, to solve problems involving [rational numbers](https://www.dcp.edu.gov.on.ca/en/), [ratios](https://www.dcp.edu.gov.on.ca/en/), [rates](https://www.dcp.edu.gov.on.ca/en/), and percents, including those requiring multiple steps or multiple operations | **Number Unit 2: Operations**  13: Developing Fluency with Operations  15: Comparing Proportional Situations  19: Solving Problems Involving Percents, Fractions, and Decimals  **Financial Literacy Unit 1: Financial Literacy**  1: Exploring Methods of Payment between Countries  2: Creating Financial Plans for Long-Term Goals  3: Maintaining a Balanced Budget  4: Simple Interest and Compound Interest  5: Growth and Impact of Interest at Different Rates  6: Making the Most of Your Money  7: Comparing Credit Cards and Other Consumer Contracts | **Big Idea:** **Quantities and numbers can be operated on to determine how many and how much.**  **Developing Fluency of Operations**  - Solves decimal number computation using efficient strategies.  - Uses reasoning, estimation, efficient, strategies, and algorithms to operate on positive and negative rational numbers.  **Big Idea:** **Numbers are related in many ways.**  **Usings Ratios, Rates, Proportions, and Percents Creates a Relationship Between Quantities**  - Understands and applies the concept of percentage as a rate per 100 (e.g., calculating sales tax, tips, or discounts).  - Uses equations to represent proportional relationships and solve problems (e.g., using exchange rates to convert between currencies).  - Understands the meaning of percents greater than 100% and less than 1%.  - Uses proportional reasoning in different contexts (e.g., scaling factors).  - Explores percentage increase and percentage decrease to solve problems (e.g. calculating simple and compound interest). |
| **Math Facts** | | |
| B2.2understand and recall commonly used square numbers and their square roots | **Number Unit 1: Number Relationships**  1: Estimating and Calculating Square Roots | **Big Idea:** **Numbers are related in many ways.**  **Estimating Quantities and Numbers**  - Estimates square roots of numbers that are imperfect squares (e.g., is between 5 and 6, and closer to 5).  **Big Idea:** **The set of real numbers is infinite.**  **Extending Whole Number Understanding to the Set of Real Numbers**  - Explores irrational numbers (e.g., and π are numbers that cannot be expressed as ratios, but have unique locations on the number line). |
| **Mental Math** | | |
| B2.3 use [mental math strategies](https://www.dcp.edu.gov.on.ca/en/) to multiply and divide [whole numbers](https://www.dcp.edu.gov.on.ca/en/) and decimal numbers up to thousandths by [powers of ten](https://www.dcp.edu.gov.on.ca/en/), and explain the strategies used | **Number Unit 1: Number Relationships**  2: Exploring Powers of 10  **Number Unit 2: Operations**  6: Mental Math with Powers of 10 | **Big Idea:** **Quantities and numbers can be grouped by or partitioned into equal-sized units.**  **Unitizing Quantities into Base-Ten Units**  - Uses understanding of place value to write numbers in expanded form using powers of 10 (e.g., 3107 = 3 × 103 + 1 × 102 + 7 × 100).  **Big Idea:** **Quantities and numbers can be operated on to determine how many and how much.**  **Developing Fluency of Operations**  - Develops efficient strategies for computing numbers expressed in scientific notation. |
| **Addition and Subtraction** | | |
| B2.4 add and subtract [integers](https://www.dcp.edu.gov.on.ca/en/), using appropriate strategies, in various contexts | **Number Unit 2: Operations**  7: Adding and Subtracting 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.  **Developing Fluency of Operations**  - Estimates and solves integer addition and subtraction using efficient strategies. |
| B2.5 add and subtract fractions, using appropriate strategies, in various contexts | **Number Unit 2: Operations**  10: Adding and Subtracting Fractions | **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. |

|  |  |  |
| --- | --- | --- |
| **Multiplication and Division** | | |
| B2.6 multiply and divide fractions by fractions, as well as by whole numbers and mixed numbers, in various contexts | **Number Unit 2: Operations**  11: Multiplying Fractions  12: Dividing Fractions | **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 multiplication and division of fractions. |
