Mathletics

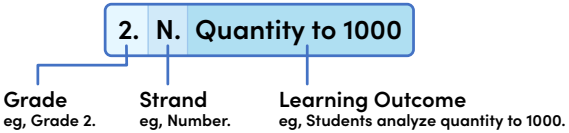
Alberta Program of Studies

Standards Correlation

Grades K-9

Mathletics

How to read Mathletics codes



Kindergarten

Strand & Organizing idea	Learning Outcome	Skills & Procedures		Mathletics Codes
Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.	Children investigate quantity to 10.	• Recognize a number of familiar objects as a quantity. • Represent a quantity in different ways. • Relate a numeral to a specific quantity. • Count within 10, forward and backward, starting at any number, according to the counting principles. • Subitize quantities to 5.	• Compare the size of two sets using one-to-one correspondence. • Describe quantities relative to each other using comparative language. • Describe a quantity in relation to a purpose or need using comparative language. • Solve problems in familiar situations by counting.	K.N.Quantity to 10
	Children interpret compositions of quantities within 10.	• Identify a quantity in various groups or arrangements. • Compose quantities within 10.	• Recognize various ways to make 5 and 10.	K.N.Compositions within 10
Geometry: Shapes are defined and related by geometric attributes.	Children investigate shape.	• Relate shapes in nature to various two-dimensional and three-dimensional shapes. • Identify familiar two- and three-dimensional shapes.	• Investigate three-dimensional shapes by rolling, stacking, or sliding. • Describe a shape using words such as flat, curved, straight, or round.	K.G.2D and 3D
Measurement: Attributes such as length, area, volume, and angle are quantified by measurement.	Children explore size through direct comparison.	• Identify measurable attributes of familiar objects to which size may refer. • Compare the length, area, weight, or capacity of two objects directly.	• Describe the size of an object in relation to another object, using comparative language. • Describe the size of an object in relation to a purpose or need, using comparative language.	K.M.Size
Patterns: Awareness of patterns supports problem solving in various situations.	Children identify and create repeating patterns.	• Recognize repeating patterns encountered in daily routines and play, including songs or dances. • Recognize change or constancy between elements in a repeating pattern.	• Predict the next elements in a repeating pattern. • Create a repeating pattern with up to three repeating elements.	K.P.Patterns
Time: Duration is described and quantified by time.	Children interpret time as a sequence of events.	• Sequence events, limited to two events, according to time using words or ordinal numbers.	• Describe daily events as occurring yesterday, today, or tomorrow.	K.T.Time

Grade 1

Strand & Organizing idea	Learning Outcome	Skills & Procedures		Mathletics Codes
Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.	Students interpret and explain quantity to 100.	• Represent quantities using words, numerals, objects, or pictures. • Identify a quantity of 0 in familiar situations. • Count within 100, forward by 1s, starting at any number, according to the counting principles. • Count backward from 20 to 0 by 1s. • Skip count to 100, forward by 5s and 10s, starting at 0. • Skip count to 20, forward by 2s, starting at 0. • Partition a set of objects by sharing and grouping.	• Demonstrate conservation of number when sharing or grouping. • Recognize quantities to 10. • Investigate equal and unequal quantities, including using a balance model. • Identify numbers that are one more, two more, one less, and two less than a given number. • Represent a quantity relative to another, including symbolically.	1.N.Quantity to 100
	Students examine addition and subtraction within 20.	• Visualize quantities between 10 and 20 as compositions of 10 and another quantity. • Model addition and subtraction within 20 in various ways, including with a balance.	• Determine a missing quantity in a sum or difference, within 20, in a variety of ways. • Express addition and subtraction symbolically. • Solve problems using addition and subtraction.	1.N.Add and subtract within 20

