

Mathletics Manitoba Curriculum

Activities (Courses) and Skill Quests



Grades 7-8

July, 2025

Mathletics

Grade 7	4
1 Number.....	4
1.1 Develop number sense.	4
2 Patterns and Relations (Patterns).....	8
2.1 Use patterns to describe the world and solve problems.	8
3 Patterns and Relations (Variables and Equations)	9
3.1 Represent algebraic expressions in multiple ways.	9
4 Shape and Space (Measurement)	11
4.1 Use direct or indirect measurement to solve problems.....	11
5 Shape and Space (3-D Objects and 2-D Shapes).....	12
5.1 Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.....	12
6 Shape and Space (Transformations)	13
6.1 Describe and analyze position and motion of objects and shapes.	13
7 Statistics and Probability (Data Analysis)	14
7.1 Collect, display, and analyze data to solve problems.	14
8 Statistics and Probability (Chance and Uncertainty)	15
8.1 Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.....	15
Grade 8	16
1 Number.....	16
1.1 Develop number sense.	16
2 Patterns and Relations (Patterns).....	19
2.1 Use patterns to describe the world and solve problems.	19
3 Patterns and Relations (Variables and Equations)	20
3.1 Represent algebraic expressions in multiple ways.	20
4 Shape and Space (Measurement)	21
4.1 Use direct or indirect measurement to solve problems.....	21
5 Shape and Space (3-D Objects and 2-D Shapes).....	23
5.1 Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.....	23
6 Shape and Space (Transformations)	24
6.1 Describe and analyze position and motion of objects and shapes.	24
7 Statistics and Probability (Data Analysis)	25

7.1 Collect, display, and analyze data to solve problems.	25
8 Statistics and Probability (Chance and Uncertainty)	26
8.1 Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.....	26

Grade 7

1 Number

1.1 Develop number sense.

7.N.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.	
Course Topics	Activities
Number-Divisibility	Factors
	Divisibility Tests
	Divisibility Tests (2, 5, 10)
	Divisibility Tests (3, 4, 9)
	Tests of Divisibility 1
	Product of Prime Factors
Topics	Skill Quests
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

7.N.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, technology could be used).	
Course Topics	Activities
Number-Decimals	Multiply Decimals: 10, 100, 1000
	Divide Decimals: 10, 100, 1000
	Divide Decimal by Whole Number
	Decimal by Whole Number
	Multiply Decimals and Powers of 10
	Decimal by Decimal
	Decimal Complements
	Divide Decimal by Decimal
	Missing Values: Decimals
	Adding Decimals
	Add Decimals 2
	Subtract Decimals 1
	Subtract Decimals 2
	Divide by Powers of 10

Number-Decimals-Estimate & Round	Adding and Subtracting Decimals
	Multiply Decimals: Area Model
	Estimate Decimal Sums 1
	Estimate Decimal Sums 2
	Estimate Decimal Differences 1
	Estimate Decimal Differences 2
	Rounding Decimals
	Rounding Decimals 1
	Rounding Decimals 2
	Estimate Decimal Operations
Topics	Skill Quests
Operations with decimals	Solving decimal word problems, 4 operations
	Adding decimals
	Subtracting decimals
	Multiplying decimals
	Multiplying decimals using place value
	Dividing decimals
	Order of operations, decimals

7.N.3 Solve problems involving percents from 1% to 100%.	
Course Topics	Activities
Number-Percent	Percents and Decimals
	Percents to Fractions
	Calculating Percentages
	Percent of a Number
	Percentage Word Problems
	What Percentage?
Topics	Skill Quests
Percents, fractions & decimals	Solving word problems involving percentages
	Converting percents into fractions & decimals

7.N.4	
Demonstrate an understanding of the relationship between repeating decimals and fractions, and terminating decimals and fractions.	
Course Topics	Activities
Number-Percent	Fractions to Decimals
	Fractions to Decimals 2
	Fraction to Terminating Decimal
	Decimals to Fractions 1
	Decimals to Fractions 2
	Recurring Decimals
	Recurring Decimals and Series
Topics	Skill Quests
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