| B2.7 multiply and divide integers, using appropriate strategies, in various contexts | **Number Unit 2: Operations**  8: Multiplying Integers  9: Dividing 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 multiplication and division  **Developing Fluency of Operations**  - Solves integer multiplication and division using efficient strategies. |
| B2.8 compare [proportional](https://www.dcp.edu.gov.on.ca/en/) situations and determine unknown values in proportional situations, and apply [proportional reasoning](https://www.dcp.edu.gov.on.ca/en/) to solve problems in various contexts | **Number Unit 3: Operations**  14: Recognizing and Describing Proportional Situations  15: Comparing Proportional Situations  17: Comparing Constant Rates and Initial Values  18. Determining Unknown Values in Proportional Situations  **Measurement/Geometry Unit 1: 2-D Shapes and 3-D Objects**  3. Using Scale Drawings  4. Exploring Angle Properties | **Big Idea:** **Numbers are related in many ways.**  **Usings Ratios, Rates, Proportions, and Percents Creates a Relationship Between Quantities**  - Uses proportional reasoning in different contexts (e.g., scaling factors).  **Big Idea:** **Regularity and repetition form patterns that can be generalized and predicted mathematically.**  **Representing Patterns, Relations, and Functions**  - Generates ordered pairs for a linear relation and plots the coordinates on a graph. (Limited to integer values on four quadrants.) |

|  |  |  |
| --- | --- | --- |
| **Curriculum Expectations** | **Grade 8 Mathology.ca** | **Pearson Canada Grades 4–9 Mathematics Learning Progression** |
| **C. Algebra** | | |
| **C1. Patterns and Relationships** identify, describe, extend, create, and make predictions about a variety of patterns, including those found in real-life contexts | | |
| **Patterns** | | |
| C1.1 identify and compare a variety of [repeating](https://www.dcp.edu.gov.on.ca/en/), [growing](https://www.dcp.edu.gov.on.ca/en/), and [shrinking patterns](https://www.dcp.edu.gov.on.ca/en/), including patterns found in real-life contexts, and compare [linear](https://www.dcp.edu.gov.on.ca/en/) growing and shrinking patterns on the basis of their [constant rates](https://www.dcp.edu.gov.on.ca/en/) and initial values | **Number Unit 3: Proportional Reasoning** 16: Exploring Constant Rates and Initial Values in Patterns  17: Comparing Constant Rates and Initial Values  **Algebra Unit 1: Patterns and Relations**  1: Exploring Patterns  5: Patterns Around Us | **Big Idea:** **Regularity and repetition form patterns that can be generalized and predicted mathematically.**  **Representing Patterns, Relations, and Functions**  - 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.  **Generalizing and Analyzing Patterns, Relations, and Functions**  - Explains the rule for numeric patterns including the starting point and change (e.g., given: 16, 22, 28, 34, … Start at 16 and add 6 each time).  - Compares linear relations on the same graph and describes the differences graphically (e.g., *y*-intercept) and symbolically (e.g., constant).  **Big Idea:** **Patterns and relations can be represented with symbols, equations, and expressions.**  **Using Variables, Algebraic Expressions, and Equations to Represent Mathematical Relations**  - Writes expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as 3*n* + 2).  **Understanding Equality and Inequality, Building on Generalized Properties of Numbers and Operations**  - Models the preservation of equality to solve equations involving integer coefficients (e.g., −4*m* + 16 = −12). |

|  |  |  |
| --- | --- | --- |
| C1.2 create and [translate](https://www.dcp.edu.gov.on.ca/en/) repeating, growing, and shrinking patterns involving rational numbers using various representations, [algebraic expressions](https://www.dcp.edu.gov.on.ca/en/) and [equations](https://www.dcp.edu.gov.on.ca/en/) for linear growing and shrinking patterns | **Algebra Unit 1: Patterns and Relations**  1: Exploring Patterns  2: Writing Algebraic Pattern Rules  3: Representing 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.  - Matches different representations of the same linear relations (e.g., graph, equation, table of values).  - Differentiates between linear and non-linear relations by their graphical representation.  **Big Idea:** **Patterns and relations can be represented with symbols, equations, and expressions.**  **Using Variables, Algebraic Expressions, and Equations to Represent Mathematical Relations**  - Writes expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as 3*n* + 2). |
