

**Mathology 1 and Ontario Ministry of Education Long-Range Plan: by Topic**

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| **Ontario Ministry Long Range Plan** | **Pearson *Mathology*** | |
| **Attributes and Numbers** | **Big Ideas**   * **Numbers tell us how many and how much.** * **Numbers are related in many ways.** * **Many things in our world (e.g., objects, spaces, events) have attributes that can be measured and compared.** * **2-D shapes and 3-D solids can be analyzed and classified in different ways by their attributes.** | |
| **Time:** 10 days | | |
| **Topics and Expectations** | **What to Look For** | **Little Books/Activity** |
|  |  | On Safari!  - count sets to 20  - add 1 or 2 |
|  |  | Paddling the River  - count, compare, and order to 20  - compose and decompose |
| **Introduce and apply throughout the year as appropriate**  B1.1 read, represent, compose, and decompose whole numbers up to and including 200, using a variety of tools and strategies, and describe various ways they are used in everyday life  E2.3 measure and draw lengths in centimetres and metres, using a measuring tool, and recognize the impact of starting at points other than zero | * *Do students say one number for each item? (magnitude)* * *Are students able to count on from a number?* | Number Cluster 1: Counting  1: Counting to 20  4: Ordinal Numbers  Measurement Cluster 2: Time  9: Relating to Seasons  10: The Calendar |

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| **Topics and Expectations** | **What to Look For** | **Little Books/Activity** |
| **Developing an understanding of attributes**  C1.1 identify and describe a variety of patterns involving geometric designs, including patterns found in real-life contexts  D1.1 sort sets of data about people or things according to two attributes, using tables and logic diagrams, including Venn and Carroll diagrams  E1.1 sort and identify two-dimensional shapes by comparing number of sides, side lengths, angles, and number of lines of symmetry  F1.1 identify different ways of representing the same amount of money up to Canadian 200¢ using various combinations of coins, and up to $200 using various combinations  of $1 and $2 coins and $5, $10, $20, $50, and $100 bills | * *Are students able to sort by attributes?* * *Are they able to explain why something does or does not have the attribute?* | Geometry Cluster 1: 2-D Shapes  1: Sorting Shapes  5: Sorting Rules  Data Management and Probability Cluster 1: Data Management  2: Interpreting Graphs  Number Cluster 8: Financial Literacy  42: Values of Coins |
| **Counting collections and subsets of collections based on attributes**  B1.4 count to 200, including by 20s, 25s, and 50s, using a variety of tools and strategies  B1.5 describe what makes a number even or odd | * *Are students able to subitize or do they count collections? (conceptual subitizing)* * *Do students guess or do they use referents to help estimate quantities?* | Number Cluster 2: Spatial Reasoning  6: Subitizing to 10  7: Estimating Quantities  ***8: Consolidation (Spatial Reasoning)*** |
| ***Reflection: How can we organize, and count based on attributes?*** | | |

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| **Ontario Ministry Long Range Plan** | | **Pearson *Mathology*** | |
| **Number Patterns, Relationships and Equivalency** | | **Big Ideas**   * **Quantities and numbers can be grouped by or partitioned into equal-sized units.** * **Numbers are related in many ways.** * **Quantities and numbers can be added and subtracted to determine how many or how much.** * **Regularity and repetition form patterns that can be generalized and predicted mathematically.** * **Patterns and relations can be represented with symbols, equations, and expressions.** | |
| **Time:** 20 Days | | | |
| **Questions and Expectations** | | **What to Look For** | **Little Books/Activity** |
|  | |  | Nutty and Wolfy  - explore equality and inequality  - compare quantities to 20 |
|  |  |  | At the Corn Farm  - group quantities based on units of 10  - compare and order sets/quantities to 20 |
|  |  |  | Hockey Time!  - add and subtract to 20  - compose and decompose to 20 |
|  | **Using patterns to develop an understanding of relationships among numbers, and addition and subtraction facts**  C1.4 create and describe patterns to illustrate relationships among whole numbers up to 50 | * *Are students able to see repeating patterns when they skip-count by 2s and 5s?* * *Are students able to use math language to describe their patterns (e.g., repeat, core, before, after, beside, next)?* | Patterning and Algebra Cluster 1: Investigating Repeating Patterns  4: Finding Patterns |

