**Ontario 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 lifeB1.7 read, represent, compare, and order decimal tenths, in various contextsE2.3 solve problems involving elapsed time by applying the relationships between different units of time | Number Unit 1: Number Relationships and Place Value1: Representing Numbers to 10 0003: Estimating and Rounding Numbers5: Estimating to Solve ProblemsNumber Unit 4: Decimals20: Exploring TenthsMeasurement Unit 3: Time12: Exploring Time13: Telling Time in One- and Five-Minute Intervals14: Telling Time on a 24-Hour Clock15: Relationships Between Units of Time16: 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 contextsE1.1 identify geometric properties of rectangles, including the number of right angles, parallel and perpendicular sides, and lines of symmetryE2.4 identify angles and classify them as right, straight, acute, or obtuse | Patterning Unit 1: Increasing and Decreasing Patterns1: Repeating and Growing PatternsGeometry Unit 1B: 2-D Shapes and Angles1: Exploring Benchmark Angles2: Properties of Rectangles3: 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 factsE2.5 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 Facts24: Strategies for Multiplication 25: Solving Multiplication Problems26: Relating Multiplication and Division27: Strategies for Division28: Whole Number Rates***29: Consolidation (Fluency with Multiplication and Division Facts)***Measurement Unit 1: Length, Perimeter, and Area4: Estimating and Measuring Area in Square Metres5: Estimating and Measuring Area in Square Centimetres6: 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 calculationsC2.1 identify and use symbols as variables in expressions and equationsC2.2 solve equations that involve whole numbers up to 50 in various contexts, and verify solutionsE2.6 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 Subtraction7: Estimating Sums and Differences8: Modelling Addition and Subtraction9: Adding and Subtracting Larger Numbers10: Using Mental Math to Add and Subtract11: Creating and Solving Problems***12: Consolidation (Fluency with Addition and Subtraction)***Patterning Unit 2: Variables and Equations7: Using Symbols8: Solving Equations Concretely9: Solving Addition and Subtraction Equations10: Solving Addition and Subtraction Inequalities11: Solving Multiplication and Division Equations12: Using Equations to Solve Problems***13: Consolidation (Variables and Equations)***Measurement Unit 1: Length, Perimeter, and Area4: Estimating and Measuring Area in Square Metres5: Estimating and Measuring Area in Square Centimetres6: 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 lifeB1.6 count to 10 by halves, thirds, fourths, fifths, sixths, eighths, and tenths, with and without the use of toolsC1.4 create and describe patterns to illustrate relationships among whole numbers and decimal tenths | Number Unit 1: Number Relationships and Place Value2: Composing and Decomposing Larger Numbers4: Comparing and Ordering Numbers***6: Consolidation (Number Relationships and Place Value)***Number Unit 3: Fractions13: What Are Fractions?14: Counting by Unit Fractions15: Exploring Different Representations of FractionsPatterning Unit 1: Increasing and Decreasing Patterns4: 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 numeratorB1.9 describe relationships and show equivalences among fractions and decimal tenths, in various contextsB2.7 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: Fractions15: Exploring Different Representations of Fractions16: Sharing Equally17: Exploring Equivalence in FractionsNumber Unit 7: Operations with Decimals and Fractions39: Repeated Addition with Unit Fractions***40: Consolidation (Operations with Decimals and Fractions)*** |

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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 lifeB1.2 compare and order whole numbers up to and including 10 000, in various contextsD1.1 describe the difference between qualitative and quantitative data, and describe situations where each would be usedD1.2 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 plotsD1.3 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 graphsD1.4 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 Value2: Composing and Decomposing Larger Numbers4: Comparing and Ordering Numbers***6: Consolidation (Number Relationships and Place Value)***Data Management and Probability Unit 1B: Data Management1: Qualitative and Quantitative Data2: Collecting and Organizing Data3: Exploring Stem-and-Leaf Plots and Multiple-Bar Graphs4: Determining Mean, Median, and Mode5: Analyzing Data6: 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 Value5: Estimating to Solve ProblemsNumber Unit 2: Fluency with Addition and Subtraction11: Creating and Solving ProblemsNumber Unit 3: Fractions16: Sharing EquallyNumber Unit 4: Decimals22: Comparing and Ordering DecimalsNumber Unit 5: Fluency with Multiplication and Division Facts27: Strategies for DivisionNumber Unit 6: Multiplying and Dividing Larger Numbers30: Exploring Strategies for Multiplying34: Dividing with RemaindersNumber Unit 7: Operations with Decimals and Fractions36: Estimating Sums and Differences with DecimalsNumber Unit 8: Financial Literacy41: Purchasing and Making Change (Whole-Dollar Amounts)Patterning Unit 1: Increasing and Decreasing Patterns3: Representing PatternsPatterning Unit 2: Variables and Equations12: Using Equations to Solve ProblemsPatterning Unit 3: Coding14: Writing CodeMeasurement Unit 1: Length, Perimeter, and Area6: Exploring the Area of RectanglesMeasurement Unit 2: Mass and Capacity9: Investigating CapacityMeasurement Unit 3: Time16: Exploring Elapsed TimeGeometry Unit 1B: 2-D Shapes and Angles2: Properties of RectanglesGeometry Unit 2: Grids and Transformations5: Investigating TranslationsData Management and Probability Unit 1B: Data Management5: Analyzing DataData Management and Probability Unit 2: Probability11: 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 anotherE1.3 describe and perform translations and reflections on a grid, and predict the results of these transformationsC3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential, concurrent, repeating, and