

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



Grades 1 – 2
November, 2021

Mathletics

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)	11
2.1 Students will be expected to use patterns to describe the world and solve problems	11
3 Patterns and Relations (Variables and Equations)	12
3.1 Students will be expected to represent algebraic expressions in multiple ways.....	12
4 Shape and Space (Measurement)	13
4.1 Use direct and indirect measurement to solve problems	13
5 Measurement	14
5.1 Students will be expected to use direct and indirect measure to solve problems	14
6 Geometry	15
6.1 Students will be expected to describe the characteristics of 3-D objects and 2-D shapes and analyze the relationships among them.....	15
7 Statistics and Probability	16
7.1 Students will be expected to collect, display, and analyze data to solve problems..	16

Grade 1

1 Number

1.1 Students will be expected to demonstrate number sense

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

equalize/compare, and part-part-whole situations.		
10. Students will be expected to use and describe strategies to determine sums and differences using manipulatives and visual aids. Strategies include: counting on or counting back; one more or one less; making ten; doubles or near doubles.	Number bonds to 10	Recognizing and recalling bonds to 10
		Doubles up to $10 + 10$
	Add and subtract using doubles	Adding using doubles
		Subtracting using doubles
	Add and subtract using near doubles	Adding and subtracting using doubles
11. Describe and use mental mathematics strategies for basic addition facts and related subtraction facts to 18.	Addition and subtraction facts to 18	Addition and subtraction facts to 18
		Introducing commutative 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 demonstrate an understanding of repeating patterns (two to four elements) by identifying, describing, reproducing, extending, and creating patterns using manipulatives, diagrams, sounds, and actions.	Repeating patterns	Recognizing repeating patterns
		Reproducing repeating patterns
		Manipulating repeating patterns
		Extending repeating patterns
		Replicating repeating patterns
		Describing and creating repeating patterns
2. Students will be expected to translate repeating patterns from one representation to another.	Translate repeating patterns	Translating repeating patterns

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

Outcome	Quests	Content
3. Students will be expected to describe equality as a balance and inequality as an imbalance, concretely and pictorially (0 to 20).	Equality and inequality	Exploring equality and inequality
4. Students will be expected to record equalities using the equal symbol.	Record equalities	Recording equalities
		Solving addition and 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 demonstrate an understanding of measurement as a process of comparing by: identifying attributes that can be compared; ordering objects; making statements of comparison; filling, covering, or matching.	Measurement	Exploring length
		Exploring volume
		Exploring mass
		Exploring area

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 3-D objects and 2-D shapes using one attribute and explain the sorting rule.	Sort 2-D shapes and 3-D objects	Sorting 2-D shapes
		Sorting 3-D objects
2. Students will be expected to replicate composite 2-D shapes and 3-D objects.	Replicate composite 2-D shapes	Replicating composite 2-D shapes
	Replicate composite 3-D objects	Replicating composite 3-D objects
3. Students will be expected to identify 2-D shapes in 3-D objects.	Compare 2-D shapes to 3-D objects	Comparing 2-D shapes to 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 the number sequence by: 1s, forward and backward, starting from any point to 200; 2s, forward and backward, starting from any point to 100; 5s and 10s, forward and backward, using starting points that are multiples of 5 and 10 respectively to 100; 10s, starting from any point, to 100.	Number sequences	Counting by 1s to 200
		Counting by 2s to 100
		Counting by 2s to 100 from any number
		Counting by 5s to 100
		Counting by 10s to 100
		Counting by 10s to 100 from any number
		Counting in 2s, 5s or 10s
2. Students will be expected to demonstrate if a number (up to 100) is even or odd.	Even & odd numbers	Even & odd numbers to 20
		Even & odd numbers to 100
3. Students will be expected to describe order or relative position using ordinal numbers (up to tenth).	Ordinal numbers	Introducing ordinal numbers
4. Students will be expected to represent and partition numbers to 100.	Represent & partition numbers to 100	Represent & partition numbers to 100
		Counting to 100
		Numbers to 100 using a tally
	Recognizing number names to 100	Using coins to represent numbers to 100
		Number names to 20
5. Students will be expected to compare and order numbers up to 100.	Compare & order numbers to 100	Number names to 50
		Number names to 100
7. Students will be expected to illustrate, concretely and pictorially, the meaning of place value for numerals to 100.	Place value partitioning up to 100	Comparing & ordering numbers to 100
		Identifying numbers before & after up to 100
	Counting collections to 100	Place value partitioning of numbers to 50
		Non-standard partitioning of numbers to 100
	Solve 2-digit place value problems	Counting collections to 50
	Counting collections to 100	
	Solving problems using place 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 demonstrate an understanding of addition (limited to 1- and 2-digit numerals) with answers to 100 and the corresponding subtraction by: using personal strategies for adding and subtracting with and without the support of manipulatives; creating and solving problems that involve addition and subtraction; explaining and demonstrating that the order in which numbers are added does not affect the sum; explaining and demonstrating that the order in which numbers are subtracted matters when finding a difference.	Addition within 100	Adding 2-digit & 1-digit numbers using place value
		Adding by bridging to 10 with 2 & 1-digit numbers
		Adding tens to a 2-digit number using models
		Adding two 2-digit numbers using place value
		Adding two 2-digit numbers using a number line
		Adding by compensating
		Adding using compatible numbers
		Using number bonds to 100
	Subtraction within 100	Subtracting by bridging to 10
		Subtracting 2 & 1-digit 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 numbers, number line
		Subtracting by compensating
	Addition & subtraction within 100	Adding up to find the 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 word problems		
Estimating sums & differences		
Judging the reasonableness of answers		
10. Students will be expected to apply mental mathematics strategies to quickly recall basic addition facts to 18 and determine related subtraction facts.	Addition & subtraction to 18	Addition & subtraction to 18
		Adding using doubles
		Subtracting using doubles
		Adding doubles or near 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 demonstrate an understanding of repeating patterns (three to five elements) by describing, extending, comparing, and creating, patterns using manipulatives, diagrams, sounds, and actions.	Explore repeating patterns	Creating & extending repeating patterns
		Identifying repeating patterns
		Numeric patterns
2. Students will be expected to demonstrate an understanding of increasing patterns by describing, extending, and creating numerical patterns (numbers to 100) and non-numerical patterns using manipulatives, diagrams, sounds, and actions.	Explore increasing number patterns	Exploring addition & subtraction patterns to 100
		Exploring patterns to 100 using multiples
		Connecting objects & symbols to number patterns
		Exploring growing number patterns up to 100
		Exploring visual patterns

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

4 Shape and Space (Measurement)

4.1 Use direct and indirect measurement to solve problems

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

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

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 2-D shapes and 3-D objects using two attributes and explain the sorting rule.	Sort 2-D shapes & 3-D objects	Sorting 2-D shapes
		Sorting 3-D objects
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
3. Students will be expected to recognize, name, describe, compare and build 2-D shapes, including triangles, squares, rectangles, and circles.	2-D shapes	Comparing 3-D objects
		Naming 2-D shapes
4. Students will be expected to identify 2-D shapes as part of 3-D objects in the environment.	Identify 2-D shapes in the environment	Comparing 2-D shapes
		Identifying 2-D shapes in the 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



For more information about Mathletics,
contact our friendly team.

www.mathletics.com/contact



A 3P Learning Product