Mathletics Newfoundland and Labrador Program of Studies

Skill Quests



Grades 7 – 8



May, 2022

Mathletics

Newfoundland and Labrador Program of Studies Skill Quests May 2022

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Grade 7

1 Number

1.1 Develop number sense

Outcome	Quests	Content
1. Determine and explain why a number is divisible by 2, 3, 4, 5, 6, 8,	Divisibility rules	Introducing divisibility rules for dividing by 2
9 or 10, and why a number cannot		Introducing divisibility rules for
be divided by 0.		dividing by 3
		Introducing divisibility rules for dividing by 4
		Introducing divisibility rules for
		dividing by 5
		Introducing divisibility rules for dividing by 6
		Introducing divisibility rules for
		dividing by 8
		Introducing divisibility rules for dividing by 9
		Introducing divisibility rules for
		dividing by 10
		Divisibility rules: dividing by 2,
		3, 4, 5, 6, 10
2. Demonstrate an understanding	Operations with	Solving decimal word
of the addition, subtraction,	decimals	problems, 4 operations
multiplication and division of		Adding decimals
decimals to solve problems (for		Subtracting decimals
more than 1-digit divisors of 2-digit		Multiplying decimals
expected)		Multiplying decimals using
		place value
		Dividing decimals
		Applying order of operations, decimals
3. Solve problems involving	Percents, fractions &	Solving word problems
percents from 1% to 100%.	decimals	involving percentages
		Converting percents into fractions & decimals
4. Demonstrate an understanding	Decimals & fractions	Investigating terminating &
of the relationship between positive		repeating decimals
terminating decimals and positive		Converting terminating
fractions and between positive		decimals to fractions
repeating decimals and positive		Converting repeating decimals
tractions.		to fractions

		Converting fractions to
		terminating decimals
		Converting fractions to
		repeating decimals
5. Demonstrate an understanding	Add fractions & mixed	Adding fractions, like
of adding and subtracting positive	numbers	denominator
fractions and mixed numbers, with		Adding a whole number & a
like and unlike denominators,		fraction
concretely, pictorially and		Adding improper fractions, like
symbolically (limited to positive		denominator
sums and differences).		Adding mixed numbers, like
		denominator
		Adding fractions, unlike
		denominator
		Adding improper fractions,
		unlike denominator
		Adding mixed numbers, unlike
		denominator
	Subtract fractions &	Subtracting fractions, like
	mixed numbers	denominator
		Subtracting a fraction from a
		whole number
		Subtracting improper
		fractions, like denominator
		Subtracting with mixed
		numbers, like denominator
		Subtracting fractions, unlike
		denominator
		Subtracting improper
		fractions, unlike denominator
		Subtracting with mixed
		numbers, unlike denominator
	Add & subtract	Adding & subtracting
	fractions, word	fractions, word problems
C. Deservation to an elementaria dia a	problems	
6. Demonstrate an understanding	Understand integers	Investigating integers
of addition and subtraction of		Comparing & ordering integers
symbolically		Understanding opposites in
symbolically.		Addian & subtracting respective
	Add & subtract integers	Adding & subtracting negative
		Adding & subtracting integers
		word problems
		Adding integers with two
		coloured counters
		Adding & subtracting integers
		on a number line
		Adding integers
		Subtracting integers
		Subtracting integers

		Adding & subtracting integers, order of operations
7. Compare and order positive fractions, positive decimals (to thousandths) and whole numbers by using: benchmarks, place value, equivalent fractions and/or decimals.	Compare & order fractions & decimals	Ordering fractions & decimals on a number line Identifying a number between 2 given numbers Comparing & ordering proper fractions Ordering terminating & repeating decimals

Patterns & Relations (Patterns)

2.1 Use patterns to describe the world and to solve problems

Outcome	Quests	Content
1. Demonstrate an understanding	Patterns & linear	Representing written patterns
of oral and written patterns and	relations	as linear relations
their equivalent linear relations.		
2. Create a table of values from a	Discrete linear relations	Graphing discrete linear
linear relation, graph the table of		relations using a table
values, and analyze the graph to		Matching graphs & linear
draw conclusions and solve		relations
problems.		Creating tables of values for
		linear relations