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|  | **Questions and Expectations** | **What to Look For** | **Little Books/Activity** |
|  | **Determining equivalency**  B2.2 recall and demonstrate addition facts for numbers up to 10, and related subtraction facts | * *Are students able to build numbers in different ways?* * *Are students able to explain how they know they have made all possible combinations for a given number?* * *How are students finding the other part of 10 (e.g., counting on, visualizing a ten-frame, recalling a known fact)?* * *Do students demonstrate quick recall of some, many, or all of the complements of 10?* | Number Cluster 5: Composing and Decomposing  17: Decomposing 10  18: Numbers to 10  19: Numbers to 20  21: Money Amounts  Number Cluster 7: Operational Fluency  32: Complements of 10 |
|  | **Demonstrating and using equivalency to represent, compose, and decompose whole numbers in different ways**  C2.2 determine whether given pairs of addition and subtraction expressions are equivalent or not  B1.1 read and represent whole numbers up to and including 50, and describe various ways they are used in everyday life  B1.2 compose and decompose whole numbers up to and including 50, using a variety of tools and strategies, in various contexts  C2.3 identify and use equivalent relationships for whole numbers up to 50, in various contexts | * *What strategies do students use to come up with new number sentences?* * *Do students find all possible ways to decompose the number?* * *Do students realize that number sentences like 5 + 7 = 12 and  12 = 5 + 7 are the same?* * *Do students know when to use = and when to use ≠?* * *Are students able to represent numbers in different ways?* | Patterning and Algebra Cluster 3: Equality and Inequality  10: Exploring Sets  11: Making Equal Sets  12: Using Symbols  ***13: Consolidation (Equality and Inequality)***  Number Cluster 6: Early Place Value  27: Tens and Ones  28: Building and Naming Numbers  29: Different Representations  ***30: Consolidation (Early Place Value)***  Number Cluster 7: Operational Fluency  31: More or Less  36: Doubles |
| ***Reflection: How can we build and represent numbers in different ways?*** | | | |

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| **Ontario Ministry Long Range Plan** | | **Pearson *Mathology*** | |
| **Comparison of Measures and Quantities** | | **Big Ideas**   * **Numbers tell us how many and how much.** * **Numbers are related in many ways.** * **2‐D shapes and 3‐D solids can be transformed in many ways and analyzed for change.** * **Many things in our world (e.g., objects, spaces, events) have attributes that can be measured and compared.** | |
| **Time:** 25 days | | | |
| **Questions and Expectations** | | **What to Look For** | **Little Books/Activity** |
|  | |  | A Family Cookout  - compare and order quantities to 25  - estimate and count to 50 |
|  | |  | The Amazing Seed  - estimate and compare attributes  - estimate and measure using non-standard units |
|  | |  | The Tailor Shop  - transform and describe shapes  - describe and compare shapes |
|  | **Comparing measures using attributes**  B1.3 compare and order whole numbers up to and including 50, in various contexts  E1.3 construct and describe two-dimensional shapes and three-dimensional objects that have matching halves  E2.1 identify measurable attributes of two-dimensional shapes and three-dimensional objects, including length, area, mass, capacity, and angle  E2.2 compare several everyday objects and order them according to length, area, mass, and capacity | * *Are students able to count on or count back from a number?* * *Do students understand how to use the line of symmetry to complete the design?* * *Do students use mathematical language in their explanations (e.g., symmetrical, line of symmetry, the same, match)?* * *Do students select suitable objects and tools or materials for the attribute being compared?* * *Do students use measurement language to compare and describe the objects (e.g., heavier, longer, holds more, greater area)?* | Number Cluster 1: Counting  2: Counting to 50  3: Counting On and Back  ***5: Consolidation (Counting)***  Geometry Cluster 3: Symmetry  13: Finding Lines of Symmetry  14: Creating Symmetrical Designs  15: Building Symmetrical Solids  ***16: Consolidation (Symmetry)***  Measurement Cluster 1: Comparing Objects  2: Comparing Length  4: Comparing Mass  5: Comparing Capacity  6: Making Comparisons  7: Comparing Area  ***8: Consolidation (Comparing Objects)*** |

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|  | **Questions and Expectations** | **What to Look For** | **Little Books/Activity** |
|  | **Comparing quantities**  B1.1 read and represent whole numbers up to and including 50, and describe various ways they are used in everyday life  F1.1 identify the various Canadian coins up to 50¢ and coins and bills up to $50, and compare their values | * *Are students able to explain how they know the numbers are written from least to greatest?* * *Do students make the connection between skip-counting by 2s, 5s, or 10s and the total value of the collection?* * *Are students able to compare and recognize which coin collection has the greater value?* | Number Cluster 3: Comparing and Ordering  9: Comparing Sets Concretely  10: Comparing Sets Pictorially  11: Comparing Numbers to 50  ***12: Consolidation (Comparing and Ordering)***  Number Cluster 8: Financial Literacy  43: Values of Bills  44: Counting Collections |
| ***Reflection: How can we compare numbers and use measurement language to compare and describe objects?*** | | | |

