

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

Ontario Ministry Long Range Plan	Pearson Mathology	
Attributes and Numbers	<ul> <li>Big Ideas</li> <li>Numbers tell us how many and how much.</li> <li>Numbers are related in many ways.</li> <li>Many things in our world (e.g., objects, spaces, events) have attributes that can be measured and compared.</li> <li>2-D shapes and 3-D solids can be analyzed and classified in different ways by their attributes.</li> </ul>	
Time: 10 days		
Topics and Expectations	What to Look For	Little Books/Activity
		<u>On Safari!</u> - count sets to 20 - add 1 or 2
		<u>Paddling the River</u> - count, compare, and order to 20 - compose and decompose
Introduce and apply throughout the year as appropriate B1.1 Read and represent whole numbers up to and including 50, and describe various ways they are used in everyday life	<ul> <li>Do students say one number for each item? (magnitude)</li> <li>Are students able to count on from a number?</li> </ul>	Number Cluster 1: Counting 1: Counting to 20 4: Ordinal Numbers <u>Measurement Cluster 2: Time</u> 9: Relating to Seasons
E2.3 Read the date on a calendar, and use a calendar to identify days, weeks, months, holidays, and seasons		10: The Calendar

Topics and Expectations	What to Look For	Little Books/Activity
Topics and ExpectationsDeveloping an understanding of attributesC1.1 identify and describe a variety of patterns involving geometric designs, including patterns found in real-life contextsD1.1 Sort sets of data about people or things according to one attribute and describe rules used for sortingE1.1 Sort two dimensional shapes according to one attribute at a time, and identify the sorting rule being usedF1.1 Identify the various Canadian coins up to 50¢ and coins and bills up to \$50, and compare their value	-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 Estimate the number of objects in collections of up to 50, and verify their estimates by counting B1.5 Count to 50 by 1s, 2s, 5s, and 10s, using a variety of tools and strategies	<ul> <li>Are students able to subitize or do they count collections? (conceptual subitizing)</li> <li>Do students guess or do they use referents to help estimate quantities?</li> </ul>	Number Cluster 2: Spatial Reasoning 6: Subitizing to 10 7: Estimating Quantities <b>8: Consolidation (Spatial Reasoning)</b>
Refl	ection: How can we organize, and co	unt based on attributes?

Ontario Ministry Long Range Plan	Pearson Mathology
Number Patterns, Relationships and	Big Ideas
Equivalency	<ul> <li>Quantities and numbers can be grouped by or partitioned into equal-sized units.</li> </ul>
	• Numbers are related in many ways.
	<ul> <li>Quantities and numbers can be added and subtracted to determine how many or how much.</li> </ul>
	<ul> <li>Regularity and repetition form patterns that can be generalized and predicted mathematically.</li> </ul>
	• 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	- Are students able to see repeating	Patterning and Algebra Cluster 1: Investigating Repeating
understanding of relationships among	patterns when they skip-count by 2s	Patterns
numbers, and addition and	and 5s?	4: Finding Patterns
subtraction facts	- Are students able to use math	
C1.4 create and describe patterns to	language to describe their patterns	
illustrate relationships among whole	(e.g., repeat, core, before, after,	
numbers up to 50	beside, next)?	

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

Ontario Ministry Long Range Plan	Pearson Mathology	
Comparison of Measures and	Big Ideas	
Quantities	• 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
<b>Comparing measures using attributes</b> 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	<ul> <li>Are students able to count on or count back from a number?</li> <li>Do students understand how to use the line of symmetry to complete the design?</li> <li>Do students use mathematical language in their explanations (e.g., symmetrical, line of symmetry, the same, match)?</li> <li>Do students select suitable objects and tools or materials for the attribute being compared?</li> <li>Do students use measurement language to compare and describe the objects (e.g., heavier, longer, holds more, greater area)?</li> </ul>	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)

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

Ontario Ministry Long Range Plan	Pearson Mathology	
Collection, Organization,	Big Ideas	
Representation, and Analysis of Data,	• Formulating questions, collecting data, and consolidating data in visual and graphical	
and Introduction to Mathematical	displays help us understand, predict, and interpret situations that involve uncertainty,	
Modelling	variability, and randomness.	
	• Numbers tell us how many and how much.	