3 Patterns & Relations (Variables & Equations)

3.1 Represent algebraic expressions in multiple ways

Outcome	Quests	Content
3. Demonstrate an understanding of preservation of equality by:	Preservation of equality	Understanding the preservation of equality
modelling preservation of equality,		Equivalent forms of equations
concretely, pictorially and symbolically, applying preservation of equality to solve equations.		Solving 1-step equations using a balance
4. Explain the difference between	Expressions &	Distinguishing between
	equutions	Identifying parts of expressions & equations
5. Evaluate an expression given the value of the variable(s).	Evaluate an expression	Evaluating expressions using substitution
6. Model and solve, concretely, pictorially and symbolically,	Linear equations, integers	Solving linear equations with integers
problems that can be represented by one-step linear equations of the form $x + a = b$, where a and b are integers.		Modelling & solving 1-step equations, algebra tiles
7. Model and solve problems that	Linear equations,	Solving 2-step equations
can be represented by linear equations of the form: ax + b = c; ax	whole numbers	Modelling & solving 2-step equations, algebra tiles
- b = c; ax = b; x/a = b, a = \neq 0 where a, b and c are whole		Modelling real-life scenarios using equations
numbers.		Solving 1-step equations
		Solving 1-step equations using algebra tiles
		Checking solutions of 2-step equations

4 Shape & Space (Measurement)

4.1 Use direct and indirect measurement to solve problems

Outcome	Quests	Content
1. Demonstrate an understanding	Circles	Introducing the parts of a
of circles by: describing the		circle
relationships among radius,		Introducing circumference
diameter and circumference,		Finding the circumference of
relating circumference to pi,		circles
determining the sum of the central		Determining sum of the central
angles, constructing circles with a		angles of a circle
given radius or diameter, solving		
problems involving the radii,		
diameters and circumferences of		
circles.		
2. Develop and apply a formula for	Determine the area	Determining the area of a
determining the area of: triangles,		triangle
parallelograms, circles.		Determining the area of a
		parallelogram
		Determining the area of a
		circle

5 Shape & Space (3-D Objects & 2-D Shapes)

5.1 Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them

Outcome	Quests	Content
3. Perform geometric constructions, including: perpendicular line segments, parallel line segments, perpendicular bisectors, angle bisectors.	Identify lines & angles	Identifying parallel & perpendicular lines

6 Shape & Space (Transformations)

6.1 Describe and analyze position and motion of objects and shapes

Outcome	Quests	Content
4. Identify and plot points in the	The Cartesian plane	Introducing Cartesian
four quadrants of a Cartesian		coordinates
plane, using integral ordered pairs.		Drawing shapes on the
		coordinate plane
5. Perform and describe	Transformations on the	Successive translations on the
transformations (translations,	Cartesian plane	coordinate plane
rotations or reflections) of a 2-D		Plotting rotations on the
shape in all four quadrants of a		coordinate plane
Cartesian plane (limited to integral		Plotting reflections on the
number vertices).		coordinate plane
		Plotting combinations of
		transformations

7 Statistics & Probability (Data Analysis)

7.1 Collect, display and analyze data to solve problems

Outcome	Quests	Content
1. Demonstrate an understanding	Measures of central	Mean
of central tendency and range by:	tendency & range	Median
determining the measures of		Mode
central tendency (mean, median,		Range
mode) and range, determining the		Choosing statistical measures
most appropriate measures of		for data
central tendency to report findings.		
3. Construct, label and interpret	Circle graphs	Interpreting & constructing
circle graphs to solve problems.		circle graphs

8 Statistics & Probability (Chance & Uncertainty)

8.1 Use experimental or theoretical probabilities to represent and solve problems involving uncertainty

Outcome	Quests	Content
4. Express probabilities as ratios,	Probability: decimal,	Probability: decimals, fractions
fractions and percents.	fraction, percent	& percents
5. Identify the sample space (where the combined sample space has 36 or fewer elements) for a probability experiment involving two	Sample space	Identifying the sample space
6. Conduct a probability experiment	Theoretical & experimental	Understanding independent events
probability (determined using a tree diagram, table or another graphic	probability	Determining theoretical probability, tree diagrams
organizer) and experimental probability of two independent events.		Exploring fair games