		• Relate addition and subtraction to various contexts involving composition or decomposition of quantity. • Investigate addition and subtraction strategies. • Add and subtract within 20. • Check differences and sums using inverse • operations.	• Identify patterns in addition and subtraction, including patterns in addition tables. • Recognize families of related addition and subtraction number facts. • Recall addition number facts, with addends to 10, and related subtraction number facts.	
	Students examine one-half as a part-whole relationship.	• Identify one-half in familiar situations. • Partition an even set of objects into two equal groups, limited to sets of 10 or less. • Partition a shape or object into two equal	• pieces. • Describe one of two equal groups or pieces as one-half. • Verify that the two halves of one whole group, shape, or object are the same size.	1.N.One-half
Geometry: Shapes are defined and related by geometric attributes.	Students interpret shape in two and three dimensions.	• Identify familiar shapes in various sizes and orientations. • Model two-dimensional shapes. Sort shapes according to one attribute and describe the sorting rule. Compose and decompose two- or three-dimensional composite shapes.	• Identify familiar shapes within two- or three dimensional composite shapes. • Investigate symmetry of two-dimensional shapes by folding and matching.	1.G.2D and 3D shape
Measurement: Attributes such as length, area, volume, and angle are quantified by measurement.	Students relate length to the understanding of size.	• Recognize cycles encountered in daily routines and nature. • Investigate cycles found in nature that inform First Nations, Métis, or Inuit practices. • Identify the pattern core, up to four elements, in a cycle. • Identify a missing element in a repeating pattern or cycle.	• Describe change and constancy in repeating patterns and cycles. • Create different representations of the same repeating pattern or cycle, limited to a pattern core of up to four elements. • Extend a sequence of elements in various ways to create repeating patterns.	1.M.Size
Patterns: Awareness of patterns supports problem solving in various situations.	Students interpret and explain quantity to 100.	• Describe cycles of time encountered in daily routines and nature. • Describe observable changes that indicate a cycle of time.	• Relate cycles of seasons to First Nations, Métis, or Inuit practices. • Identify cycles from a calendar.	1.P.Patterns
Time: Duration is described and quantified by time.	Students examine addition and subtraction within 20.	• Share wonderings about people, things, events, or experiences. • Gather data by sharing answers to questions.	• Collaborate to construct a concrete graph using data collected in the learning environment. • Create a pictograph from a concrete graph.	1.T.Time
Statistics: The science of collecting, analyzing, visualizing, and interpreting data can inform understanding and decision making.	Students investigate and represent data.	• Share wonderings about people, things, events, or experiences. • Gather data by sharing answers to questions.	• Collaborate to construct a concrete graph using data collected in the learning environment. • Create a pictograph from a concrete graph.	1.S.Data

Grade 2

Strand & Organizing idea	Learning Outcome	Skills & Procedures		Mathletics Codes
Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.	Students analyze quantity to 1000.	• Represent quantities using words and natural numbers. Identify the digits representing thousands, hundreds, tens, and ones based on place in a natural number. • Relate a number, including zero, to its position on the number line. • Decompose quantities into groups of 100s, 10s, and 1s. • Count within 1000, forward and backward by 1s, starting at any number. • Skip count by 20s, 25s, or 50s, starting at 0. • Skip count by 2s and 10s, starting at any number. • Determine the value of a collection of coins or bills of the same denomination by skip counting.	• Model even and odd quantities by sharing and grouping. • Describe a quantity as even or odd. • Partition a set of objects by sharing or grouping, with or without remainders. • Estimate quantities using benchmarks. • Model equality and inequality between two quantities, including with a balance. • Compare and order natural numbers. • Describe a quantity as less than, greater than, or equal to another quantity.	2.N.Quantity to 1000
	Students investigate addition and subtraction within 100.	• Visualize 100 as a composition of multiples of 10 in various ways. • Compose a sum in multiple ways, including with more than two addends. • Recall and apply addition number facts, with addends to 10, and related subtraction number facts. • Investigate strategies for addition and subtraction of two-digit numbers.	• Add and subtract numbers within 100. • Verify a sum or difference using inverse operations. • Determine a missing quantity in a sum or difference, within 100, in a variety of ways. • Solve problems using addition and subtraction of countable quantities or measurable lengths.	2.N.Add and subtract within 100
	Students interpret part-whole relationships using unit fractions.	• Model a unit fraction by partitioning a whole object or whole set into equal parts, limited to 10 or fewer equal parts.	• Compare the same unit fractions of different wholes, limited to denominators of 10 or less. • Model one whole, using a given unit fraction, limited to denominators of 10 or less.	2.N.Unit fractions