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| **Ontario Ministry Long Range Plan** | | **Pearson *Mathology*** | |
| **Collection, Organization, Representation, and Analysis of Data, and Introduction to Mathematical Modelling** | | **Big Ideas**   * **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.** * **Numbers tell us how many and how much.** * **Quantities and numbers can be grouped by or partitioned into equal-sized units.** | |
| **Time:** 30 days | | | |
| **Questions and Expectations** | | **What to Look For** | **Little Books/Activity** |
|  | |  | Graph It  - interpret concrete graphs and picture graphs  - build concrete graphs and picture graphs |
|  |  |  | How Many Is Too Many?  - estimate and groups to skip-count to 50  - compare quantities to 50 |
|  | **Collecting, organizing, and representing data**  D1.2 collect data through observations, experiments, or interviews to answer questions of interest that focus on a single piece of information; record the data using methods of their choice; and organize the data in tally tables  D1.3 display sets of data, using one-to-one correspondence, in concrete graphs and pictographs with proper sources, titles, and labels | * *How are students organizing their graphs?* * *Are students able to formulate and answer questions about their graphs?* * *Do students use math language when answering questions and comparing data (e.g., more, fewer, most, least)?* | Data Management and Probability Cluster 1: Data Management  3: Making Concrete Graphs  4: Making Pictographs  ***5: Consolidation (Data Management)*** |

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|  | **Questions and Expectations** | **What to Look For** | **Little Books/Activity** |
|  | **Analyzing data using counts**  B1.5 count to 50 by 1s, 2s, 5s, and 10s, using a variety of tools and strategies  D1.4 order categories of data from greatest to least frequency for various data sets displayed in tally tables, concrete graphs, and pictographs  D1.5 analyze different sets of data presented in various ways, including in tally tables, concrete graphs, and pictographs, by asking and answering questions about the data and drawing conclusions, then make convincing arguments and informed decisions  D2.2 make and test predictions about the likelihood that the categories in a data set from one population will have the same frequencies in data collected from a different population of the same size | * *Do students know the 2s, 5s, and 10s skip-counting sequences?* * *Do students include the leftovers in their total or do they only count the groups?* * *Do students realize that if they count another way, the total will be the same as the original count?* | Number Cluster 4: Skip-Counting  13: Skip-Counting Forward  14: Skip-Counting with Leftovers  15: Skip-Counting Backward  ***16: Consolidation: (Skip-Counting)***  Data Management and Probability Cluster 2: Probability and Chance  6: Likelihood of Events  7: Making and Testing Predictions  ***8: Consolidation (Probability and Chance)*** |

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|  | **Questions and Expectations** | **What to Look For** | **Little Books/Activity** |
|  | **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  C2.1 identify quantities that can change and quantities that always remain the same in real-life contexts\*\*  \* 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. |  | Measurement Cluster 2: Time  9: Relating to Seasons  10: The Calendar  ***11: Consolidation (Time)***  Number Cluster 5: Composing and Decomposing  21: Money Amounts  Number Cluster 8: Financial Literacy  42: Values of Coins |
| ***Reflection: How can we ask and answer questions when comparing Data?*** | | | |

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| **Ontario Ministry Long Range Plan** | **Pearson *Mathology*** | |
| **Represent and Solve Problems Involving Addition and Subtraction** | **Big Ideas**   * **Quantities and numbers can be added and subtracted to determine how many or how much.** * **Objects can be located in space and viewed from multiple perspectives.** | |
| **Time: 30 Days** | | |
| **Questions and Expectations** | **What to Look For** | **Little Books /Activity** |
|  |  | Cats and Kittens!  - add and subtract to 20  - compare quantities to 20 |
|  |  | Canada’s Oldest Sport  - add and subtract to 20  - compare and order sets to 20 |
|  |  | Buy 1–Get 1  - add and subtract to 20  - develop addition and subtraction strategies |
|  |  | Memory Book  - locate and map objects in the environment  - investigate 2-D shapes and 3-D solids |