Grade 8

1 Number

1.1 Develop number sense

Outcome	Quests	Content
1. Demonstrate an understanding	Squares & square roots	Perfect squares
of perfect squares and square		Finding square roots
roots, concretely, pictorially and		
symbolically (limited to whole		
numbers).		
2. Determine the approximate	Estimate square roots	Estimating square roots
square root of numbers that are not		
numbers).		
3. Demonstrate an understanding	Percents greater than	Percents greater than 100%
of percents greater than or equal to	or equal to 0%	Converting percents to
0%.		fractions & mixed numbers
		Converting percents to
		decimals
		Solving problems involving
		consecutive percents
		Increasing & decreasing
		amounts by percents
		Solving problems involving
1 Demonstrate an understanding	Lindenstein durchten Qurchen	combined percents
4. Demonstrate an understanding	Understand ratio & rate	Introduction to ratios
E Salva problems that involve	Datas ratios %	Simplifying & comparing rates
s. Solve problems that involve	proportional reasoning	Simplifying & comparing rates
reasoning	proportional reasoning	Dividing a quantity in a given
Teusoning.		ratio
		Solving ratio problems
		Solving proportions problems
6. Demonstrate an understanding	Multiply fractions &	Multiplying unit fractions by
of multiplying and dividing positive	mixed numbers	whole numbers
fractions and mixed numbers,		Multiplying proper fractions by
concretely, pictorially and		whole numbers
symbolically.		Multiplying mixed numbers by
		Multiplying fractions
		Multiplying mixed pumbers
	Divide fractions &	Dividing fractions & whole
	mixed numbers	numbers
		Dividing fractions

		Dividing whole numbers & mixed numbers
		Dividing mixed numbers &
		fractions
		Dividing mixed numbers
		Dividing fractions, word
		problems
7. Demonstrate an understanding	Multiply & divide	Multiplying integers
of multiplication and division of	integers	Dividing integers
integers, concretely, pictorially and		Multiplying & dividing integers
symbolically.		Multiplying integers using
		models
		Dividing integers using models

2 Patterns & Relations (Patterns)

2.1 Use patterns to describe the world and solve problems

Outcome	Quests	Content
1. Graph and analyze two-variable linear relations.	Linear relations	Graphing discrete linear relationships
		Identifying equation from a discrete linear graph

3 Patterns & Relations (Variables & Equations)

3.1 Use patterns to describe the world and solve problems

Outcome	Quests	Content
2. Model and solve problems using	Linear equations,	Modelling & solving 2-step
linear equations of the form: ax = b;	integers	linear equations
$x/a = b, a \neq 0; ax + b = c; x/a + b = c,$		Solving linear equation word
$a \neq 0$; $a(x + b) = c$ where a, b, and c		problems
are integers.		Solving 2-step linear
		equations, mixed operations
		Solving 1-step linear
		equations, add & subtract
		Solving 1-step linear
		equations, multiply & divide
		Solving 1-step linear
		equations, mixed operations
		Solving linear equations,
		distributive property
		Checking solutions using
		substitution

4 Shape & Space (Measurement)

4.1 Use direct or indirect measurement to solve problems

Outcome	Quests	Content
1. Develop and apply the Pythagorean theorem to solve	Pythagorean Theorem	ldentifying the sides of a right triangle
problems.		Converse of the Pythagorean Theorem
		Finding the length of the
		missing side, short side
		Finding the length of the
		missing side, hypotenuse
		Finding the length of the
		missing side
		Matching right triangles to
		word problems
		Identifying Pythagorean triples
2. Draw and construct nets for 3-D objects.	Nets of 3-D objects	Connecting prisms with their nets Connecting 3-D objects with their nets
3. Determine the surface area of:	Surface area	Finding the surface area of
ngni reciangular prisms, ngni		Finding the surface area of
colvo problems		Finding the surface area of
solve problems.		Linding the surface area of
		cylinders
4. Develop and apply formulas for	Volume	Finding the volume of cubes &
determining the volume of right prisms and right cylinders.		rectangular prisms
		Finding the volume of triangular prisms
		Finding the volume of
		cylinders
		Solving volume problems, right
		prisms & cylinders

5 Shape & Space (3-D Objects & 2-D Shapes)

5.1 Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them

Outcome	Quests	Content
5. Draw and interpret top, front and side views of 3-D objects composed	Top, front & side views of 3-D objects	Drawing top, front & side views of 3-D objects
of right rectangular prisms.		

6 Shape & Space (Transformations)

6.1 Describe and analyze position and motion of objects and shapes

Outcome	Quests	Content
6. Demonstrate an understanding	Tessellation	Investigating tessellations
properties of shapes that make		Recognizing tessellations
tessellating possible, creating		
tessellations, identifying		
tessellations in the environment.		

7 Statistics & Probability (Data Analysis)

7.1 Collect, display and analyze data to solve problems

Outcome	Quests	Content
1. Critique ways in which data is	Critique data displays	Critiquing data displays
presented.		

8 Statistics & Probability (Chance & Uncertainty)

8.1 Use experimental or theoretical probabilities to represent and solve problems involving uncertainty

Outcome	Quests	Content
2. Solve problems involving	Probability of	Finding the probability of 2
probability of independent events.	independent events	independent events



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