| C1.3 determine [pattern rules](https://www.dcp.edu.gov.on.ca/en/) and use them to extend patterns, make and justify predictions, and identify missing [elements](https://www.dcp.edu.gov.on.ca/en/) in growing and shrinking patterns involving rational numbers, and use algebraic representations of the pattern rules to solve for unknown values in linear growing and shrinking patterns | **Algebra Unit 1: Patterns and Relations**  3: Representing Linear Relations  4: Determining Term Numbers and Term Values  5: Patterns Around Us | **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 relations (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**  - Writes expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as 3*n* + 2).  **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**  - Models the preservation of equality to solve equations involving integer coefficients (e.g., −4*m* + 16 = −12). |
| C1.4 create and describe patterns to illustrate [relationships](https://www.dcp.edu.gov.on.ca/en/) among rational numbers | **Number Unit 2: Operations**  7: Adding and Subtracting Integers  8: Multiplying Integers  9: Dividing 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.  - Models and demonstrates an understanding of integer multiplication and division  **Developing Fluency of Operations**  - Estimates and solves integer addition and subtraction using efficient strategies.  - Solves integer multiplication and division using efficient strategies. |

|  |  |  |
| --- | --- | --- |
| **C2. Equations and Inequalities** demonstrate an understanding of variables, expressions, equalities, and inequalities, and apply this understanding in various contexts | | |
| **Variables and Expressions** | | |
| C2.1 add and subtract [monomials](https://www.dcp.edu.gov.on.ca/en/) with a degree of 1, and add [binomials](https://www.dcp.edu.gov.on.ca/en/) with a degree of 1 that involve integers, using tools | **Algebra Unit 2: Variables and Equations**  6: Working with Monomials and Binomials  7: Evaluating Expressions | **Big Idea:** **Patterns and relations can be represented with symbols, equations, and expressions.**  **Using Variables, Algebraic Expressions, and Equations to Represent Mathematical Relations**  - Uses expressions and equations with variables to represent generalized relations and algorithms (e.g., *P* = 2*l* + 2*w*).   * Evaluates algebraic expressions, including formulas, given specific values for the variables (e.g., evaluate 3*r* − 12, when *r* = 3; when base is 12 cm and height is 5 cm). |
| C2.2 [evaluate](https://www.dcp.edu.gov.on.ca/en/) algebraic expressions that involve rational numbers | **Algebra Unit 2: Variables and Equations**  7: Evaluating Expressions | **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 3*r* − 12, when *r* = 3; when base is 12 cm and height is 5 cm). |
| **Equalities and Inequalities** | | |
| C2.3 solve equations that involve multiple [terms](https://www.dcp.edu.gov.on.ca/en/), integers, and decimal numbers in various contexts, and verify solutions | **Algebra Unit 1: Patterns and Relations**  4: Determining Term Numbers and Term Values  5: Patterns Around Us  **Algebra Unit 2: Variables and Equations**  8: Solving Equations with Multiple Terms  10: Solving Problems Using Equations and Inequalities  **Measurement/Geometry Unit 1: 2-D Shapes and 3-D Objects**  1: Exploring Relationships in Right Triangles  2: Solving Problems with the Pythagorean Theorem | **Big Idea:** **Patterns and relations can be represented with symbols, equations, and expressions.**  **Using Variables, Algebraic Expressions, and Equations to Represent Mathematical Relations**  - Writes expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as 3*n* + 2).  **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**  - Models the preservation of equality to solve equations involving integer coefficients (e.g., −4*m* + 16 = −12). |