7.N.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).	
Course Topics	Activities
Number - Fractions Add and Subtract	Add: Common Denominator
	Subtract: Common Denominator
	Add Unlike Fractions
	Add: No Common Denominator
	Subtract: No Common Denominator
	Subtract Unlike Fractions
	Add subtract fractions 1
	Add Like Mixed Numbers
	Add Unlike Mixed Numbers
	Subtract Unlike Mixed Numbers
	Subtract Mixed Numbers: Renaming
	One take Fraction
Number - Fractions	Simplifying Fractions
	Equivalent Fractions
Topics	Skill Quests
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

7.N.6 Demonstrate an understanding of addition and subtraction of integers, concretely, pictorially, and symbolically.	
Course Topics	Activities
Number-Integers	More with Integers
	Integers: Add and Subtract
	Add Integers
	Subtract Integers
	Negative or Positive?
Topics	Skill Quests
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 twocoloured counters
	Adding & subtracting integers on a number line
	Adding integers
	Subtracting integers
	Adding & subtracting integers, order of operations

7.N.7 Compare and order fractions, decimals (to thousandths), and integers by using benchmarks, place value, equivalent fractions and/or decimals	
Course Topics	Activities
Number-Decimals	Decimal Order 1
	Decimals on a Number Line
	Comparing Decimals
Number-Integers	Ordering Integers
	Comparing Integers
Number - Fractions	Arranging Fractions
	Comparing Fractions 1
	Comparing Fractions 2
Topics	Skill Quests
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
	Comparing & ordering integers

2 Patterns and Relations (Patterns)

2.1 Use patterns to describe the world and solve problems.

7.PR.1	
Demonstrate an understanding of oral and written patterns and their corresponding relations.	
Course Topics	Activities
Teacher directed	
Topics	Skill Quests
Patterns & linear relations	Representing written patterns as linear relations

7.PR.2	
Construct a table of values from a relation, graph the table of values, and analyze the graph to draw conclusions and solve problems.	
Course Topics	Activities
Patterns & Relations-Patterns	Table of Values
	Graphing from a Table of Values
	Reading Values from a Line
Topics	Skill Quests
Discrete linear relations	Graphing discrete linear relations using a table
	Matching graphs & linear relations
	Creating tables of values for linear relations

3 Patterns and Relations (Variables and Equations)

3.1 Represent algebraic expressions in multiple ways.

7.PR.3	
Demonstrate an understanding of preservation of equality by modelling preservation of equality, concretely, pictorially, and symbolically, applying preservation of equality to solve equations	
Course Topics	Activities
Teacher patterns	
Topics	Skill Quests
Preservation of equality	Understanding the preservation of equality
	Equivalent forms of equations
	Solving 1-step equations using a balance

7.PR.4	
Explain the difference between an expression and an equation.	
Course Topics	Activities
Patterns-Relations-Variables-Equations	Writing Algebraic Expressions
Topics	Skill Quests
Expressions & equations	Distinguishing between expressions & equations
	Identifying parts of expressions & equations

7.PR.5	
Evaluate an expression given the value of the variable(s).	
Course Topics	Activities
Patterns-Relations-Variables-Equations	Simple Substitution 1
Topics	Skill Quests
Evaluate an expression	Evaluating expressions using substitution

7.PR.6	
Model and solve problems that can be represented by one-step linear equations of the form $x + a = b$, concretely, pictorially, and symbolically, where a and b are integers.	
Course Topics	Activities
Teacher directed	
Topics	Skill Quests
Linear equations, integers	Solving linear equations with integers
	Modeling & solving 1-step equations, algebra tiles

7.PR.7

Model and solve problems that can be represented by linear equations of the form: $ax + b = c$, $ax = b$, $x/a = b$, $a \neq 0$, concretely, pictorially, and symbolically, where a , b , and c , are whole numbers.

