**Ontario Ministry Sample Long Range Planner: By Topic**

**and Mathology Grade 6**

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| Time: 10 Days |
| Ontario Ministry Topics and Expectations | Pearson Mathology Lessons |
| **Extending place value to one million and decimal thousandths**B1.1 read and represent whole numbers up to and including one million, using appropriate tools and strategies, and describe various ways they are used in everyday lifeC1.4 create and describe patterns to illustrate relationships among whole numbers and decimal numbers | Number Unit 1: Number Relationships and Place Value1: Representing Larger Numbers (to 1 000 000 and Beyond)2: Representing Numbers in Different Forms***5: Consolidation (Number Relationships and Place Value)***Patterning Unit 1: Patterning2: Solving Problems3: Representing Patterns in Different Ways |
| **Using characteristics to classify**C1.1 identify and describe repeating, growing, and shrinking patterns, including patterns found in real-life contexts, and specify which growing patterns are linearE1.1 create lists of the geometric properties of various types of quadrilaterals, including the properties of the diagonals, rotational symmetry, and line symmetry | Patterning Unit 1: Patterning1: Investigating Patterns and Relationships in Tables and Graphs2: Solving ProblemsGeometry Unit 1B: 2-D Shapes and Angles1: Measuring and Constructing Angles3: Properties of Quadrilaterals4: Constructing 3-D Objects***5: Consolidation (2-D Shapes and Angles)*** |
| **Determining area by decomposing shapes**E2.4 determine the areas of trapezoids, rhombuses, kites, and composite polygons by decomposing them into shapes with known areasE2.5 create and use nets to demonstrate the relationship between the faces of prisms and pyramids and their surface areasE2.6 determine the surface areas of prisms and pyramids by calculating the areas of their two-dimensional faces and adding them together | Measurement Unit 1B: Length, Mass, Capacity, and Area2: Determining Area3: Surface Area of Prisms and Pyramids***4: Consolidation (Length, Mass, Capacity, and Area)*** |

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| **Finding factors**B1.5 round decimal numbers, both terminating and repeating, to the nearest tenth, hundredth, or whole number, as applicable, in various contextsB2.2 understand the divisibility rules and use them to determine whether numbers are divisible by 2, 3, 4, 5, 6, 8, 9, and 10B2.6 represent composite numbers as a product of their prime factors, including through the use of factor trees | Number Unit 1: Number Relationshipsand Place Value3: Identifying Factors and Multiples4: Identifying Prime and Composite Numbers***5: Consolidation (Number Relationships and Place Value)***Number Unit 2: Fluency with Whole Numbers6: Solving Problems with Whole NumbersNumber Unit 3: Fractions, Decimals, Percents, and Integers16: Comparing and Ordering Decimals***21: Consolidation (Fractions, Decimals, Percents, and Integers)*** |
| **Working with integers**B1.2 read and represent integers, using a variety of tools and strategies, including horizontal and vertical number linesB1.3 compare and order integers, decimal numbers, and fractions, separately and in combination, in various contextsE1.3 plot and read coordinates in all four quadrants of a Cartesian plane, and describe the translations that move a point from one coordinate to another | Number Unit 3: Fractions, Decimals, Percents, and Integers14: Comparing and Ordering Fractions17: Comparing and Ordering Fractions and Decimals19: Representing Integers20: Comparing and Ordering IntegersGeometry Unit 2: Grids and Transformations6: Plotting and Reading Coordinates8: Rotating 2-D Shapes up to 360°Patterning Unit 3: Coding12: Making Shapes13: Classifying Polygons |