| C2.4 solve [inequalities](https://www.dcp.edu.gov.on.ca/en/) that involve integers, and verify and graph the solutions | **Algebra Unit 2: Variables and Equations**  9. Solving and Graphing Inequalities involving Integers  10. Solving Problems Using Equations and Inequalities | **Big Idea:** **Regularity and repetition form patterns that can be generalized and predicted mathematically.**  **Representing Patterns, Relations, and Functions**  - Models and solves linear inequalities graphically and symbolically (*a* + 5 < 9).  **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**  - Applies arithmetic properties to solve inequalities (e.g., 2x > 9) and determines which inequalities have finite or infinitely many solutions. |
| **C3. Coding** solve problems and create computational representations of mathematical situations using coding concepts and skills | | |
| **Coding Skills** | | |
| C3.1 solve problems and create [computational representations](https://www.dcp.edu.gov.on.ca/en/) of mathematical situations by writing and [executing code](https://www.dcp.edu.gov.on.ca/en/), including [code](https://www.dcp.edu.gov.on.ca/en/) that involves the analysis of data in order to inform and communicate decisions | **Algebra Unit 3: Coding**  11: Using Code to Explore Translations 12: Using Code to Explore Volume and Surface Area  13: Using Code to Analyze Data and Make Decisions  14: Using Code to Simulate Independent Events | **Big Idea:** **Regularity and repetition form patterns that can be generalized and predicted mathematically.**  **Representing Patterns, Relations, and Functions**  - Uses multiple approaches to model situations involving repetition (i.e., repeating patterns) and change (i.e., increasing/decreasing patterns) (e.g., using objects, tables, graphs, symbols, loops and nested loops in coding). |
| C3.2 read and alter existing code involving the analysis of data in order to inform and communicate decisions, and describe how changes to the code affect the [outcomes](https://www.dcp.edu.gov.on.ca/en/) and the efficiency of the code | **Algebra Unit 3: Coding**  11: Using Code to Explore Translations 12: Using Code to Explore Volume and Surface Area  13: Using Code to Analyze Data and Make Decisions  14: Using Code to Simulate Independent Events | **Big Idea:** **Regularity and repetition form patterns that can be generalized and predicted mathematically.**  **Representing Patterns, Relations, and Functions**  - Uses multiple approaches to model situations involving repetition (i.e., repeating patterns) and change (i.e., increasing/decreasing patterns) (e.g., using objects, tables, graphs, symbols, loops and nested loops in coding). |

|  |
| --- |
| **C4. Mathematical Modelling** |
| Apply the process of mathematical modelling to represent, analyse, make predictions, and provide insight into real-life situations |
| This overall expectation has no specific expectations. [Mathematical modelling](https://www.dcp.edu.gov.on.ca/en/) is an [iterative](https://www.dcp.edu.gov.on.ca/en/) and interconnected process that is applied to various contexts, allowing students to bring in learning from other strands. Students’ demonstration of the process of mathematical modelling, as they apply concepts and skills learned in other strands, is assessed and evaluated.  **Algebra Unit 2: Variables and Equations**  10: Solving Problems Using Equations and Inequalities  **Measurement Unit 1: 2-D Shapes and 3-D Objects**  10: Solving Problems with 3-D Composite Objects |

|  |  |  |
| --- | --- | --- |
| **Curriculum Expectations** | **Grade 8 Mathology.ca** | **Pearson Canada Grades 4–9 Mathematics Learning Progression** |
| **D. Data** | | |
| **D1. Data Literacy**  manage, analyse, and use data to make convincing arguments and informed decisions, in various contexts drawn from real life | | |
| **Data Collection and Organization** | | |
| D1.1 identify situations involving [one-variable data](https://www.dcp.edu.gov.on.ca/en/) and situations involving [two-variable data](https://www.dcp.edu.gov.on.ca/en/), and explain when each type of data is needed | **Data Management Unit 1: Data**  1: Exploring Types of Data | **Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphical displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.**  **Collecting Data and Organizing It into Categories**  - Generates bivariate data (i.e., two variables such as foot size and height) to explore relationships. |
