

Mathletics

New Brunswick Curriculum

Activities (Courses) and Skill Quests



Grades 7-8

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Mathletics

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Grade 7

1 Number

1.1 Number sense

7.N1 Describe numbers, ways of representing numbers, relationships among numbers, and number systems	
Course Topics	Activities
Number-Compare and Order	Integers on a Number Line
	Ordering Integers (Number Line)
	Comparing Integers
	Comparing Integers (<, =, >)
Topics	Skill Quests
Understand integers	Investigating integers
	Comparing & ordering integers
	Understanding opposites in context

1.2 Operations

7.N2 Add and subtract positive and negative integers to solve problems	
Course Topics	Activities
Number-Integers	More with Integers
	Integers: Add and Subtract
	Add Integers
	Subtract Integers
	Negative or Positive?
	Integers: Subtraction
Topics	Skill Quests
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.N3 Add, subtract, multiply, and divide decimals to solve problems (1-digit divisors and 2-digit multipliers)	
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 Complements
	Missing Values: Decimals
	Adding Decimals
	Add Decimals 2
	Subtract Decimals 1
	Subtract Decimals 2
	Subtracting Decimals
	Divide by Powers of 10
	Adding and Subtracting Decimals
	Multiply Decimals: Area Model
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
	Applying order of operations, decimals

7.N4	
Add, subtract, multiply, and divide positive fractions and mixed numbers to solve problems	
Course Topics	Activities
Number-Fractions	Add: Common Denominator
	Simplifying Fractions
	Subtract: Common Denominator
	Add Unlike Fractions
	Add: No Common Denominator
	Subtract: No Common Denominator
	Add subtract fractions 1
	Improper to Mixed
	Mixed to Improper
	Add Like Mixed Numbers
	Subtract Unlike Fractions
	Add Unlike Mixed Numbers
	Subtract Unlike Mixed Numbers
	Subtract Mixed Numbers: Renaming
	Add Mixed Numbers: Same Sign
	One take Fraction
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
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

2 Statistics and Probability

2.1 Data Analysis

7.SP1	
Calculate measures of central tendency to solve problems	
Course Topics	Activities
Statistics & Probability-Data Analysis	Mean
	Mean from Frequency Table
	Mode
	Mode from Frequency Table
	Median
	Median from Frequency
	Grouped Frequency
Topics	Skill Quests
Measures of central tendency & range	Mean
	Median
	Mode
	Range
	Choosing statistical measures for data
Investigate outliers	Investigating the effect of outliers

7.SP2	
Analyze linear relations of the forms shown below and compare graphs to solve problems. (e.g., $y = x + ?$, $y = x/a$, $y = x/a + ?$)	
Course Topics	Activities
Patterns & Relations-Patterns	Find the Pattern Rule
	Pattern Rules and Tables
	Table of Values
	Graphing from a Table of Values
	Reading Values from a Line
Topics	Skill Quests
Patterns & linear relations	Representing written patterns as linear relations
Discrete linear relations	Graphing discrete linear relations using a table
	Matching graphs & linear relations
	Creating tables of values for linear relations
Linear equations, integers	Solving linear equations with integers
	Modeling & solving 1-step equations, algebra tiles
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 two-step equations

7.SP3 Identify points and transformations in the four quadrants of the Cartesian Plane using integral ordered pairs	
Course Topics	Activities
Shape & Space-Transformations	Transformations
	Transformations: Coordinate Plane
	Rotations: Coordinate Plane
	Rotational Symmetry
	Vertical and horizontal shift
Topics	Skill Quests
The Cartesian plane	Introducing Cartesian coordinates
	Drawing shapes on the coordinate plane
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

2.2 Chance and Uncertainty

7.SP4 Determine the probability of outcomes to solve problems	
Course Topics	Activities
Stat.-Probability-Chance & Uncertainty	Ratios
	Simple Probability
	Find the Probability
	Probability Tables
	Probability Scale
	Tree Diagrams
	Probability With Replacement
	Probability Without Replacement
	Two-way Table Probability
	Complementary Events
	Dice and Coins
Topics	Skill Quests
Probability: decimal, fraction, percent	Probability: decimals, fractions & percents
Sample space	Identifying the sample space
Theoretical & experimental probability	Understanding independent events
	Determining theoretical probability, tree diagrams
	Exploring fair games

3 Patterns and Relations

3.1 Algebra

7.PR1 Solve linear equations	
Course Topics	Activities
Patterns & Relations-Patterns	Patterns, Rules and Equations
	Solve Equations: Add, Subtract 1
	Solve Equations: Multiply, Divide 1
	Solve Proportions
	Solving Simple Equations
Patterns-Relations-Variables-Equations	Solve Equations: Add, Subtract 2
	Solve Equations: Multiply, Divide 2
	Solve Two-Step Equations
	Solve Multi-Step Equations
	Writing Algebraic Expressions
	Simple Substitution 1
	Writing Equations
	More Substitution in Formulae
	Missing Numbers: Variables
	Solving More Equations
	Equations with Fractions
	Equations with Decimals
	Equations: Variables, Both Sides
	Write an Equation: Word Problems
	Checking Solutions
	Identifying errors in applying the order of operations
	Find the Mistake
Topics	Skill Quests
Preservation of equality	Understanding the preservation of equality
	Equivalent forms of equations
	Solving 1-step equations using a balance
Expressions & equations	Distinguishing between expressions & equations
	Identifying parts of expressions & equations
Evaluate an expression	Evaluating expressions using substitution