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| Time: 25 Days |
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| **Collecting, organizing, and representing data**D1.1 describe the difference between discrete and continuous data, and provide examples of eachD1.2 collect qualitative data and discrete and continuous quantitative data to answer questions of interest about a population, and organize the sets of data as appropriate, including using intervalsD1.3 select from among a variety of graphs, including histograms and broken-line 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 tables, histograms, and broken-line graphs, and incorporating any other relevant information that helps to tell a story about the data | Data Management and Probability Unit 1: Data Management1: Exploring Line Graphs2: Exploring Histograms3: Collecting and Organizing Data4: Interpreting Graphs to Solve Problems5: Determining Range and Measures of Central Tendency |
| **Analyzing data using measures of central tendency**D1.5 determine the range as a measure of spread and the measures of central tendency for various data sets, and use this information to compare two or more data setsD1.6 analyze different sets of data presented in various ways, including in histograms and broken-line graphs and in misleading graphs, by asking and answering questions about the data, challenging preconceived notions, and drawing conclusions, then make convincing arguments and informed decisions | Data Management and Probability Unit 1: Data Management***6: 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 Value4: Identifying Prime and Composite NumbersNumber Unit 2: Fluency with Whole Numbers6: Solving Problems with Whole NumbersNumber Unit 3: Fractions, Decimals, Percents, and Integers14: Comparing and Ordering FractionsNumber Unit 4: Operations with Decimals, Fractions, and Percentages22: Multiplying Decimals by 1-Digit NumbersNumber Unit 5: Financial Literacy33: Planning for Financial GoalsPatterning Unit 2: Variables and Equations8: Solving EquationsMeasurement Unit 1B: Length, Mass, Capacity, and Area2: Determining AreaData Management and Probability Unit 1: Data Management2: Exploring HistogramsData Management and Probability Unit 2: Probability8: Identifying Possible OutcomesPatterning Unit 3: Coding11: Altering Code for a Game12: Making Shapes13: Classifying Polygons***14: Consolidation (Coding)*** |

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| **Creating, describing, and performing transformations**E1.3 plot and read coordinates in all four quadrants of a Cartesian plane, and describe the translations that move a point from one coordinate to anotherE1.4 describe and perform combinations of translations, reflections, and rotations up to 360 on a grid, and predict the results of these transformationsC3.1 solve problems and create computational representations of mathematical situations by writing and executing efficient 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 and the efficiency of the code | Geometry Unit 2: Grids and Transformations7: Transformations on a Grid9: Combining Transformations on a Grid***10: Consolidation (Grids and Transformations)***Patterning Unit 3: Coding11: Altering Code for a Game12: Making Shapes13: Classifying Polygons***14: Consolidation (Coding)*** |

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| Time: 15 Days |
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| **Comparing measures spatially**E1.2 construct three dimensional objects when given their top, front, and side viewsE2.5 create and use nets to demonstrate the relationship between the faces of prisms and pyramids and their surface areasE2.6 determine the surface areas of prisms and pyramids by calculating the areas of their two-dimensional faces and adding them together | Geometry Unit 1B: 2-D Shapes and Angles4: Constructing 3-D Objects***5: Consolidation (2-D Shapes and Angles)***Measurement Unit 1B: Length, Mass, Capacity, and Area2: Determining Area3: Surface Area of Prisms and Pyramids***4: Consolidation (Length, Mass, Capacity, and Area)*** |
| **Comparing measures using standard units**E2.1 measure length, area, mass, and capacity using the appropriate metric units, and solve problems that require converting smaller units to larger ones and vice versaE2.2 use a protractor to measure and construct angles up to 360, and state the relationship between angles that are measured clockwise and those that are measured counterclockwiseE2.3 use the properties of supplementary angles, complementary angles, opposite angles, and interior and exterior angles to solve for unknown angle measures | Measurement Unit 1B: Length, Mass, Capacity, and Area1: Relationships Among Metric Units***4: Consolidation (Length, Mass, Capacity, and Area)***Geometry Unit 1B: 2-D Shapes and Angles1: Measuring and Constructing Angles2: Angle Properties and Relationships3: Properties of Quadrilaterals***5: Consolidation (2-D Shapes and Angles)*** |
| **Comparing integers, fractions, and decimal numbers**B1.3 compare and order integers, decimal numbers, and fractions, separately and in combination, in various contextsB1.4 read, represent, compare, and order decimal numbers up to thousandths, in various contextsB1.6 describe relationships and show equivalences among fractions and decimal numbers up to thousandths, using appropriate tools and drawings, in various contexts**Comparing two expressions**C2.4 solve inequalities that involve two operations and whole numbers up to 100, and verify and graph the solutions | Number Unit 3: Fractions, Decimals, Percents, and Integers13: Representing Fractions14: Comparing and Ordering Fractions15: Representing Decimals16: Comparing and Ordering Decimals17: Comparing and Ordering Fractions and Decimals18: Relating Fractions, Decimals, and Percents20: Comparing and Ordering Integers***21: Consolidation (Fractions, Decimals, Percents, and Integers)***Patterning Unit 2: Variables and Equations9: Solving and Graphing Inequalities***10: Consolidation (Variables and Equations)*** |