| D1.2 collect [continuous data](https://www.dcp.edu.gov.on.ca/en/) to answer [questions of interest](https://www.dcp.edu.gov.on.ca/en/) involving two variables, and organize the data sets as appropriate in a [table of values](https://www.dcp.edu.gov.on.ca/en/) | **Data Management Unit 1: Data**  1: Exploring Types of Data | **Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphical displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.**  **Collecting Data and Organizing It into Categories**  - Generates bivariate data (i.e., two variables such as foot size and height) to explore relationships. |

|  |  |  |
| --- | --- | --- |
| **Data Visualization** | | |
| D1.3 select from among a variety of graphs, including [scatter plots](https://www.dcp.edu.gov.on.ca/en/), the type of graph best suited to represent various sets of data; display the data in the graphs with proper sources, titles, and labels, and appropriate scales; and justify their choice of graphs | **Data Management Unit 1: Data**  2: Exploring Scatter Plots  3: Using Different Types of Graphs | **Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphical displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.**  **Formulating questions learn about groups, collections, and events by collecting relevant data.**  - Generates questions seeking a potential relationship between two variables or attributes 9 e.g. Does study time impact test scores?)  **Creating Graphical Displays of Collected Data**  - Visually represents two or more data sets (e.g., double bar chart, stacked bar graph multi-line graph, multi-column table).  - Chooses and justifies appropriate visual representations for displaying discrete (e.g., bar graph) and continuous (e.g., line graph) data. |
| D1.4 create an [infographic](https://www.dcp.edu.gov.on.ca/en/) about a data set, representing the data in appropriate ways, including in tables and scatter plots, and incorporating any other relevant information that helps to tell a story about the data | **Data Management Unit 1: Data**  6: Creating an Infographic  **Algebra Unit 3: Coding**  13: Using Code to Analyze and Make Decisions | **Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphical displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.**  **Formulating questions learn about groups, collections, and events by collecting relevant data.**  - Investigates questions in society involving statistics (e.g., population growth) and probability (e.g., insurance options, weather). |
| **Data Analysis** | | |
| D1.5 use mathematical language, including the terms “strong”, “weak”, “none”, “positive”, and “negative”, to describe the relationship between two variables for various data sets with and without [outliers](https://www.dcp.edu.gov.on.ca/en/) | **Data Management Unit 1: Data**  2: Exploring Scatter Plots  4: Investigating Relationships in Data | **Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphical displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.**  **Formulating questions learn about groups, collections, and events by collecting relevant data.**  - Generates questions seeking a potential relationship between two variables or attributes 9 e.g. Does study time impact test scores?)  **Collecting Data and Organizing It into Categories**  **-** Generates bivariate data (i.e., two variables such as foot size and height) to explore relationships.  **Creating Graphical Displays of Collected Data**  - Visually represents two or more data sets (e.g., double bar chart, stacked bar graph multi-line graph, multi-column table). |
| D1.6 analyse different sets of data presented in various ways, including in scatter plots and in [misleading graphs](https://www.dcp.edu.gov.on.ca/en/), by asking and answering questions about the data, challenging preconceived notions, and drawing conclusions, then make convincing arguments and informed decisions | **Data Management Unit 1: Data**  5: Using Data to Make Convincing Arguments  **Algebra Unit 3: Coding**  13: Using Code to Analyze and Make Decisions | **Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphical displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.**  **Reading and Interpreting Data Displays and Analyzing Variability.**  - Critiques the ways in which data is presented in graphs and tables (e.g., misleading graphs; changing scale). |