Course Topics	Activities
Patterns-Relations-Variables-Equations	Writing Equations
	Missing Numbers: Variables
	Write an Equation: Word Problems
	Equations to Solve Problems
Topics	Skill Quests
Linear equations, whole numbers	Solving 2-step equations
	Modeling & solving 2-step equations, algebra tiles
	Modeling real-life scenarios using equations
	Solving 1-step equations
	Solving 1-step equations using algebra tiles
	Checking solutions of twostep equations

4 Shape and Space (Measurement)

4.1 Use direct or indirect measurement to solve problems.

7.SS.1	
Demonstrate an understanding of circles by describing the relationships among radius, diameter, and circumference of circles, relating circumference to pi (π), 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.	
Course Topics	Activities
Shape & Space-Shapes	Identify Parts of Circles 1
	Circumference: Circles
Topics	Skill Quests
Circles	Finding the circumference of circles
	Introducing the parts of a circle
	Introducing circumference
	Sum of the central angles of a circle

7.SS.2	
Develop and apply a formula for determining the area of triangles, parallelograms, and circles.	
Course Topics	Activities
Shape & Space-Shapes	Area: Circles
	Area: Triangles
	Area: Quadrilaterals
	Area: Right Angled Triangles
	Area: Parallelograms (Metric)
Topics	Skill Quests
Determine the area	Determining the area of a triangle
	Determining the area of a parallelogram
	Determining the area of a circle

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

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

7.SS.3 Perform geometric constructions, including perpendicular line segments, parallel line segments, perpendicular bisectors, and angle bisectors.	
Course Topics	Activities
Shape & Space-Shapes	What Line Am I?
Topics	Skill Quests
Lines & angles	Identifying parallel & perpendicular lines

6 Shape and Space (Transformations)

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

7.SS.4	
Identify and plot points in the four quadrants of a Cartesian plane using ordered pairs.	
Course Topics	Activities
Shape & Space-Transformations	Ordered Pairs
	Patterns, Rules and Equations
Topics	Skill Quests
The Cartesian plane	Introducing Cartesian coordinates
	Drawing shapes on the coordinate plane

7.SS.5	
Perform and describe transformations of a 2-D shape in all four quadrants of a Cartesian plane (limited to integral vertices).	
Course Topics	Activities
Shape & Space-Transformations	Transformations: Coordinate Plane
	Rotations: Coordinate Plane
	Vertical and horizontal shift
Topics	Skill Quests
Transformations on the Cartesian plane	Successive translations on the coordinate plane
	Rotations on the coordinate plane
	Reflections on the coordinate plane
	Combinations of transformations

7 Statistics and Probability (Data Analysis)

7.1 Collect, display, and analyze data to solve problems.

7.SP.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	
Course Topics	Activities
Statistics & Probability-Data Analysis	Mean
	Mean from Frequency Table
	Mode
	Mode from Frequency Table
	Median
	Median from Frequency
Topics	Skill Quests
Measures of central tendency & range	Understanding mean
	Understanding median
	Understanding mode
	Understanding range
	Choosing statistical measures for data

7.SP.2 Determine the effect on the mean, median, and mode when an outlier is included in a data set.	
Course Topics	Activities
Teacher directed	
Topics	Skill Quests
Outliers	Investigating the effect of outliers

7.SP.3 Construct, label, and interpret circle graphs to solve problems.	
Course Topics	Activities
Statistics & Probability-Data Analysis	Sector Graphs
	Sector Graph Calculations
	Sector Graph Angles
	Creating a Sector Graph
Topics	Skill Quests
Circle graphs	Interpreting & constructing circle graphs

