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Description automatically generatedOntario Ministry Sample Long Range Planner: By Topic**

**and Mathology Grade 4**

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| Time: 10 Days | |
| Ontario Ministry Topics and Expectations | Pearson Mathology Lessons |
| **Attributes and Numbers**  **Introduce and apply throughout the year as appropriate**  B1.1 read, represent, compose, and decompose whole numbers up to and including 10 000, using appropriate tools and strategies, and describe various ways they are used in everyday life  B1.7 read, represent, compare, and order decimal tenths, in various contexts  E2.3 solve problems involving elapsed time by applying the relationships between different units of time | Number Unit 1: Number Relationships and Place Value  1: Representing Numbers to 10 000  3: Estimating and Rounding Numbers  5: Estimating to Solve Problems  Number Unit 4: Decimals  20: Exploring Tenths  Measurement Unit 3: Time  12: Exploring Time  13: Telling Time in One- and Five-Minute Intervals  14: Telling Time on a 24-Hour Clock  15: Relationships Between Units of Time  16: Exploring Elapsed Time  ***18: Consolidation (Time)*** |
| **Using characteristics to classify**  C1.1 identify and describe repeating and growing patterns, including patterns found in real-life contexts  E1.1 identify geometric properties of rectangles, including the number of right angles, parallel and perpendicular sides, and lines of symmetry  E2.4 identify angles and classify them as right, straight, acute, or obtuse | Patterning Unit 1: Increasing and Decreasing Patterns  1: Repeating and Growing Patterns  Geometry Unit 1B: 2-D Shapes and Angles  1: Exploring Benchmark Angles  2: Properties of Rectangles  3: Investigating Polygons  ***4: Consolidation (2-D Shapes and Angles)*** |

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| **Facts, Expressions and Equations including Area of a Rectangle**  **Developing multiplication facts using the area of a rectangle**  B2.2 recall and demonstrate multiplication facts for  1 × 1 to 10 × 10, and related division facts  E2.5 use the row and column structure of an array to measure the areas of rectangles and to show that the area of any rectangle can be found by multiplying its side lengths | Number Unit 5: Fluency with Multiplication and Division Facts  24: Strategies for Multiplication  25: Solving Multiplication Problems  26: Relating Multiplication and Division  27: Strategies for Division  28: Whole Number Rates  ***29: Consolidation (Fluency with Multiplication and Division Facts)***  Measurement Unit 1: Length, Perimeter, and Area  4: Estimating and Measuring Area in Square Metres  5: Estimating and Measuring Area in Square Centimetres  6: Exploring the Area of Rectangles |
| **Understanding and working with equations**  B2.1 use the properties of operations, and the relationships between addition, subtraction, multiplication, and division, to solve problems involving whole numbers, including those requiring more than one operation, and check calculations  C2.1 identify and use symbols as variables in expressions and equations  C2.2 solve equations that involve whole numbers up to 50 in various contexts, and verify solutions  E2.6 apply the formula for the area of a rectangle to find the unknown measurement when given two of the three | Number Unit 2: Fluency with Addition and Subtraction  7: Estimating Sums and Differences  8: Modelling Addition and Subtraction  9: Adding and Subtracting Larger Numbers  10: Using Mental Math to Add and Subtract  11: Creating and Solving Problems  ***12: Consolidation (Fluency with Addition and Subtraction)***  Patterning Unit 2: Variables and Equations  7: Using Symbols  8: Solving Equations Concretely  9: Solving Addition and Subtraction Equations  10: Solving Addition and Subtraction Inequalities  11: Solving Multiplication and Division Equations  12: Using Equations to Solve Problems  ***13: Consolidation (Variables and Equations)***  Measurement Unit 1: Length, Perimeter, and Area  4: Estimating and Measuring Area in Square Metres  5: Estimating and Measuring Area in Square Centimetres  6: Exploring the Area of Rectangles |

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| **Number Patterns and Number Relationships**  **Extending place value to decimal tenths**  B1.1 read, represent, compose, and decompose whole numbers up to and including 10 000, using appropriate tools and strategies, and describe various ways they are used in everyday life  B1.6 count to 10 by halves, thirds, fourths, fifths, sixths, eighths, and tenths, with and without the use of tools  C1.4 create and describe patterns to illustrate relationships among whole numbers and decimal tenths | Number Unit 1: Number Relationships and Place Value  2: Composing and Decomposing Larger Numbers  4: Comparing and Ordering Numbers  ***6: Consolidation (Number Relationships and Place Value)***  Number Unit 3: Fractions  13: What Are Fractions?  14: Counting by Unit Fractions  15: Exploring Different Representations of Fractions  Patterning Unit 1: Increasing and Decreasing Patterns  4: Investigating Number Relationships |
| **Representing fractions**  B1.4 represent fractions from halves to tenths using drawings, tools, and standard fractional notation, and explain the meanings of the denominator and the numerator  B1.9 describe relationships and show equivalences among fractions and decimal tenths, in various contexts  B2.7 represent the relationship between the repeated addition of a unit fraction and the multiplication of that unit fraction by a whole number, using tools, drawings, and standard fractional notation | Number Unit 3: Fractions  15: Exploring Different Representations of Fractions  16: Sharing Equally  17: Exploring Equivalence in Fractions  Number Unit 7: Operations with Decimals and Fractions  39: Repeated Addition with Unit Fractions  ***40: Consolidation (Operations with Decimals and Fractions)*** |

