# **Mathletics Nova Scotia Program of Studies** Understanding Practice and Fluency (UPF)



## Grades 1 – 2



November, 2021

### Mathletics

Nova Scotia Program of Studies Understanding, Practice and Fluency (UPF) November 2021

Grade 1	3
1 Number	.3
1.1 Students will be expected to demonstrate number sense	3
2 Patterns and Relations	.5
2.1 Students will be expected to use patterns to describe the world and solve problems	; .5
2.2 Students will be expected to represent algebraic expressions in multiple ways	5
3 Measurement	.6
3.1 Students will be expected to use direct and indirect measure to solve problems	6
4 Geometry	.7
4.1 Students will be expected to describe the characteristics of 3-D objects and 2-D shapes and analyze the relationships among them	7
Grade 2	8
1 Number	.8
1.1 Students will be expected to demonstrate number sense	8
2 Patterns and Relations (Patterns)1	.1
2.1 Students will be expected to use patterns to describe the world and solve problems	; .1
3 Patterns and Relations (Variables and Equations)1	.2
3.1 Students will be expected to represent algebraic expressions in multiple ways 1	.2
4 Shape and Space (Measurement)1	.3
4.1 Use direct and indirect measurement to solve problems	.3
5 Measurement	.4
5.1 Students will be expected to use direct and indirect measure to solve problems 1	.4
6 Geometry 1	.5
6.1 Students will be expected to describe the characteristics of 3-D objects and 2-D shapes and analyze the relationships among them1	.5
7 Statistics and Probability1	.6
7.1 Students will be expected to collect, display, and analyze data to solve problems 1	.6

### Grade 1

#### 1 Number

#### 1.1 Students will be expected to demonstrate number sense

Outcome	Quests	Content
1. Students will be expected to say	Number sequences to	Counting by 1s to 100
the number sequence by: 1s,	100	Skip counting by 2s to 20
forward and backward between		Skip counting by 5s to 100
any two given numbers, 0 to 100;		Skip counting by 10s to 100
2s to 20, forward starting at 0; 5s		Skip counting by 2s, 5s and
to 100, forward starting at 0, using		10s
a hundred chart or a number line;		
10s to 100, forward starting at 0,		
using a hundred chart or a number		
line.		
3. Students will be expected to	Counting strategies	Sequencing numbers to 20
demonstrate an understanding of		
the last number said identifies "how		Counting collections to 20
many": showing that any set has		Counting collections to 20
only one count: using the counting-		
on strategy.		
4. Students will be expected to	Represent and partition	Represent and partition
represent and partition numbers to	numbers to 20	numbers to 20
20.		
5. Students will be expected to	Compare and order	Comparing and ordering sets
compare sets containing up to 20	sets up to 20	up to 20
objects to solve problems using		Exploring change in quantity
referents and one-to-one		up to 20
correspondence.		
7. Students will be expected to	Conservation of	Conservation of numbers to 20
demonstrate an understanding of	numbers to 20	
conservation of number for up to 20		
8 Students will be expected to	Numbers more than	Numbers more than and less
identify the number up to 20 that	and less than	than
is one more two more one less		lian
and two less than a given number.		
9. Students will be expected to	Add and subtract two	Adding and subtracting two
demonstrate an understanding of	1-digit numbers	1-digit numbers
the addition of two one-digit		
numbers and the corresponding		
subtraction, concretely, pictorially,		
and symbolically, in join, separate,		

equalize/compare, and part-part- whole situations.		
10. Students will be expected to use and describe strategies to	Number bonds to 10	Recognizing and recalling bonds to 10
determine sums and differences		Doubles up to 10 + 10
using manipulatives and visual	Add and subtract using	Adding using doubles
aids. Strategies include: counting on	doubles	Subtracting using doubles
or counting back; one more or one less; making ten; doubles or near doubles.	Add and subtract using near doubles	Adding and subtracting using doubles
11. Describe and use mental	Addition and	Addition and subtraction facts
mathematics strategies for basic	subtraction facts to 18	to 18
addition facts and related		Introducing commutative
subtraction facts to 18.		property of addition

#### **2** Patterns and Relations

### 2.1 Students will be expected to use patterns to describe the world and solve problems

Outcome	Quests	Content
1. Students will be expected to	Repeating patterns	Recognizing repeating
demonstrate an understanding of		patterns
repeating patterns (two to four		Reproducing repeating
elements) by identifying, describing,		patterns
reproducing, extending, and		Manipulating repeating
creating patterns using		patterns
manipulatives, diagrams, sounds,		Extending repeating patterns
and actions.		Replicating repeating patterns
		Describing and creating
		repeating patterns
2. Students will be expected to	Translate repeating	Translating repeating patterns
translate repeating patterns from	patterns	
one representation to another.		