8 Statistics and Probability (Chance and Uncertainty)

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

7.SP.4 Express probabilities as ratios, fractions, and percents.	
Course Topics	Activities
Stat.-Probability-Chance & Uncertainty	Simple Probability
	Find the Probability
	Complementary Events
Topics	Skill Quests
Probability: decimal, fraction, percent	Probability: decimals, fractions & percents

7.SP.5 Identify the sample space (where the combined sample space has 36 or fewer elements) for a probability experiment involving two independent events.	
Course Topics	Activities
Teacher directed	
Topics	Skill Quests
Sample space	Identifying the sample space

7.SP.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.	
Course Topics	Activities
Stat.-Probability-Chance & Uncertainty	Probability Tables
	Two-way Table Probability
	Dice and Coins
Topics	Skill Quests
Theoretical & experimental probability	Understanding independent events
	Determining theoretical probability, tree diagrams
	Exploring fair games

Grade 8

1 Number

1.1 Develop number sense.

8.N.1 Demonstrate an understanding of perfect squares and square roots, concretely, pictorially, and symbolically (limited to whole numbers).	
Course Topics	Activities
Number-Square Roots	Square Roots
Topics	Skill Quests
Squares & square roots	Perfect squares
	Finding square roots

8.N.2 Determine the approximate square root of numbers that are not perfect squares (limited to whole numbers).	
Course Topics	Activities
Number-Square Roots	Estimate Square Roots
	Estimating Square Roots
Topics	Skill Quests
Estimate square roots	Estimating square roots

8.N.3 Demonstrate an understanding of percents greater than or equal to 0%.	
Course Topics	Activities
Number-Percents	Calculating Percentages
	Decimal to Percentage
	Percentage Composition
	Percentage to Fraction
	Solve Percent Equations
	Decimals to Fractions 2
	Fractions to Decimals 2
	Percents and Decimals
	Fraction to Terminating Decimal
	Percentage Word Problems
	Percent Increase and Decrease
Topics	Skill Quests
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

8.N.4 Demonstrate an understanding of ratio and rate.	
Course Topics	Activities
Number-Ratios & Rates	Ratios
	Equivalent Ratios
	Simplify Ratios: 2 Whole Numbers
	Simplify Ratios: 3 Whole Numbers
	Simplify Ratios: Mixed Numbers
Topics	Skill Quests
Understand ratio & rate	Unit rate
	Introduction to ratios

8.N.5 Solve problems that involve rates, ratios, and proportional reasoning.	
Course Topics	Activities
Number-Ratios & Rates	Rates
	Rate Word Problems
	Rates Word Problems
	Rates Calculations
	Ratio and Proportion
	Ratio Word Problems
	Solve Proportions
	Dividing a Quantity in a Ratio
Topics	Skill Quests
Rates, ratios & proportional reasoning	Simplifying & comparing rates
	Solving rate problems
	Dividing a quantity in a given ratio
	Solving ratio problems
	Solving proportions problems

8.N.6 Demonstrate an understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially, and symbolically.	
Course Topics	Activities
Number-Fractions	Model fractions to multiply
	Multiplying Fractions
	Multiply Two Fractions 1
	Multiply Mixed Numbers
	Divide Fractions by Fractions 1
	Divide Mixed Numbers
	Divide by a unit fraction
	Divide Fractions Visual Model
Topics	Skill Quests

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

8.N.7 Demonstrate an understanding of multiplication and division of integers, concretely, pictorially, and symbolically.	
Course Topics	Activities
Number-Integers	Integers: Multiply and Divide
	Integers: Multiply and Divide 1
Topics	Skill Quests
Multiply & divide integers	Multiplying integers
	Dividing integers
	Multiplying & dividing integers
	Multiplying integers using models
	Dividing integers using models

8.N.8 Solve problems involving positive rational numbers.	
Course Topics	Activities
Number-Fractions	Fraction Word Problems
Topics	Skill Quests
Operations with decimals	Solving decimal word problems, 4 operations
	Using operations with decimals
Add & subtract fractions & mixed numbers	Adding fractions & mixed numbers
	Subtracting fractions & mixed numbers
	Adding & subtracting fractions, word problems