		• Compare different unit fractions of the same whole, limited to denominators of 10 or less.		
Geometry: Shapes are defined and related by geometric attributes.	Students analyze and explain geometric attributes of shape.	• Sort shapes according to two geometric attributes and describe the sorting rule. Relate the faces of three-dimensional shapes to two-dimensional shapes. Create a picture or design with shapes from verbal instructions, visualization, or memory.	• Investigate translation, rotation, and reflection of two- and three-dimensional shapes. • Describe geometric attributes of two- and three-dimensional shapes in various orientations. Recognize the translation, rotation, or reflection of shapes represented in artwork.	2.G.2D and 3D
Measurement: Attributes such as length, area, volume, and angle are quantified by measurement.	Students communicate length using units.	• Measure length with non-standard units by tiling, iterating, or using a self-created measuring tool. • Compare and order measurements of different lengths measured with the same non-standard units, and explain the choice of unit. • Compare measurements of the same length measured with different nonstandard units. • Measure length with standard units by tiling or iterating with a centimetre.	• Compare and order measurements of different lengths measured with centimetres. • Identify referents for a centimetre. • Estimate length by visualizing the iteration of a referent for a centimetre. • Investigate First Nations, Métis, or Inuit use of the land in estimations of length.	2.M.Length
Patterns: Awareness of patterns supports problem solving in various situations.	Students explain and analyze patterns in a variety of contexts.	• Describe non-repeating patterns encountered in surroundings, including in art, architecture, cultural designs, and nature. • Investigate patterns in a hundreds chart.	• Create and express growing patterns using sounds, objects, pictures, or actions. • Create and express a repeating pattern with a pattern core of up to four elements that change by more than one attribute.	2.P.Patterns
Time: Duration is described and quantified by time.	Students relate duration to time.	• Express significant events using calendar dates. • Describe the duration between or until significant events using comparative language. • Describe the duration of events using nonstandard units.	• Relate First Nations' winter counts to duration. • Describe the relationship between days, weeks, months, and years. • Describe the duration between or until significant events using standard units of time.	2.T.Time
Statistics: The science of collecting, analyzing, visualizing, and interpreting data can inform understanding and decision making.	Students relate data to a variety of representations.	• Generate questions for a specific investigation within the learning environment. • Collect first-hand data by questioning people within the learning environment. • Record data in a table.	• Construct graphs to represent data. • Interpret graphs to answer questions. • Compare the features of pictographs, dot plots, and bar graphs.	2.S.Data

Grade 3

Strand & Organizing idea	Learning Outcome	Skills & Procedures		Mathletics Codes
Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.	Students interpret place value within 100 000.	• Identify the place value of each digit in a natural number. • Relate the values of adjacent places. • Determine the value of each digit in a natural number. • Express natural numbers using words and numerals. • Express various compositions of a natural number using place value. • Round natural numbers to various places.	• Compare and order natural numbers. • Express the relationship between two numbers using <, >, or =. • Count and represent the value of a collection of nickels, dimes, and quarters as cents. • Count and represent the value of a collection of loonies, toonies, and bills as dollars. • Recognize French and English symbolic representations of monetary values.	3.N.Place value within 100 000
	Students apply strategies for addition and subtraction within 1000	• Relate strategies for the addition and subtraction of two-digit numbers to strategies for the addition and subtraction of three-digit numbers. • Model regrouping by place value for addition and subtraction.	• Explain the standard algorithms for addition and subtraction of natural numbers. • Add and subtract natural numbers using standard algorithms. • Estimate sums and differences. • Solve problems using addition and subtraction.	3.N.Add and subtract within 1000
	Students analyze and apply strategies for multiplication and division within 100.	• Compose a product using equal groups of objects. • Relate multiplication to repeated addition. • Relate multiplication to skip counting. • Investigate multiplication by 0. • Model a quotient by partitioning a quantity into equal groups or groups of a certain size, with or without remainders. • Visualize and model products and quotients as arrays.	• Verify a product or quotient using inverse operations. • Determine a missing quantity in a product or quotient in a variety of ways. • Express multiplication and division symbolically. • Explain the meaning of the remainder in various situations. • Solve problems using multiplication and division in sharing or grouping situations.	3.N.Multipy and divide within 100