## Time: 30 days

Questions and Expectations	What to Look For	Little Books/Activity
		<u>Graph It</u> - 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
<b>Collecting, organizing, and</b> <b>representing data</b> 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	<ul> <li>How are students organizing their graphs?</li> <li>Are students able to formulate and answer questions about their graphs?</li> <li>Do students use math language when answering questions and comparing data (e.g., more, fewer, most, least)?</li> </ul>	Data Management and Probability Cluster 1: Data         Management         3: Making Concrete Graphs         4: Making Pictographs         5: Consolidation (Data Management)

Questions and Expectations	What to Look For	Little Books/Activity
Analyzing data using counts	- Do students know the 2s, 5s, and	Number Cluster 4: Skip-Counting
B1.5 count to 50 by 1s, 2s, 5s, and 10s,	10s skip-counting sequences?	13: Skip-Counting Forward
using a variety of tools and strategies	- Do students include the leftovers in	14: Skip-Counting with Leftovers
D1.4 order categories of data from	their total or do they only count the	15: Skip-Counting Backward
greatest to least frequency for various	groups?	16: Consolidation: (Skip-Counting)
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 realize that if they count another way, the total will be the same as the original count?	<ul> <li>Data Management and Probability Cluster 2: Probability and Chance</li> <li>6: Likelihood of Events</li> <li>7: Making and Testing Predictions</li> <li>8: Consolidation (Probability and Chance)</li> </ul>

Questions and Expectations	What to Look For	Little Books/Activity
Posing a real-life situation that		Measurement Cluster 2: Time
requires the process of mathematical		9: Relating to Seasons
modelling and involves the collection,		10: The Calendar
organization, representation, and		11: Consolidation (Time)
analysis of data*		
C4 apply the process of mathematical		Number Cluster 5: Composing and Decomposing
modelling to represent, analyze, make		21: Money Amounts
predictions, and provide insight into real-		
life situations		Number Cluster 8: Financial Literacy
C2.1 identify quantities that can change		42: Values of Coins
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.		
Reflection	n: How can we ask and answer ques	tions when comparing Data?

Ontario Ministry Long Range Plan Represent and Solve Problems Involving Addition and Subtraction Time: 30 Days	Pearson Mathology           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.	
Questions and Expectations	What to Look For	Little Books /Activity
		<u>Cats and Kittens!</u> - add and subtract to 20 - compare quantities to 20
		<u>Canada's Oldest Sport</u> - 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
		<u>Memory Book</u> - locate and map objects in the environment - investigate 2-D shapes and 3-D solids

Questions and Expectations	What to Look For	Little Books /Activity
Developing mental math skills related	- Are students able to correctly	Number Cluster 7: Operational Fluency
to estimating, adding, and subtracting	identify the whole and the parts?	33: Adding to 20
Representing and using addition and	How do students decide which	34: Subtracting to 50
subtraction, and the commutative	operation to use?	35: The Number Line
property for addition	- Are students able to use math	36: Doubles
Using mental math strategies to	language to explain how they solved	37: Part-Part-Whole
create and predict the outcome of	the problems (e.g., add, subtract,	39: Solving Story Problems
code that moves an agent from one	take away, answer)?	40: Adding and Subtracting to 50
location to another and models	- Are students able to use positional	41: Consolidation (Operational Fluency)
addition and subtraction	words (e.g., above, beside) and	
B1.2 compose and decompose whole		Geometry Cluster 4: Location and Movement
numbers up to and including 50, using a	the position of objects?	17: Perspective Taking
variety of tools and strategies, in various	- Are students paying attention to	18: Mapping
contexts	relative location (the relation of	22: Consolidation (Location and Movement)
B2.1 use the properties of addition and	objects to other objects)?	
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		

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?		

Ontario Ministry Long Range Plan	Pearson Mathology 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.	
Parts and Wholes		
Time: 20 days		
Questions and Expectations	What to Look For	Little Books/Activity
		<u>What Was Here?</u> - 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	- Can students identify and describe	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)

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

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

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

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	1	
Questions and Expectations	What to Look For	Little Books/Activity
Mathematical Modelling		Number Cluster 3: Comparing and Ordering 10: Comparing Sets Pictorially <u>Number Cluster 4: Skip-Counting</u> 14: Skip-Counting with Leftovers
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 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

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