4 Shape and Space

4.1 Measurement

7.SS1	
Apply the formulae for perimeter of polygons, area of rectangles, area of triangles, area of parallelograms, and volume of right prisms to solve problems	
Course Topics	Activities
Shape & Space-Shapes	Area of Triangles
	Area: Triangles
	Area: Quadrilaterals
	Area: Right Angled Triangles
	Area: Parallelograms
Topics	Skill Quests
Determine the area	Determining the area of a triangle
	Determining the area of a parallelogram
	Determining the area of a circle

7.SS2	
Perform geometric constructions	
Course Topics	Activities
Shape & Space-Shapes	Parallel Lines
	What Line Am I?
Topics	Skill Quests
Identify lines & angles	Identifying parallel & perpendicular lines

4.2 2-D Shapes and 3-D Objects

7.SS3	
Draw and verify nets.	
Course Topics	Activities
Teacher directed	
Topics	Skill Quests
Nets of 3-D objects	Connecting prisms with their nets
	Connecting 3-D objects with their nets

Grade 8

1 Number

1.1 Number Sense

8.N1	
Describe numbers, ways of representing numbers, relationships among numbers, and number systems	
Course Topics	Activities
Number-Square Roots	Square Roots
	Equations with Square Roots
	Estimate Square Roots
	Estimating Square Roots
	Square and Cube Roots
Number-Percents	Calculating Percentages
	Calculating Percentages 1
	Decimal to Percentage
	Percentage Composition
	Percentage to Fraction
	Solve Percent Equations
	Percents and Decimals
	Percentage Word Problems
	Percentages of a quantity (>100%)
	Percent of a Number (Mental)
	Quantities to Percentages (with units)
Topics	Skill Quests
Squares & square roots	Perfect squares
	Finding square roots
Estimate square roots	Estimating square roots
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

1.2 Operations

8.N2	
Multiply and divide integers to solve problems (2-digit by 1-digit)	
Course Topics	Activities
Number-Integers	Integers: Multiply and Divide
	Integers: Multiply and Divide 1
	Multiplying and Dividing Integers
Topics	Skill Quests
Multiply & divide integers	Multiplying integers

	Dividing integers
	Multiplying & dividing integers
	Multiplying integers using models
	Dividing integers using models

8.N3	
Apply the order of operations including whole numbers, positive fractions, and decimals	
Course Topics	Activities
Number-Integers	Integers: Order of Operations (BEDMAS)
	Order of Operations 1 (BEDMAS)
Topics	Skill Quests
Linear relations	Graphing discrete linear relationships
	Identifying equation from a discrete linear graph

2 Statistics and Probability

2.1 Data Analysis

8.SP1	
Compare and critique graphs and the presentation of data	
Course Topics	Activities
Statistics	Step Graphs
	Histograms
	Frequency Histograms
	Histogram or Polygon?
	Cumulative Frequency Histogram
	Dot Plots
	Line Plots
	Pie Charts
	Divided Bar Graphs
Topics	Skill Quests
Critique data displays	Critiquing data displays
Circle graphs	Interpreting & constructing circle graphs

8.SP2	
Analyze linear relations of the forms shown below and compare graphs to solve problems. (e.g., $y = mx + b$, $y = \frac{1}{m}x + b$, $y = \frac{1}{m}x - b$, $y = \frac{1}{m}x$).	
Course Topics	Activities
Pattern, Relations, Variables, Equations	Graphing from a Table of Values 2
	Reading Values from a Line
Topics	Skill Quests
Teacher directed	

2.2 Chance and Uncertainty

8.SP3	
Determine the probability of outcomes to solve problems	
Course Topics	Activities
Probability	Dice and Coins
	Probability Scale
	Probability Tables
	Probability With Replacement
	Probability with Replacement 1
	Probability Without Replacement
	Probability without Replacement 1
	Simple Probability
	Simple Probability 1
	Find the Probability
	Two-way Table Probability
	Complementary Events
Topics	Skill Quests

Probability of independent events	Finding the probability of 2 independent events
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3 Patterns and Relations

3.1 Algebra

8.PR1 Solve linear equations	
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
	Reading Values from a Line
	$y=ax$
	Equation of a Line 2
	Which Straight Line?
	Solve Equations: Add, Subtract 2
	Solve Equations: Multiply, Divide 2
	Equations to Solve Problems
	Solving More Equations
	Equations with Grouping Symbols
	Equations with Fractions
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

4.1 Measurement

8.SS1	
Apply the formulae for volume of right cylinders to solve problems	
Course Topics	Activities
Shape and Space	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

8.SS2	
Apply properties of circles to solve problems	
Course Topics	Activities
Teacher directed	
Topics	Skill Quests
Circles	Finding the circumference of circles
	Introducing the parts of a circle
	Introducing circumference
	Determining sum of the central angles of a circle

8.SS3	
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



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