| **D2. Probability**  describe the likelihood that events will happen, and use that information to make predictions | | |
| **Probability** | | |
| D2.1 solve various problems that involve [probability](https://www.dcp.edu.gov.on.ca/en/), using appropriate tools and strategies, including [Venn](https://www.dcp.edu.gov.on.ca/en/) and [tree diagrams](https://www.dcp.edu.gov.on.ca/en/) | **Data Management Unit 2: Data**  8: Exploring Probability Using Venn Diagrams  9: Probability of Multiple Independent Events  10: Probability of Multiple Dependent Events | **Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphical 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**  - Extends understanding of the probability continuum by expressing and comparing probabilities using decimals (between 0 and 1), ratios, fractions, and percents.  - 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).  - Distinguishes between independent and dependent events (e.g., removing marbles without replacement).  **Drawing Conclusions by Making Inferences and Justifying Decisions Based on Data Collected**  - Compares short- and long-run experimental probabilities of events to their theoretical expectations and explains the differences. |
| D2.2 determine and compare the [theoretical](https://www.dcp.edu.gov.on.ca/en/) and [experimental probabilities](https://www.dcp.edu.gov.on.ca/en/) of multiple [independent events](https://www.dcp.edu.gov.on.ca/en/) happening and of multiple [dependent events](https://www.dcp.edu.gov.on.ca/en/) happening | **Data Management Unit 2: Data**  9. Probability of Multiple Independent Events  10. Probability of Multiple Dependent Events  **Algebra Unit 3: Coding**  14: Using Code to Simulate Independent Events | **Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphical 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).  - Distinguishes between independent and dependent events (e.g., removing marbles without replacement).  **Drawing Conclusions by Making Inferences and Justifying Decisions Based on Data Collected**  - Compares short- and long-run experimental probabilities of events to their theoretical expectations and explains the differences. |

|  |  |  |
| --- | --- | --- |
| **Curriculum Expectations** | **Grade 8 Mathology.ca** | **Pearson Canada Grades 4–9 Mathematics Learning Progression** |
| **E. Spatial Sense** | | |
| **E1. Geometric and Spatial Reasoning**  describe and represent shape location, and movement by applying geometric properties and spatial relationships in order to navigate the world around them | | |
| **Geometric Reasoning** | | |
| E1.1 identify geometric properties of tessellating shapes and identify the [transformations](https://www.dcp.edu.gov.on.ca/en/) that occur in the [tessellations](https://www.dcp.edu.gov.on.ca/en/) | **Geometry Unit 1: 2-D Shapes and 3-D Objects**  8: Exploring Tessellations | **Big Idea: 2-D shapes and 3-D solids can be transformed in many ways and analyzed for change.**  **Exploring 2-D Shapes and 3-D Solids by Applying and Visualizing Transformations**  - Uses properties of shapes and transformations to design tessellations. |
| E1.2 make objects and models using appropriate scales, given their top, front, and side views or their [perspective views](https://www.dcp.edu.gov.on.ca/en/) | **Geometry Unit 1: 2-D Shapes and 3-D Objects**  9: Building Objects from Drawings | **Big Idea: Objects can be located in space and viewed from multiple perspectives.**  **Viewing and Representing Objects from Multiple Perspectives**  - Interprets and created coded plans, and constructs objects from plans (e.g., uses linking cubes to build 3-D object from plan). |
| **Location and Movement** | | |
