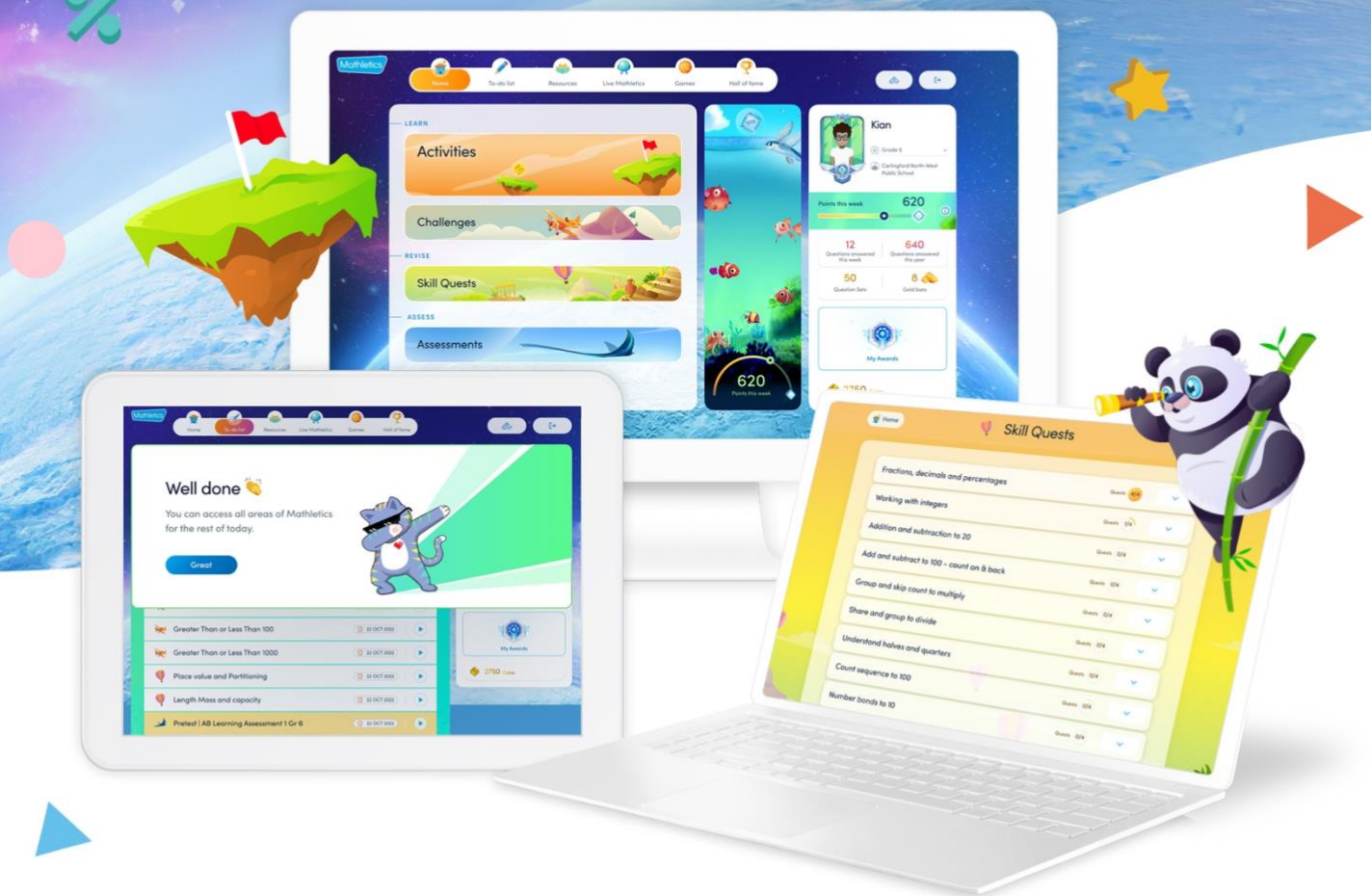
# Mathletics

## Newfoundland and Labrador Curriculum

Skill Quests

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July, 2025

Mathletics

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

| | | |
|---|---|---|
| | | Converting fractions to terminating decimals |
| | | Converting fractions to repeating decimals |
| 5. Demonstrate an understanding of adding and subtracting positive fractions and mixed numbers, with like and unlike denominators, concretely, pictorially and symbolically (limited to positive sums and differences). | Add fractions & mixed numbers | Adding fractions, like denominator |
| | | Adding a whole number & a fraction |
| | | Adding improper fractions, like denominator |
| | | Adding mixed numbers, like denominator |
| | | Adding fractions, unlike denominator |
| | | Adding improper fractions, unlike denominator |
| | | Adding mixed numbers, unlike denominator |
| | Subtract fractions & mixed numbers | Subtracting fractions, like 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 fractions, word problems | Adding & subtracting fractions, word problems |
| 6. Demonstrate an understanding of addition and subtraction of integers, concretely, pictorially and symbolically. | Understand integers | Investigating integers |
| | | Comparing & ordering integers |
| | | Understanding opposites in context |
| | Add & subtract integers | Adding & subtracting negative integers |
| | | Adding & subtracting integers, word problems |
| | | Adding integers with two-coloured counters |
| | | Adding & subtracting integers on a number line |
| | | Adding 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 of oral and written patterns and their equivalent linear relations. | Patterns & linear relations | Representing written patterns as linear relations |
| 2. Create a table of values from a linear relation, graph the table of values, and analyze the graph to draw conclusions and solve problems. | Discrete linear relations | Graphing discrete linear relations using a table |
| | | Matching graphs & linear relations |
| | | 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: modelling preservation of equality, concretely, pictorially and symbolically, applying preservation of equality to solve equations. | Preservation of equality | Understanding the preservation of equality |
| | | Equivalent forms of equations |
| | | Solving 1-step equations using a balance |
| 4. Explain the difference between an expression and an equation. | Expressions & equations | Distinguishing between expressions & equations |
| | | 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, problems that can be represented by one-step linear equations of the form $x + a = b$, where a and b are integers. | Linear equations, integers | Solving linear equations with integers |
| | | Modelling & solving 1-step equations, algebra tiles |