#### 2.2 Students will be expected to represent algebraic expressions in multiple ways

Outcome	Quests	Content
3. Students will be expected to	Equality and inequality	Exploring equality and
describe equality as a balance and		inequality
inequality as an imbalance,		
concretely and pictorially (0 to 20).		
4. Students will be expected to	Record equalities	Recording equalities
record equalities using the equal		Solving addition and
symbol.		subtraction equality problems

#### 3 Measurement

## 3.1 Students will be expected to use direct and indirect measure to solve problems

Outcome	Quests	Content
1. Students will be expected to	Measurement	Exploring length
demonstrate an understanding of		Exploring volume
measurement as a process of		Exploring mass
comparing by: identifying attributes		Exploring area
that can be compared; ordering		
objects; making statements of		
comparison; filling, covering, or		
matching.		

#### 4 Geometry

4.1 Students will be expected to describe the characteristics of 3-D objects and 2-D shapes and analyze the relationships among them

Outcome	Quests	Content
1. Students will be expected to sort	Sort 2-D shapes and	Sorting 2-D shapes
3-D objects and 2-D shapes using	3-D objects	Sorting 3-D objects
one attribute and explain the		
sorting rule.		
2. Students will be expected to	Replicate composite	Replicating composite 2-D
replicate composite 2-D shapes	2-D shapes	shapes
and 3-D objects.	Replicate composite	Replicating composite 3-D
	3-D objects	objects
3. Students will be expected to	Compare 2-D shapes	Comparing 2-D shapes to
identify 2-D shapes in 3-D objects.	to 3-D objects	parts of 3-D objects

### Grade 2

#### 1 Number

#### 1.1 Students will be expected to demonstrate number sense

Outcome	Quests	Content
1. Students will be expected to say	Number sequences	Counting by 1s to 200
the number sequence by: 1s,		Counting by 2s to 100
forward and backward, starting		Counting by 2s to 100 from
from any point to 200; 2s, forward		any number
and backward, starting from any		Counting by 5s to 100
point to 100; 5s and 10s, forward		Counting by 10s to 100
and backward, using starting		Counting by 10s to 100 from
points that are multiples of 5 and		any number
from any point to 100; 10s, starting		Counting in 2s, 5s or 10s
		Counting a sum of money to 100¢
2. Students will be expected to	Even & odd numbers	Even & odd numbers to 20
demonstrate if a number (up to 100) is even or odd.		Even & odd numbers to 100
3. Students will be expected to	Ordinal numbers	Introducing ordinal numbers
using ordinal numbers (up to tenth).		
4. Students will be expected to	Represent & partition	Represent & partition numbers
represent and partition numbers to	numbers to 100	to 100
100.		Counting to 100
		Numbers to 100 using a tally
		Using coins to represent
		numbers to 100
	Recognizing number	Number names to 20
	names to 100	Number names to 50
		Number names to 100
5. Students will be expected to	Compare & order	Comparing & ordering
compare and order numbers up to	numbers to 100	numbers to 100
100.		Identifying numbers before &
		after up to 100
7. Students will be expected to	Place value partitioning	Place value partitioning of
illustrate, concretely and pictorially,	up to 100	numbers to 50
the meaning of place value for numerals to 100.		Non-standard partitioning of numbers to 100
	Counting collections to	Counting collections to 50
	100	Counting collections to 100
	Solve 2-digit place	Solving problems using place
	value problems	value

8. Students will be expected to demonstrate and explain the effect of adding zero to or subtracting zero from any number.	Add & subtract a zero	Adding a zero
9. Students will be expected to	Addition within 100	Adding 2-digit & 1-digit
addition (limited to 1- and 2-digit		Adding by bridging to 10 with
numerals) with answers to 100 and		2 & 1-digit numbers
the corresponding subtraction by: using personal strategies for		Adding tens to a 2-digit
adding and subtracting with and		Adding two 2-digit numbers
without the support of manipulates;		using place value
creating and solving problems that		Adding two 2-digit numbers
involve addition and subtraction;		using a number line
explaining and demonstrating that		Adding by compensating
added does not affect the sum;		Adding using compatible
explaining and demonstrating that		Using number bonds to 100
the order in which numbers are	Subtraction within 100	Subtracting by bridging to 10
subtracted matters when finding a		Subtracting 2 & 1-digit
difference.		numbers using place value
		Subtracting using mixed
		strategies
		Subtracting tens from a 2-digit
		number
		Subtracting two 2-digit
		numbers using place value
		Subtracting two 2-digit
		Subtracting by compensating
	Addition & subtraction	Adding up to find the
	within 100	difference
		Add/subtract place value
		patterns
		Add/subtract using mixed
		strategies
		Add/subtract two 2-digit
		numbers using place value
		Solving addition & subtraction
		word problems
		Number sentences to solve
		Fotimating sums & differences
		Estimating sums & differences
		answers
10 Students will be expected to	Addition & subtraction	Addition & subtraction to 18
apply mental mathematics	to 18	Adding using doubles
strategies to guickly recall basic		Subtracting using doubles
addition facts to 18 and determine		Adding doubles or near
related subtraction facts.		doubles