| E1.3 use [scale drawings](https://www.dcp.edu.gov.on.ca/en/) to calculate actual lengths and areas, and reproduce scale drawings at different [ratios](https://www.dcp.edu.gov.on.ca/en/) | **Geometry Unit 1: 2-D Shapes and 3-D Objects**  3: Using Scale Drawings  9: Building Objects from Drawings | **Big Idea: Objects can be located in space and viewed from multiple perspectives.**  **Viewing and Representing Objects from Multiple Perspectives**  - Interprets and created coded plans, and constructs objects from plans (e.g., uses linking cubes to build 3-D object from plan).  **Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.**  **Understanding Relationships Among Measured Units**  - Investigates the proportional effect of a scale factor on side lengths, perimeter, and area of similar (i.e., scalar) 2-D shapes. |
| E1.4 describe and perform translations, reflections, rotations, and dilations on a Cartesian plane, and predict the results of these transformations | **Geometry Unit 1: 2-D Shapes and 3-D Objects**  7: Transformations on the Cartesian Plane  **Algebra Unit 3: Coding**  11: Using Code to Explore Translations | **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. |
| **E2. Measurement**  compare, estimate, and determine measurements in various contexts | | |
| **The Metric System** | | |
| E2.1 represent very large (mega, giga, tera) and very small (micro, nano, pico) metric units using models, base ten relationships, and [exponential notation](https://www.dcp.edu.gov.on.ca/en/) | **Number Unit 1: Number Relationships**  3: Very Large and Very Small Numbers around Us | **Big Idea:** **Numbers are related in many ways.**  **Estimating Quantities and Numbers**  - Uses scientiﬁc notation to approximate large and small values (e.g., 395 674 213 is approximately 4.0 × 108).  **Big Idea:** **Quantities and numbers can be grouped by or partitioned into equal-sized units.**  **Unitizing Quantities into Base-Ten Units**  - Uses place value, rounding, and powers of 10 to represent very large and very small numbers using scientific notation (e.g., 3 241 782 can be represented as 3.24 × 106). |
| **Lines and Angles** | | |
| E2.2 solve problems involving angle properties, including the properties of intersecting and [parallel lines](https://www.dcp.edu.gov.on.ca/en/) and of polygons | **Measurement Unit 1: 2-D Shapes and 3-D Objects**  4: Exploring Angle Properties | **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**  - Develops and applies understanding of angle relationships of intersecting lines, transversals, and triangles to solve problems.  - Uses interior angle properties of polygons to solve problems and determine similarity |

|  |  |  |
| --- | --- | --- |
| **Length, Area, and Volume** | | |
| E2.3 solve problems involving the [perimeter](https://www.dcp.edu.gov.on.ca/en/), [circumference](https://www.dcp.edu.gov.on.ca/en/), area, [volume](https://www.dcp.edu.gov.on.ca/en/), and [surface area](https://www.dcp.edu.gov.on.ca/en/) of composite [two-dimensional shapes](https://www.dcp.edu.gov.on.ca/en/) and [three-dimensional objects](https://www.dcp.edu.gov.on.ca/en/), using appropriate formulas | **Measurement Unit 1: 2-D Shapes and 3-D Objects**  6: Solving Problems with 2-D Composite Shapes  10. Solving Problems with 3-D Composite Objects  **Algebra Unit 3: Coding** 12: Using Code to Explore Volume and Surface Area | **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).  - Determines volume and surface area of composite 3-D objects. |
| E2.4 describe the [Pythagorean relationship](https://www.dcp.edu.gov.on.ca/en/) using various geometric models, and apply the [theorem](https://www.dcp.edu.gov.on.ca/en/) to solve problems involving an unknown side length for a given [right triangle](https://www.dcp.edu.gov.on.ca/en/) | **Measurement Unit 1: 2-D Shapes and 3-D Objects**  1: Exploring Relationships in Right Triangles  2: Solving Problems with the Pythagorean Relationship | **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 construct, compute, and apply the Pythagorean Theorem |

|  |  |  |
| --- | --- | --- |
| **Curriculum Expectations** | **Grade 8 Mathology.ca** | **Pearson Canada Grades 4–9 Mathematics Learning Progression** |
| **Financial Literacy** | | |
| **F1. Money and Finances**  demonstrate the knowledge and skills needed to make informed financial decisions | | |
| **Money Concepts** | | |