| 7. Model and solve problems that can be represented by linear equations of the form: $ax + b = c$; $ax - b = c$; $ax = b$; $x/a = b$, $a = \neq 0$ where a, b and c are whole numbers. | Linear equations, whole numbers | Solving 2-step equations |
| | | Modelling & solving 2-step equations, algebra tiles |
| | | Modelling real-life scenarios using equations |
| | | 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 of circles by: describing the relationships among radius, diameter and circumference, relating circumference to pi, determining the sum of the central angles, constructing circles with a given radius or diameter, solving problems involving the radii, diameters and circumferences of circles. | Circles | Introducing the parts of a circle |
| | | Introducing circumference |
| | | Finding the circumference of circles |
| | | Determining sum of the central angles of a circle |
| 2. Develop and apply a formula for determining the area of: triangles, parallelograms, circles. | Determine the area | Determining the area of a triangle |
| | | 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 four quadrants of a Cartesian plane, using integral ordered pairs. | The Cartesian plane | Introducing Cartesian coordinates |
| | | Drawing shapes on the coordinate plane |
| 5. Perform and describe transformations (translations, rotations or reflections) of a 2-D shape in all four quadrants of a Cartesian plane (limited to integral number vertices). | Transformations on the Cartesian plane | Successive translations on the coordinate plane |
| | | Plotting rotations on the coordinate plane |
| | | Plotting reflections on the 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 of central tendency and range by: determining the measures of central tendency (mean, median, mode) and range, determining the most appropriate measures of central tendency to report findings. | Measures of central tendency & range | Mean |
| | | Median |
| | | Mode |
| | | Range |
| | | Choosing statistical measures for data |
| 3. Construct, label and interpret circle graphs to solve problems. | Circle graphs | Interpreting & constructing 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, fractions and percents. | Probability: decimal, fraction, percent | Probability: decimals, fractions & percents |
| 5. Identify the sample space (where the combined sample space has 36 or fewer elements) for a probability experiment involving two independent events. | Sample space | Identifying the sample space |
| 6. Conduct a probability experiment to compare the theoretical probability (determined using a tree diagram, table or another graphic organizer) and experimental probability of two independent events. | Theoretical & experimental probability | Understanding independent events |
| | | Determining theoretical probability, tree diagrams |
| | | Exploring fair games |