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| Time: 30 Days | |
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| **Collection, Organization, Representation, and Analysis of Data, and Introduction to Mathematical Modelling**  **Collecting, organizing, and representing data**  B1.1 read, represent, compose, and decompose whole numbers up to and including 10 000, using appropriate tools and strategies, and describe various ways they are used in everyday life  B1.2 compare and order whole numbers up to and including 10 000, in various contexts  D1.1 describe the difference between qualitative and quantitative data, and describe situations where each would be used  D1.2 collect data from different primary and secondary sources to answer questions of interest that involve comparing two or more sets of data, and organize the data in frequency tables and stem-and-leaf plots  D1.3 select from among a variety of graphs, including multiple-bar graphs, 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  D1.4 create an infographic about a data set, representing the data in appropriate ways, including in frequency tables, stem-and-leaf plots, and multiple-bar graphs, and incorporating any other relevant information that helps to tell a story about the data | Number Unit 1: Number Relationships and Place Value  2: Composing and Decomposing Larger Numbers  4: Comparing and Ordering Numbers  ***6: Consolidation (Number Relationships and Place Value)***  Data Management and Probability Unit 1B: Data Management  1: Qualitative and Quantitative Data  2: Collecting and Organizing Data  3: Exploring Stem-and-Leaf Plots and Multiple-Bar Graphs  4: Determining Mean, Median, and Mode  5: Analyzing Data  6: Creating Infographics  ***7: Consolidation (Data Management)*** |
| **Posing a real-life situation that requires the process of mathematical modelling and involves the collection, organization, representation and analysis of data. \***  C4 apply the process of mathematical modelling to represent, analyze, make predictions, and provide insight into real-life situations\*\*  \* Depending on the situation it may be appropriate to complete the mathematical modelling task now or continue as new learning is acquired.  \*\* One aspect of the mathematical modelling process is to identify things that change (variable) and things that remain the same. | Number Unit 1: Number Relationships and Place Value  5: Estimating to Solve Problems  Number Unit 2: Fluency with Addition and Subtraction  11: Creating and Solving Problems  Number Unit 3: Fractions  16: Sharing Equally  Number Unit 4: Decimals  22: Comparing and Ordering Decimals  Number Unit 5: Fluency with Multiplication and Division Facts  27: Strategies for Division  Number Unit 6: Multiplying and Dividing Larger Numbers  30: Exploring Strategies for Multiplying  34: Dividing with Remainders  Number Unit 7: Operations with Decimals and Fractions  36: Estimating Sums and Differences with Decimals  Number Unit 8: Financial Literacy  41: Purchasing and Making Change (Whole-Dollar Amounts)  Patterning Unit 1: Increasing and Decreasing Patterns  3: Representing Patterns  Patterning Unit 2: Variables and Equations  12: Using Equations to Solve Problems  Patterning Unit 3: Coding  14: Writing Code  Measurement Unit 1: Length, Perimeter, and Area  6: Exploring the Area of Rectangles  Measurement Unit 2: Mass and Capacity  9: Investigating Capacity  Measurement Unit 3: Time  16: Exploring Elapsed Time  Geometry Unit 1B: 2-D Shapes and Angles  2: Properties of Rectangles  Geometry Unit 2: Grids and Transformations  5: Investigating Translations  Data Management and Probability Unit 1B: Data Management  5: Analyzing Data  Data Management and Probability Unit 2: Probability  11: Making and Testing Predictions |

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| **Transformations and Coding**  **Creating, describing, and performing transformations**  E1.2 plot and read coordinates in the first quadrant of a Cartesian plane, and describe the translations that move a point from one coordinate to another  E1.3 describe and perform translations and reflections on a grid, and predict the results of these transformations  C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential, concurrent, repeating, and nested events  C3.2 read and alter existing code, including code that involves sequential, concurrent, repeating, and nested events, and describe how changes to the code affect the outcomes | Geometry Unit 2: Grids and Transformations  5: Investigating Translations  6: Plotting and Reading Coordinates  7: Investigating Reflections  ***8: Consolidation (Grids and Transformations)***  Patterning Unit 3: Coding  14: Writing Code  15: Making Shapes  16: Coding a Concurrent Shape Design  ***17: Consolidation (Coding)*** |