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| **Questions and Expectations** | **What to Look For** | **Little Books /Activity** |
| **Developing mental math skills related to estimating, adding, and subtracting**  **Representing and using addition and subtraction, and the commutative property for addition**  **Using mental math strategies to create and predict the outcome of code that moves an agent from one location to another and models addition and subtraction**  B1.2 compose and decompose whole numbers up to and including 50, using a variety of tools and strategies, in various contexts  B2.1 use the properties of addition and subtraction, and the relationship between addition and subtraction, to solve problems and check calculations  B2.2 recall and demonstrate addition facts for numbers up to 10, and related subtraction facts  B2.3 use mental math strategies, including estimation, to add and subtract whole numbers that add up to no more than 20, and explain the strategies used  B2.4 use objects, diagrams, and equations to represent, describe, and solve situations involving addition and subtraction of whole numbers that add up to no more than 50  C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential events | * *Are students able to correctly identify the whole and the parts?*  *How do students decide which operation to use?* * *Are students able to use math language to explain how they solved the problems (e.g., add, subtract, take away, answer)?* * *Are students able to use positional words (e.g., above, beside) and relative location to find and describe the position of objects?* * *Are students paying attention to relative location (the relation of objects to other objects)?* | Number Cluster 7: Operational Fluency  33: Adding to 20  34: Subtracting to 50  35: The Number Line  36: Doubles  37: Part-Part-Whole  39: Solving Story Problems  40: Adding and Subtracting to 50  ***41: Consolidation (Operational Fluency)***  Geometry Cluster 4: Location and Movement  17: Perspective Taking  18: Mapping  ***22: Consolidation (Location and Movement*)** |

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| **Questions and Expectations** | **What to Look For** | **Little Books /Activity** |
| C3.2 read and alter existing code, including code that involves sequential events, and describe how changes to the code affect the outcomes  E1.4 describe the relative locations of objects or people, using positional language  E1.5 give and follow directions for moving from one location to another |  |  |
| ***Reflection: How can we represent and solve addition and subtraction problems?*** | | |

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| **Ontario Ministry Long Range Plan** | **Pearson *Mathology*** | |
| **Parts and Wholes** | **Big Ideas**   * **2‐D shapes and 3‐D solids can be analyzed and classified in different ways by their attributes.** * **Quantities and numbers can be grouped by or partitioned into equal-sized units.** | |
| **Time:** 20 days | | |
| **Questions and Expectations** | **What to Look For** | **Little Books/Activity** |
|  |  | What Was Here?  - find and describe shapes and solids  - explore and classify shapes and solids |
| **Developing an understanding that “wholes” can be decomposed into “parts” and “parts” can be recomposed to make “wholes”**  E1.2 construct three-dimensional objects, and identify two-dimensional shapes contained within structures and objects  E1.3 construct and describe two-dimensional shapes and three-dimensional objects that have matching halves | * *Are students able to identify the sorting rule and explain why they think the sorting rule is correct?* * *Can students identify and describe shapes using attributes?* * *Are students able to build a model of a 3-D solid? Do they choose appropriate materials?* * *Do students use math language to describe the attributes of their solid (e.g., vertices, edges, face, triangle, rectangle, square)?* * *Are students able to explain how the skeleton and its solid are alike and how they are different?* | Geometry Cluster 1: 2-D Shapes  1: Sorting Shapes  2: Identifying Triangles  3: Identifying Rectangles  4: Visualizing Shapes  5: Sorting Rules  ***6: Consolidation (2-D Shapes)***  Geometry Cluster 2: 3-D Solids  7: Exploring 3-D Solids  9: Sorting 3-D Solids  10: Identify the Sorting Rule  11: Constructing Solids and Skeletons  ***12: Consolidation (3-D Solids)*** |

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| **Questions and Expectations** | **What to Look For** | **Little Books/Activity** |
| B1.6 use drawings to represent and solve fair-share problems that involve 2 and 4 sharers, respectively, and have remainders of 1 or 2  B1.7 recognize that one half and two fourths of the same whole are equal, in fair-sharing contexts  B1.8 use drawings to compare and order unit fractions representing the individual portions that result when a whole is shared by different numbers of sharers, up to a maximum of 10  B2.5 represent and solve equal-group problems where the total number of items is no more than 10, including problems in which each group is a half, using tools and drawings | * *Do students recognize that no matter how a given number of items are grouped, the number of cubes doesn’t change?* * *Do students realize that when the groups contain more items, they will be able to make fewer groups?* * *Are students able to connect the number of parts to the correct fraction name?* | Number Cluster 5: Composing and Decomposing  22: Equal Groups  23: Equal Parts  25: Comparing and Ordering Unit Fractions  ***26: Consolidation (Composing and Decomposing)*** |
| ***Reflection: How can we construct and describe two-dimensional shapes and three-dimensional objects? How can we compare and order unit fractions?*** | | |