		• Recognize interpretations of multiplication and division in various contexts. • Investigate multiplication and division strategies. • Multiply and divide within 100.	• Examine patterns in multiplication and division, including patterns in multiplication tables and skip counting. • Recognize families of related multiplication and division number facts. Recall multiplication number facts, with factors to 10, and related division facts.	
	Students interpret fractions in relation to one whole	• Model fractions of a whole quantity, length, shape, or object, in various ways, limited to denominators of 12 or less. • Visualize fractions as compositions of a unit fraction. • Identify the numerator and denominator of a fraction in various representations. • Name a given fraction. • Express fractions, including one whole, symbolically, limited to denominators of 12 or less. • Relate various representations of the same fraction, limited to denominators of 12 or less.	• Compare the same fraction of different-sized wholes. • Compare different fractions of the same whole that have the same denominator. • Compare different fractions of the same whole that have the same numerator and different denominators. • Express the relationship between two fractions of the same whole, using <, >, or =. • Relate a fraction less than one to its position on the number line, limited to denominators of 12 or less. • Compare fractions to benchmarks of 0, ½, and 1.	3.N.Fractions and wholes
Algebra: Equations express relationships between quantities.	Students illustrate equality with equations.	• Write equations that represent equality between a number and an expression or between two different expressions of the same number. • Model equations that include an unknown value, including with a balance.	• Determine an unknown value on the left or right side of an equation, limited to equations with one operation. • Solve problems using equations, limited to equations with one operation.	3.A.Equality
Geometry: Shapes are defined and related by geometric attributes.	Students relate geometric properties to shape.	• Investigate the relationships between the sides of a polygon, including perpendicular, parallel, and equal, using referents for 90° or by measuring. • Investigate the relationships between vertices of a polygon, including equal or right angles, using direct comparison or referents for 90°. • Describe geometric properties of regular and irregular polygons.	• Sort polygons according to geometric properties and describe the sorting rule. • Classify polygons as regular or irregular using geometric properties. • Examine geometric properties of polygons by translating, rotating, or reflecting using hands-on materials or digital applications.	3.G.Geometric properties
Measurement: Attributes such as length, area, volume, and angle are quantified by measurement.	Students determine length using standard units	• Relate millimetres, centimetres, and metres. • Relate inches to feet and yards. • Justify the choice of millimetres, centimetres, or metres to measure various lengths. • Measure lengths of straight lines and curves, with millimetres, centimetres, or metres. • Recognize length expressed in metric or imperial units. • Approximate a measurement in inches, feet, or yards using centimetres or metres.	• Determine the perimeter of polygons. • Determine the length of an unknown side given the perimeter of a polygon. • Identify referents for a centimetre and a metre. • Estimate length by comparing to a benchmark. • Estimate length by visualizing the iteration of a referent for a centimetre or metre.	3.M.Length
	Students interpret angles.	• Recognize various angles in surroundings. • Recognize situations in which an angle can be perceived as motion. • Compare two angles directly by superimposing.	• Compare two angles indirectly by superimposing a third angle. • Estimate which of two angles is greater. • Identify referents for 90°. • Identify 90° angles in the environment using a referent.	3.M.Angles
Patterns: Awareness of patterns supports problem solving in various situations.	Students analyze patterns in numerical sequences.	• Recognize familiar numerical sequences, including the sequence of even or odd numbers. • Describe position in a sequence using ordinal numbers. Differentiate between finite and infinite sequences. • Recognize skip-counting sequences in various representations, including rows or columns of a multiplication table.	• Determine any missing term in a skip-counting sequence using multiplication. • Describe the change from term to term in a numerical sequence using mathematical operations.	3.P.Patterns
Time: Duration is described and quantified by time.	Students tell time using clocks.	• Investigate relationships between seconds, minutes, and hours using an analog clock. • Relate minutes past the hour to minutes until the next hour.	• Describe time of day as a.m. or p.m. relative to 12-hour cycles of day and night. • Tell time using analog and digital clocks. • Express time of day in relation to one 24-hour cycle.	3.T.Time
Statistics: The science of collecting, analyzing, visualizing, and interpreting data can inform understanding and decision making..	Students interpret and explain representations of data.	• Formulate statistical questions for investigation. • Predict the answer to a statistical question. • Collect data using digital or nondigital tools and resources. • Represent first-hand and second-hand data in a dot plot or bar graph with one-to-one correspondence.	• Describe the story that a representation tells about a collection of data in relation to a statistical question. • Examine First Nations, Métis, or Inuit representations of data. • Consider possible answers to a statistical question based on the data collected.	3.S.Data