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| **Comparison of Quantities**  **Comparing measures**  E2.2 use metric prefixes to describe the relative size of different metric units, and choose appropriate units and tools to measure length, mass, and capacity | Measurement Unit 1: Length, Perimeter, and Area  1: Estimating and Measuring in Millimetres  2: Measuring Length in Different Units  4: Estimating and Measuring Area in Square Metres  5: Estimating and Measuring Area in Square Centimetres  6: Exploring the Area of Rectangles  ***7: Consolidation (Length, Perimeter, and Area)***  Measurement Unit 2: Mass and Capacity  8: Investigating Mass  9: Investigating Capacity  10: Exploring Metric Prefixes |
| **Comparing whole numbers, fractions and decimal tenths**  B1.2 compare and order whole numbers up to and including 10 000, in various contexts  B1.5 use drawings and models to represent, compare, and order fractions representing the individual portions that result from two different fair-share scenarios involving any combination of 2, 3, 4, 5, 6, 8, and 10 sharers  B1.7 read, represent, compare, and order decimal tenths, in various contexts  **Comparing two expressions solutions**  C2.3 solve inequalities that involve addition and subtraction of whole numbers up to 20, and verify and graph the solutions | Number Unit 1: Number Relationships and Place Value  2: Composing and Decomposing Larger Numbers  4: Comparing and Ordering Numbers  Number Unit 3: Fractions  16: Sharing Equally  17: Exploring Equivalence in Fractions  18: Comparing and Ordering Fractions  ***19: Consolidation (Fractions)***  Number Unit 4: Decimals  20: Exploring Tenths  22: Comparing and Ordering Decimals  ***23: Consolidation (Decimals)***  Patterning Unit 2: Variables and Equations  10: Solving Addition and Subtraction Inequalities |

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| **Proportional Relationships and Measurements**  **Using proportional reasoning**  B2.3 use mental math strategies to multiply whole numbers by 10, 100, and 1000, divide whole numbers by 10, and add and subtract decimal tenths, and explain the strategies used  E2.1 explain the relationships between grams and kilograms as metric units of mass, and between litres and millilitres as metric units of capacity, and use benchmarks for these units to estimate mass and capacity  E2.2 use metric prefixes to describe the relative size of different metric units, and choose appropriate units and tools to measure length, mass, and capacity  B2.8 show simple multiplicative relationships involving whole-number rates, using various tools and drawings  E2.3 solve problems involving elapsed time by applying the relationships between different units of time | Number Unit 6: Multiplying and Dividing Larger Numbers  30: Exploring Strategies for Multiplying  31: Estimating Products  32: Exploring Strategies for Dividing  33: Estimating Quotients  34: Dividing with Remainders  ***35: Consolidation (Multiplying and Dividing Larger Numbers)***  Measurement Unit 2: Mass and Capacity  10: Exploring Metric Prefixes  ***11: Consolidation (Mass and Capacity)*** |

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| Time: 15 Days | |
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| **Patterns and Likelihood of Events**  **Creating patterns and code, and making predictions about them**  C1.2 create and translate repeating and growing patterns using various representations, including tables of values and graphs  C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in repeating and growing patterns  C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential, concurrent, repeating, and nested events  C3.2 read and alter existing code, including code that involves sequential, concurrent, repeating, and nested events, and describe how changes to the code affect the outcomes | Patterning Unit 1: Increasing and Decreasing Patterns  1: Repeating and Growing Patterns  3: Representing Patterns  4: Investigating Number Relationships  ***6: Consolidation (Increasing and Decreasing Patterns)*** |
| **Predicting the likelihood of an event**  D2.1 use mathematical language, including the terms “impossible”, “unlikely”, “equally likely”, “likely”, and “certain”, to describe the likelihood of events happening, represent this likelihood on a probability line, and use it to make predictions and informed decisions | Data Management and Probability Unit 2: Probability  8: Describing Likelihood of Outcomes  9: Predicting Outcomes  10: Conducting Experiments to Check Predictions  11: Making and Testing Predictions  ***12: Consolidation (Probability)*** |