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| **Ontario Ministry Long Range Plan** | **Pearson *Mathology*** | |
| **Patterns and Likelihood of Events** | **Big Ideas**   * **Regularity and repetition form patterns that can be generalized and predicted mathematically.** * **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.** | |
| **Time:** 20 days | | |
| **Questions and Expectations** | **What to Look For** | **Little Books/Activity** |
|  |  | Midnight and Snowfall  - identify and describe repeating patterns  - compare and create patterns |
| **Creating patterns and code, and making predictions about them**  C1.1 identify and describe the regularities in a variety of patterns, including patterns found in real-life contexts  C1.2 create and translate patterns using movements, sounds, objects, shapes, letters, and numbers  C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in patterns  C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential events  C3.2 read and alter existing code, including code that involves sequential events, and describe how changes to the code affect the outcomes | * *Are students able to see repeating patterns when they skip-count by 2s and 5s?* * *Do students find patterns that are not repeating patterns (e.g., numbers increase by 1 across a row; numbers increase by 10 as you go down a column; in rows 2–10, the first digit is always the same, except for the last column)?* * *Are students able to use math language to describe their patterns (e.g., repeat, core, before, after, beside, next)?* * *Are students able to use the cores and create patterns independently and accurately?* * *Are students able to identify and correct errors in a repeating pattern?* | Patterning and Algebra Cluster 1: Investigating Repeating Patterns  1: Repeating the Core  2: Representing Patterns  3: Predicting Elements  ***5: Consolidation (Investigating Repeating Patterns)***  Patterning and Algebra Cluster 2: Creating Patterns  6: Extending Patterns  7: Translating Patterns  8: Errors and Missing Elements  ***9: Consolidation (Creating Patterns)*** |

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| **Questions and Expectations** | **What to Look For** | **Little Books/Activity** |
| **Predicting the likelihood of an event**  D2.1 use mathematical language, including the terms “impossible”, “possible”, and “certain”, to describe the likelihood of events happening, and use that likelihood to make predictions and informed decisions | * *Do students use the language of chance as they discuss their pictures?* * *Are students able to determine which of two events is more likely or less likely?* | Data Management and Probability Cluster 2: Probability and Chance  6: Likelihood of Events  7: Making and Testing Predictions  ***8: Consolidation (Probability and Chance)*** |
| ***Reflection: How can we create and describe patterns and describe the likelihood of events?*** | | |

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| **Ontario Ministry Long Range Plan** | **Pearson *Mathology*** | |
| **Mathematical Modelling** | **Big Ideas**  **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 using a variety of Big Ideas** | |
| **Time:** 15 Days | | |
| **Questions and Expectations** | **What to Look For** | **Little Books/Activity** |
| **Mathematical Modelling**  **Depending on the real-life situation, coding may be a tool in mathematical modelling**  C2.1 identify quantities that can change and quantities that always remain the same in real-life contexts  C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential events  C3.2 read and alter existing code, including code that involves sequential events, 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. |  | Number Cluster 3: Comparing and Ordering  10: Comparing Sets Pictorially  Number Cluster 4: Skip-Counting  14: Skip-Counting with Leftovers  Number Cluster 5: Composing and Decomposing  19: Numbers to 20  20: Decomposing 50  21: Money Amounts  Number Cluster 6: Early Place Value  29: Different Representations  ***30: Consolidation (Early Place Value)***  Number Cluster 7: Operational Fluency  39: Solving Story Problems  ***41: Consolidation (Operational Fluency)***  Number Cluster 8: Financial Literacy  44: Counting Collections  ***47: Consolidation (Financial Literacy)***  Patterning and Algebra Cluster 2: Creating Patterns  7: Translating Patterns  ***9: Consolidation (Creating Patterns)***  Patterning and Algebra Cluster 3: Equality and Inequality  12: Using Symbols |

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| **Questions and Expectations** | **What to Look For** | **Little Books /Activity** |
|  |  | Data Management and Probability Cluster 1: Data Management  3: Making Concrete Graphs  ***5: Consolidation (Data management)***  Data Management and Probability Cluster 2: Probability and Chance  7: Making and Testing Predictions  Geometry Cluster 3: Symmetry  ***16: Consolidation (Symmetry)*** |
| ***Reflection: How can we* apply mathematical concepts and skills to solve real-life problems ?** | | |