| F1.1 describe some advantages and disadvantages of various [methods of payment](https://www.dcp.edu.gov.on.ca/en/) that can be used when dealing with multiple [currencies](https://www.dcp.edu.gov.on.ca/en/) and [exchange rates](https://www.dcp.edu.gov.on.ca/en/) | **Financial Literacy Unit 1: Financial Literacy**  1. Exploring Methods of Payment between Countries | **Big Idea: Numbers are related in many ways.**  **Using Ratios, Rates, Proportions, and Percents Creates a Relationship Between Quantities**  - Uses equations to represent proportional relationships and solve problems (e.g., using exchange rates to convert between currencies). |
| **Financial Management** | | |
| F1.2 create a [financial plan](https://www.dcp.edu.gov.on.ca/en/) to reach a long-term [financial goal](https://www.dcp.edu.gov.on.ca/en/), accounting for [income](https://www.dcp.edu.gov.on.ca/en/), [expenses](https://www.dcp.edu.gov.on.ca/en/), and tax implications | **Financial Literacy Unit 1: Financial Literacy**  2. Creating Financial Plans for Long-Term Goals | **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 100 (e.g., calculating sales tax, tips, or discounts).  **Big Idea: Quantities and numbers can be operated on to determine how many and how much.**  **Developing Fluency of Operations**   * Solves decimal number computation using efficient strategies. |
| F1.3 identify different ways to maintain a [balanced budget](https://www.dcp.edu.gov.on.ca/en/), and use appropriate tools to track all income and [spending](https://www.dcp.edu.gov.on.ca/en/), for several different scenarios | **Financial Literacy Unit 1: Financial Literacy**  3. Maintaining a Balanced Budget | **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 100 (e.g., calculating sales tax, tips, or discounts).  **Big Idea: Quantities and numbers can be operated on to determine how many and how much.**  **Developing Fluency of Operations**   * Solves decimal number computation using efficient strategies. |
| F1.4 determine the growth of [simple](https://www.dcp.edu.gov.on.ca/en/) and [compound interest](https://www.dcp.edu.gov.on.ca/en/) at various rates using digital tools, and explain the impact interest has on long-term financial planning | **Financial Literacy Unit 1: Financial Literacy**  4. Simple Interest and Compound Interest  5. Growth and Impact of Interest at Different Rates | **Big Idea: Numbers are related in many ways.**  **Using Ratios, Rates, Proportions, and Percents Creates a Relationship Between Quantities**  - Explores percentage increase and percentage decrease to solve problems (e.g., calculating simple and compound interest).  **Big Idea: Quantities and numbers can be operated on to determine how many and how much.**  **Developing Fluency of Operations**   * Solves decimal number computation using efficient strategies. |
| **Consumer and Civic Awareness** | | |
| F1.5 compare various ways for consumers to get more value for their money when spending, including taking advantage of sales and customer [loyalty](https://www.dcp.edu.gov.on.ca/en/) and [incentive programs](https://www.dcp.edu.gov.on.ca/en/), and determine the best choice for different scenarios | **Financial Literacy Unit 1: Financial Literacy**  6. Making the Most of Your Money | **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 100 (e.g., calculating sales tax, tips, or discounts).  **Big Idea: Quantities and numbers can be operated on to determine how many and how much.**  **Developing Fluency of Operations**   * Solves decimal number computation using efficient strategies. |
| F1.6 compare interest rates, annual [fees](https://www.dcp.edu.gov.on.ca/en/), and rewards and other incentives offered by various [credit card](https://www.dcp.edu.gov.on.ca/en/) companies and [consumer contracts](https://www.dcp.edu.gov.on.ca/en/) to determine the best value and the best choice for different scenarios | **Financial Literacy Unit 1: Financial Literacy**  7. Comparing Credit Cards and other Consumer Contracts | **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 100 (e.g., calculating sales tax, tips, or discounts).  **Big Idea: Quantities and numbers can be operated on to determine how many and how much.**  **Developing Fluency of Operations**   * Solves decimal number computation using efficient strategies. |