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| **Operations**  **Developing fluency with adding, subtracting, multiplying, and dividing**  B1.8 round decimal numbers to the nearest whole number, in various contexts  B2.4 represent and solve problems involving the addition and subtraction of whole numbers that add up to no more than 10 000 and of decimal tenths, using appropriate tools and strategies, including algorithms  B2.5 represent and solve problems involving the multiplication of two- or three-digit whole numbers by one-digit whole numbers and by 10, 100, and 1000, using appropriate tools, including arrays  B2.6 represent and solve problems involving the division of two- or three-digit whole numbers by one-digit whole numbers, expressing any remainder as a fraction when appropriate, using appropriate tools, including arrays | Number Unit 2: Fluency with Addition and Subtraction  8: Modelling Addition and Subtraction  9: Adding and Subtracting Larger Amounts  Number Unit 4: Decimals  20: Exploring Tenths  Number Unit 6: Multiplying and Dividing Larger Numbers  30: Exploring Strategies for Multiplying  31: Estimating Products  32: Exploring Strategies for Dividing  33: Estimating Quotients  34: Dividing with Remainders  ***35: Consolidation (Multiplying and Dividing Larger Numbers)***  Number Unit 7: Operations with Decimals and Fractions  36: Estimating Sums and Differences with Decimals  37: Adding and Subtracting Decimals  38: Using Mental Math to Add and Subtract Decimals  Number Unit 8: Financial Literacy  41: Purchasing and Making Change (Whole-Dollar Amounts)  43: Making Financial Decisions  44: Making Good Purchases  ***45: Consolidation (Financial Literacy)*** |

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| **Financial Literacy and Operations involving Money**  **Developing financial concepts**  F1.1 identify various methods of payment that can be used to purchase goods and services  F1.3 explain the concepts of spending, saving, earning, investing, and donating, and identify key factors to consider when making basic decisions related to each  F1.4 explain the relationship between spending and saving, and describe how spending and saving behaviours may differ from one person to another  F1.5 describe some ways of determining whether something is reasonably priced and therefore a good purchase | Number Unit 8: Financial Literacy  41: Purchasing and Making Change (Whole-Dollar Amounts)  43: Making Financial Decisions  44: Making Good Purchases  ***45: Consolidation (Financial Literacy)*** |
| **Using operations and mental math to solve problems involving purchases**  F1.2 estimate and calculate the cost of transactions involving multiple items priced in whole-dollar amounts, not including sales tax, and the amount of change needed when payment is made in cash, using mental math  B1.3 round whole numbers to the nearest ten, hundred, or thousand, in various contexts  B2.1 use the properties of operations, and the relationships between addition, subtraction, multiplication, and division, to solve problems involving whole numbers, including those requiring more than one operation, and check calculations  C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves conditional statements and other control structures  C3.2 read and alter existing code, including code that involves conditional statements and other control structures, and describe how changes to the code affect the outcomes | Number Unit 8: Financial Literacy  41: Purchasing and Making Change (Whole-Dollar Amounts)  Number Unit 1: Number Relationships and Place Value  3: Estimating and Rounding Numbers |

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| **Integrated Task**  This is an opportunity to apply mathematical concepts and skills from this grade to solve real-life problems that require the process of mathematical modelling\*.  Depending on the real-life situation, coding may be a tool in mathematical modelling.  C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves conditional statements and other control structures  C3.2 read and alter existing code, including code that involves conditional statements and other control structures, and describe how changes to the code affect the outcomes  \* One aspect of the mathematical modelling process is to identify things that change (variable) and things that remain the same. Variables may be used to represent quantities that will change. | Number Unit 1: Number Relationships and Place Value  5: Estimating to Solve Problems  Number Unit 2: Fluency with Addition and Subtraction  11: Creating and Solving Problems  Number Unit 3: Fractions  16: Sharing Equally  Number Unit 4: Decimals  22: Comparing and Ordering Decimals  Number Unit 5: Fluency with Multiplication and Division Facts  27: Strategies for Division  Number Unit 6: Multiplying and Dividing Larger Numbers  30: Exploring Strategies for Multiplying  34: Dividing with Remainders  Number Unit 7: Operations with Decimals and Fractions  36: Estimating Sums and Differences with Decimals  Number Unit 8: Financial Literacy  41: Purchasing and Making Change (Whole-Dollar Amounts)  Patterning Unit 1: Increasing and Decreasing Patterns  3: Representing Patterns  Patterning Unit 2: Variables and Equations  12: Using Equations to Solve Problems  Patterning Unit 3: Coding  14: Writing Code  Measurement Unit 1: Length, Perimeter, and Area  6: Exploring the Area of Rectangles  Measurement Unit 2: Mass and Capacity  9: Investigating Capacity  Measurement Unit 3: Time  16: Exploring Elapsed Time  Geometry Unit 1B: 2-D Shapes and Angles  2: Properties of Rectangles  Geometry Unit 2: Grids and Transformations  5: Investigating Translations  Data Management and Probability Unit 1B: Data Management  5: Analyzing Data  Data Management and Probability Unit 2: Probability  11: Making and Testing Predictions |