# Grade 8

## 1 Number

### 1.1 Develop number sense

| Outcome | Quests | Content |
|---|---|---|
| 1. Demonstrate an understanding of perfect squares and square roots, concretely, pictorially and symbolically (limited to whole numbers). | Squares & square roots | Perfect squares |
| | | Finding square roots |
| 2. Determine the approximate square root of numbers that are not perfect squares (limited to whole numbers). | Estimate square roots | Estimating square roots |
| 3. Demonstrate an understanding of percents greater than or equal to 0%. | Percents greater than or equal to 0% | Percents greater than 100% |
| | | Converting percents to fractions & mixed numbers |
| | | Converting percents to decimals |
| | | Solving problems involving consecutive percents |
| | | Increasing & decreasing amounts by percents |
| | | Solving problems involving combined percents |
| 4. Demonstrate an understanding of ratio and rate. | Understand ratio & rate | Unit rate |
| | | Introduction to ratios |
| 5. Solve problems that involve rates, ratios and proportional reasoning. | Rates, ratios & proportional reasoning | Simplifying & comparing rates |
| | | Solving rate problems |
| | | Dividing a quantity in a given ratio |
| | | Solving ratio problems |
| | | Solving proportions problems |
| 6. Demonstrate an understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially and symbolically. | Multiply fractions & mixed numbers | Multiplying unit fractions by whole numbers |
| | | Multiplying proper fractions by whole numbers |
| | | Multiplying mixed numbers by whole numbers |
| | | Multiplying fractions |
| | | Multiplying mixed numbers |
| | Divide fractions & mixed numbers | Dividing fractions & whole numbers |
| | | Dividing fractions |

| | | |
|---|---|---|
| | | Dividing whole numbers & mixed numbers |
| | | Dividing mixed numbers & fractions |
| | | Dividing mixed numbers |
| | | Dividing fractions, word problems |
| 7. Demonstrate an understanding of multiplication and division of integers, concretely, pictorially and symbolically. | Multiply & divide integers | Multiplying integers |
| | | Dividing integers |
| | | Multiplying & dividing integers |
| | | 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 of the form: $ax = b$; $x/a = b$, $a \neq 0$; $ax + b = c$; $x/a + b = c$, $a \neq 0$; $a(x + b) = c$ where a, b, and c are integers. | Linear equations, integers | Modelling & solving 2-step linear equations |
| | | Solving linear equation word problems |
| | | 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 problems. | Pythagorean Theorem | Identifying the sides of a right triangle |
| | | 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: right rectangular prisms, right triangular prisms, right cylinders to solve problems. | Surface area | Finding the surface area of rectangular prisms |
| | | Finding the surface area of triangular prisms |
| | | Finding the surface area of cylinders |
| 4. Develop and apply formulas for determining the volume of right prisms and right cylinders. | Volume | Finding the volume of cubes & 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 of right rectangular prisms. | Top, front & side views of 3-D objects | Drawing top, front & side views of 3-D objects |

# 6 Shape & Space (Transformations)

## 6.1 Describe and analyze position and motion of objects and shapes

| Outcome | Quests | Content |
|---|---|---|
| 6. Demonstrate an understanding of tessellation by: explaining the properties of shapes that make tessellating possible, creating tessellations, identifying tessellations in the environment. | Tessellation | Investigating tessellations using transformations |
| | | Recognizing tessellations |

# 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 presented. | Critique data displays | Critiquing data displays |

# 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 independent events. | Probability of independent events | Finding the probability of 2 independent events |


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