nested eventsC3.2 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 Transformations5: Investigating Translations6: Plotting and Reading Coordinates7: Investigating Reflections***8: Consolidation (Grids and Transformations)***Patterning Unit 3: Coding14: Writing Code15: Making Shapes16: 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 Area1: Estimating and Measuring in Millimetres2: Measuring Length in Different Units4: Estimating and Measuring Area in Square Metres5: Estimating and Measuring Area in Square Centimetres6: Exploring the Area of Rectangles***7: Consolidation (Length, Perimeter, and Area)***Measurement Unit 2: Mass and Capacity8: Investigating Mass9: Investigating Capacity10: 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 contextsB1.5 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 sharersB1.7 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 Value2: Composing and Decomposing Larger Numbers4: Comparing and Ordering NumbersNumber Unit 3: Fractions16: Sharing Equally17: Exploring Equivalence in Fractions18: Comparing and Ordering Fractions***19: Consolidation (Fractions)***Number Unit 4: Decimals20: Exploring Tenths22: Comparing and Ordering Decimals***23: Consolidation (Decimals)***Patterning Unit 2: Variables and Equations10: 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 usedE2.1 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 capacityE2.2 use metric prefixes to describe the relative size of different metric units, and choose appropriate units and tools to measure length, mass, and capacityB2.8 show simple multiplicative relationships involving whole-number rates, using various tools and drawingsE2.3 solve problems involving elapsed time by applying the relationships between different units of time | Number Unit 6: Multiplying and Dividing Larger Numbers30: Exploring Strategies for Multiplying31: Estimating Products32: Exploring Strategies for Dividing33: Estimating Quotients34: Dividing with Remainders***35: Consolidation (Multiplying and Dividing Larger Numbers)***Measurement Unit 2: Mass and Capacity10: 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 graphsC1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in repeating and growing patternsC3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential, concurrent, repeating, and nested eventsC3.2 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 Patterns1: Repeating and Growing Patterns3: Representing Patterns4: 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: Probability8: Describing Likelihood of Outcomes9: Predicting Outcomes10: Conducting Experiments to Check Predictions11: 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 contextsB2.4 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 algorithmsB2.5 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 arraysB2.6 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 Subtraction8: Modelling Addition and Subtraction9: Adding and Subtracting Larger AmountsNumber Unit 4: Decimals20: Exploring TenthsNumber Unit 6: Multiplying and Dividing Larger Numbers30: Exploring Strategies for Multiplying31: Estimating Products32: Exploring Strategies for Dividing33: Estimating Quotients34: Dividing with Remainders***35: Consolidation (Multiplying and Dividing Larger Numbers)***Number Unit 7: Operations with Decimals and Fractions36: Estimating Sums and Differences with Decimals37: Adding and Subtracting Decimals38: Using Mental Math to Add and Subtract DecimalsNumber Unit 8: Financial Literacy41: Purchasing and Making Change (Whole-Dollar Amounts)43: Making Financial Decisions44: 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 servicesF1.3 explain the concepts of spending, saving, earning, investing, and donating, and identify key factors to consider when making basic decisions related to eachF1.4 explain the relationship between spending and saving, and describe how spending and saving behaviours may differ from one person to anotherF1.5 describe some ways of determining whether something is reasonably priced and therefore a good purchase | Number Unit 8: Financial Literacy41: Purchasing and Making Change (Whole-Dollar Amounts)43: Making Financial Decisions44: 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 mathB1.3 round whole numbers to the nearest ten, hundred, or thousand, in various contextsB2.1 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 calculationsC3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves conditional statements and other control structuresC3.2 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 Literacy41: Purchasing and Making Change (Whole-Dollar Amounts)Number Unit 1: Number Relationships and Place Value3: 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 structuresC3.2 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 Value5: Estimating to Solve ProblemsNumber Unit 2: Fluency with Addition and Subtraction11: Creating and Solving ProblemsNumber Unit 3: Fractions16: Sharing EquallyNumber Unit 4: Decimals22: Comparing and Ordering DecimalsNumber Unit 5: Fluency with Multiplication and Division Facts27: Strategies for DivisionNumber Unit 6: Multiplying and Dividing Larger Numbers30: Exploring Strategies for Multiplying34: Dividing with RemaindersNumber Unit 7: Operations with Decimals and Fractions36: Estimating Sums and Differences with DecimalsNumber Unit 8: Financial Literacy41: Purchasing and Making Change (Whole-Dollar Amounts)Patterning Unit 1: Increasing and Decreasing Patterns3: Representing PatternsPatterning Unit 2: Variables and Equations12: Using Equations to Solve ProblemsPatterning Unit 3: Coding14: Writing CodeMeasurement Unit 1: Length, Perimeter, and Area6: Exploring the Area of RectanglesMeasurement Unit 2: Mass and Capacity9: Investigating CapacityMeasurement Unit 3: Time16: Exploring Elapsed TimeGeometry Unit 1B: 2-D Shapes and Angles2: Properties of RectanglesGeometry Unit 2: Grids and Transformations5: Investigating TranslationsData Management and Probability Unit 1B: Data Management5: Analyzing DataData Management and Probability Unit 2: Probability11: Making and Testing Predictions |