2 Patterns and Relations (Patterns)

2.1 Use patterns to describe the world and solve problems.

8.PR.1 Graph and analyze two-variable linear relations.	
Course Topics	Activities
Pattern, Relations, Variables, Equations	Table of Values
	Graphing from a Table of Values 2
	Pattern Rules and Tables
	Find the Pattern Rule
	Find the Function Rule
	Ordered Pairs
	Reading Values from a Line
	$y=ax$
	Which Straight Line?
Topics	Skill Quests
Linear relations	Graphing discrete linear relations
	Identifying equation from a discrete linear graph

3 Patterns and Relations (Variables and Equations)

3.1 Represent algebraic expressions in multiple ways.

8.PR.2	
Model and solve problems using linear equations of the form: $ax = b$, $x/a = b$, $a \neq 0$, $ax + b = c$, $x/a + b = c$, $a \neq 0$, $a(x + b) = c$ concretely, pictorially, and symbolically, where a , b , and c , are integers.	
Course Topics	Activities
Pattern, Relations, Variables, Equations	Solve Equations: Multiply, Divide 2
Topics	Skill Quests
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 and Space (Measurement)

4.1 Use direct or indirect measurement to solve problems.

8.SS.1	
Develop and apply the Pythagorean theorem to solve problems.	
Course Topics	Activities
Shape and Space	Hypotenuse of a Right Triangle
	Pythagoras' Theorem
	Pythagorean Triads
	Find Slant Height
Topics	Skill Quests
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

8.SS.2	
Draw and construct nets for 3-D objects.	
Course Topics	Activities
Shape and Space	Nets
Topics	Skill Quests
Nets of 3-D objects	Connecting prisms with their nets
	Connecting 3-D objects with their nets

8.SS.3	
Determine the surface area of: right rectangular prisms, right triangular prisms, right cylinders to solve problems.	
Course Topics	Activities
Shape and Space	Surface Area: Rectangular Prisms
	Surface Area: Triangular Prisms
Topics	Skill Quests
Surface area	Finding the surface area of rectangular prisms
	Finding the surface area of triangular prisms
	Finding the surface area of cylinders

8.SS.4	
Develop and apply formulas for determining the volume of right prisms and right cylinders.	
Course Topics	Activities
Shape and Space	Volume: Rectangular Prisms 2
	Volume: Triangular Prisms
	Volume: Prisms
	Volume: Cylinders
Topics	Skill Quests
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 and Space (3-D Objects and 2-D Shapes)

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

8.SS.5	
Draw and interpret top, front, and side views of 3-D objects composed of right rectangular prisms.	
Course Topics	Activities
Teacher directed	
Topics	Skill Quests
Top, front & side views of 3-D objects	Drawing top, front & side views of 3-D objects

6 Shape and Space (Transformations)

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

8.SS.6	
Demonstrate an understanding of tessellation by: explaining the properties of shapes that make tessellating possible, creating tessellations, identifying tessellations in the environment	
Course Topics	Activities
Teacher directed	
Topics	Skill Quests
Tessellation	Investigating tessellations using transformations
	Recognizing tessellations

7 Statistics and Probability (Data Analysis)

7.1 Collect, display, and analyze data to solve problems.

8.SP.1 Critique ways in which data are presented.	
Course Topics	Activities
Teacher directed	
Topics	Skill Quests
Critique data displays	Critiquing data displays

8 Statistics and Probability (Chance and Uncertainty)

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

8.SP.2 Solve problems involving the probability of independent events.	
Course Topics	Activities
Probability	Dice and Coins
	Probability Tables
	Simple Probability
	Simple Probability 1
	Find the Probability
Topics	Skill Quests
Probability of independent events	Finding the probability of 2 independent events



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