Finding fact families for
addition & subtraction
Using the commutative
property of addition
Counting on by bridging to 10
Addition & subtraction facts —
word problems

### 2 Patterns and Relations (Patterns)

### 2.1 Students will be expected to use patterns to describe the world and solve problems

Outcome	Quests	Content
1. Students will be expected to	Explore repeating	Creating & extending
demonstrate an understanding of	patterns	repeating patterns
repeating patterns (three to five		Identifying repeating patterns
elements) by describing, extending,		Numeric patterns
comparing, and creating, patterns		
using manipulatives, diagrams,		
sounds, and actions.		
2. Students will be expected to	Explore increasing	Exploring addition &
demonstrate an understanding of	number patterns	subtraction patterns to 100
increasing patterns by describing,		Exploring patterns to 100
extending, and creating numerical		using multiples
patterns (numbers to 100) and non-		Connecting objects & symbols
numerical patterns using		to number patterns
manipulatives, diagrams, sounds,		Exploring growing number
and actions.		patterns up to 100
		Exploring visual patterns

#### Patterns and Relations (Variables and Equations)

3.1 Students will be expected to represent algebraic expressions in multiple ways

Outcome	Quests	Content
3. Students will be expected to demonstrate and explain the	Equality & inequality	Introducing equality & inequality
meaning of equality and inequality by using manipulatives and diagrams (0 to 100)		
4. Students will be expected to	Use the equal & not-	Using the equal & not-equal
record equalities and inequalities	equal symbols	symbols
symbolically, using the equal		
symbol or not equal symbol.		

### 4 Shape and Space (Measurement)

#### 4.1 Use direct and indirect measurement to solve problems

Outcome	Quests	Content
1. Students will be expected to	Explore the passing of	Calendars
demonstrate an understanding of	time	Days of the week & months of
the calendar and the relationships		the year
among days, weeks, months, and		
years.		

#### Measurement

## 5.1 Students will be expected to use direct and indirect measure to solve problems

Outcome	Quests	Content
2. Students will be expected to	Non-standard	Non-standard measurement
relate the size of a unit of measure	measurement	of length
to the number of units (limited to		Non-standard measurement
non-standard units) used to		of mass
measure length and mass.		
3. Students will be expected to	Compare & order	Comparing & ordering objects
compare and order objects by	objects	by length
length, height, distance around, and		Comparing & ordering objects
mass using non-standard units and		by mass
make statements of comparison.		
4. Students will be expected to	Measure length using	Measuring length using non-
measure length to the nearest non-	non-standard units	standard units
standard unit by using multiple		
copies of a unit and using a single		
copy of a unit (iteration process).		

#### 6 Geometry

6.1 Students will be expected to describe the characteristics of 3-D objects and 2-D shapes and analyze the relationships among them

Outcome	Quests	Content
1. Students will be expected to sort	Sort 2-D shapes & 3-D	Sorting 2-D shapes
2-D shapes and 3-D objects using	objects	Sorting 3-D objects
sorting rule.		
2. Students will be expected to recognize, name, describe, compare, and build 3-D objects, including cubes and other prisms, spheres, cones, cylinders, and pyramids.	3-D objects	Introducing spheres
		Introducing cones
		Introducing cubes
		Introducing cylinders
		Introducing pyramids
		Introducing prisms
		Identifying 3-D objects
		Identifying attributes of 3-D
		objects
		Comparing 3-D objects
3. Students will be expected to	2-D shapes	Naming 2-D shapes
recognize, name, describe, compare		Comparing 2-D shapes
and build 2-D shapes, including		
triangles, squares, rectangles, and		
circles.		
4. Students will be expected to	Identify 2-D shapes in	Identifying 2-D shapes in the
objects in the environment.	the environment	environment

#### 7 Statistics and Probability

## 7.1 Students will be expected to collect, display, and analyze data to solve problems

Outcome	Quests	Content
1. Students will be expected to gather and record data about self and others to answer questions.	Gather & record data	Gathering, sorting & recording data
2. Students will be expected to construct and interpret concrete graphs and pictographs to solve problems.	Interpret data	Using pictographs
		Using basic graphs
		Using a tally
		Making a graph
		Answering questions about a graph



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