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| **Using proportional reasoning**B2.3 use mental math strategies to calculate percents of whole numbers, including 1%, 5%, 10%, 15%, 25%, and 50%, and explain the strategies usedB2.5 add and subtract fractions with like and unlike denominators, using appropriate tools, in various contextsB2.9 multiply whole numbers by proper fractions, using appropriate tools and strategiesB2.10 divide whole numbers by proper fractions, using appropriate tools and strategiesB2.12 solve problems involving ratios, including percents and rates, using appropriate tools and strategies | Number Unit 2: Fluency with Whole Numbers10: Unit Rates11: Exploring Ratios***12: Consolidation (Fluency with Whole Numbers)***Number Unit 4: Operations with Decimals, Fractions, and Percentages22: Multiplying Decimals by 1-Digit Numbers23: Multiplying 3-Digit Whole Numbers by Decimal Tenths24: Dividing Decimals by 1-Digit Numbers25: Dividing 3-Digit Whole Numbers by Decimal Tenths26: Adding and Subtracting Decimals27: Adding and Subtracting Fractions28: Multiplying and Dividing Whole Numbers by Proper Fractions29: Using Mental Math to Calculate Percents |

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| **Creating patterns and code, and making predictions about them**C1.1 identify and describe repeating, growing, and shrinking patterns, including patterns found in real-life contexts, and specify which growing patterns are linearC1.2 create and translate repeating, growing, and shrinking patterns using various representations, including tables of values, graphs, and, for linear growing patterns, algebraic expressions and equationsC1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in repeating, growing, and shrinking patterns, and use algebraic representations of the pattern rules to solve for unknown values in linear growing patternsC2.3 solve equations that involve multiple terms and whole numbers in various contexts, and verify solutions**NOTE:** solving for an unknown value with an algebraic representation of a pattern is an application in solving equations | Patterning Unit 1: Patterning1: Investigating Patterns and Relationships in Tables and Graphs2: Solving Problems3: Representing Patterns in Different Ways***4: Consolidation (Patterning)***Patterning Unit 2: Variables and Equations7: Representing Generalizations in Patterns8: Solving Equations***10: Consolidation (Variables and Equations)*** |
| **Expressing and predicting probability**D2.1 use fractions, decimals, and percents to express the probability of events happening, represent this probability on a probability line, and use it to make predictions and informed decisionsD2.2 determine and compare the theoretical and experimental probabilities of two independent events happening | Data Management and Probability Unit 2: Probability7: Exploring Theoretical Probability8: Identifying Possible Outcomes9: Conducting Experiments***10: Consolidation (Probability)*** |
| **Coding can be used to create patterns, check predictions, and simulate probabilities**C3.1 solve problems and create computational representations of mathematical situations by writing and executing efficient 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 and the efficiency of the code | Patterning Unit 3: Coding11: Altering Code for a Game12: Making Shapes13: Classifying Polygons***14: Consolidation (Coding)*** |

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| **Developing fluency with adding, subtracting, multiplying, and dividing**B2.1 use the properties of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and whole number percents, including those requiring multiple steps or multiple operationsB2.4 represent and solve problems involving the addition and subtraction of whole numbers and decimal numbers, using estimation and algorithmsB2.7 represent and solve problems involving the multiplication of three-digit whole numbers by decimal tenths, using algorithmsB2.8 represent and solve problems involving the division of three-digit whole numbers by decimal tenths, using appropriate tools, strategies, and algorithms, and expressing remainders as appropriateB2.11 represent and solve problems involving the division of decimal numbers up to thousandths by whole numbers up to 10, using appropriate tools and strategiesC2.2 evaluate algebraic expressions that involve whole numbers and decimal tenths | Number Unit 2: Fluency with Whole Numbers6: Solving Problems with Whole Numbers7: Estimating Reasonableness of Solutions8: The Order of Operations9: Mental Math StrategiesNumber Unit 4: Operations with Decimals, Fractions, and Percentages22: Multiplying Decimals by 1-Digit Numbers23: Multiplying 3-Digit Whole Numbers by Decimal Tenths24: Dividing Decimals by 1-Digit Numbers25: Dividing 3-Digit Whole Numbers by Decimal Tenths26: Adding and Subtracting Decimals27: Adding and Subtracting Fractions28: Multiplying and Dividing Whole Numbers by Proper Fractions29: Using Mental Math to Calculate Percents***30: Consolidation (Operations with Decimals, Fractions, and Percentages)***Patterning Unit 2: Variables and Equations5: Investigating Algebraic Expressions6: Investigating Equality in Equations |

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| **Developing financial concepts**F1.1 describe the advantages and disadvantages of various methods of payment that can be used to purchase goods and servicesF1.2 identify different types of financial goals, including earning and saving goals, and outline some key steps in achieving themF1.3 identify and describe various factors that may help or interfere with reaching financial goalsF1.4 explain the concept of interest rates, and identify types of interest rates and fees associated with different accounts and loans offered by various banks and other financial institutionsF1.5 describe trading, lending, borrowing, and donating as different ways to distribute financial and other resources among individuals and organizations | Number Unit 5: Financial Literacy31: Advantages and Disadvantages of Payment Methods32: Interest Rates and Fees33: Planning for Financial Goals***34: Consolidation (Financial Literacy)*** |
| **Using operations and mental math to solve problems involving purchases**B2.1 use the properties of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and whole number percents, including those requiring multiple steps or multiple operationsC3.1 solve problems and create computational representations of mathematical situations by writing and executing efficient 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 and the efficiency of the code | Number Unit 2: Fluency with Whole Numbers6: Solving Problems with Whole Numbers7: Estimating Reasonableness of Solutions8: The Order of Operations9: Mental Math StrategiesPatterning Unit 3: Coding11: Altering Code for a Game12: Making Shapes13: Classifying Polygons***14: Consolidation (Coding)*** |

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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 efficient 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 and the efficiency of the code\* 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 Value4: Identifying Prime and Composite NumbersNumber Unit 2: Fluency with Whole Numbers6: Solving Problems with Whole NumbersNumber Unit 3: Fractions, Decimals, Percents, and Integers14: Comparing and Ordering FractionsNumber Unit 4: Operations with Decimals, Fractions, and Percentages22: Multiplying Decimals by 1-Digit NumbersNumber Unit 5: Financial Literacy33: Planning for Financial GoalsPatterning Unit 2: Variables and Equations8: Solving EquationsMeasurement Unit 1B: Length, Mass, Capacity, and Area2: Determining AreaData Management and Probability Unit 1: Data Management2: Exploring HistogramsData Management and Probability Unit 2: Probability8: Identifying Possible OutcomesPatterning Unit 3: Coding11: Altering Code for a Game12: Making Shapes13: Classifying Polygons***14: Consolidation (Coding)*** |