Grade 4				
Strand & Organizing idea	**Learning Outcome**	**Skills & Procedures**		**Mathletics Codes**
Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.	Students apply place value to decimal numbers.	• Identify the place value of each digit in a number, including tenths and hundredths. • Relate the values of adjacent places, including tenths and hundredths. • Determine the value of each digit in a number, including tenths and hundredths. • Express numbers, including decimal numbers, using words and numerals. • Express various compositions of a number, including decimal numbers, using place value.	• Recognize decimal notation expressed in English and in French. • Round numbers to various places, including tenths. • Compare and order numbers, including decimal numbers. • Express the relationship between two numbers, including decimal numbers, using <, >, or =. • Express a monetary value in cents as a monetary value in dollars using decimal notation.	4.N.Decimal numbers
	Students add and subtract within 10 000, including decimal numbers to hundredths.	• Add and subtract numbers, including decimal numbers, using standard algorithms. • Assess the reasonableness of a sum or difference using estimation.	• Solve problems using addition and subtraction, including problems involving money.	4.N.Add and subtract within 10 000
	Students explain properties of prime and composite numbers using multiplication and division.	• Determine the factors of a number within 100. • Describe a number as prime or composite.	• Determine the first five multiples of a given number within 100. • Recognize the greatest common factor (greatest common divisor) of two numbers within 100.	4.N.Prime and composite numbers
	Students multiply and divide natural numbers within 10 000.	• Recall and apply multiplication number facts, with factors to 12, and related division number facts. • Investigate patterns in multiplication and division of natural numbers by 10, 100, and 1000. • Multiply and divide 3-digit natural numbers by 1-digit natural numbers using personal strategies. • Examine standard algorithms for multiplication and division.	• Multiply and divide 3-digit natural numbers by 1-digit natural numbers using standard algorithms. • Divide and express a quotient with or without a remainder. • Investigate strategies for estimation of products and quotients. • Assess the reasonableness of a product or quotient using estimation. • Solve problems using multiplication and division.	4.N.Multiply and divide within 10 000
	Students apply equivalence to the interpretation of fractions.	• Model equivalent fractions by partitioning a whole in multiple ways. • Determine fractions equivalent to a given fraction. • Relate the position of equivalent fractions on the number line. • Identify fractions in which the numerator and denominator have a common factor. Simplify a given fraction by dividing the numerator and denominator by a common factor.	• Express a fraction in simplest form. Compare and order fractions. • Relate fractions and equivalent decimal numbers to their positions on the number line. • Express fractions as decimal numbers and vice versa, limited to tenths and hundredths.	4.N.Equivalence of fractions
	Students interpret percentages.	• Investigate percentage in familiar situations. • Compare percentages within 100%.	• Express the fraction, decimal, and percentage representations of the same part-whole relationship.	4.N.Percentages
Algebra: Equations express relationships between quantities.	Students represent and apply equality in multiple ways.	• Evaluate expressions according to the order of operations. • Create various expressions of the same number using one or more operations. • Write equations involving one operation to represent a situation. • Investigate preservation of equality using a balance model.	• Investigate preservation of equality using an equation without an unknown value. • Apply preservation of equality to determine the unknown value in an equation, limited to equations with one operation. • Solve problems using equations, limited to equations with one operation.	4.A.Equality
Geometry: Shapes are defined and related by geometric attributes.	Students analyze and explain geometric properties.	• Identify relationships between the sides of a polygon, including parallel, equal length, or perpendicular, by measuring. • Identify relationships between angles at vertices of a polygon, including equal, supplementary, and complementary, by measuring. • Identify relationships between the faces of three-dimensional models of prisms, including parallel or perpendicular, by measuring. • Describe triangles according to side length.	• Classify triangles as right, acute, or obtuse using geometric properties related to angles. • Classify quadrilaterals in a hierarchy according to geometric properties. • Show, using geometric properties, that a close approximation of a polygon is not the same as the polygon. • Verify geometric properties of polygons by translating, rotating, or reflecting using hands-on materials or digital applications.	4.G.Geometric properties

Measurement: Attributes such as length, area, volume, and angle are quantified by measurement.	Students interpret and express area.	• Model area by dragging a length using hands-on materials or digital applications. • Recognize the rearrangement of area in First Nations, Métis, or Inuit design. • Compare non-standard units that tile to non-standard units that do not tile. • Measure area with non-standard units by tiling. • Measure area with standard units by tiling with square centimetres.	• Visualize and model the area of various rectangles as two-dimensional arrays of square shaped units. • Determine the area of a rectangle using multiplication. • Solve problems involving area of rectangles. • Identify referents for a square centimetre. • Estimate an area by visualizing the iteration of a referent for a square centimetre. • Estimate an area by rearranging or combining partial units.	4.M.Area
	Students determine and express angles using standard units.	• Measure an angle with degrees using a protractor. Describe an angle as acute, right, obtuse, or straight. • Relate angles of 90°, 180°, 270°, and 360° to fractions of a circle. • Estimate angles by comparing to benchmarks of 45°, 90°, 180°, 270°, and 360°. • Investigate increasing sequences, including the Fibonacci sequence, in multiple representations. • Create and explain increasing or decreasing sequences, including numerical sequences.	• Express a numerical sequence to represent a concrete or pictorial sequence. • Recognize arithmetic and geometric sequences. • Describe the initial term and the constant change in an arithmetic sequence. • Express the first five terms of an arithmetic sequence related to a given initial term and constant change. • Describe the initial term and the constant change in a geometric sequence. • Express the first five terms of a geometric sequence related to a given initial term and constant change.	4.M.Angles
Patterns: Awareness of patterns supports problem solving in various situations.	Students interpret and explain arithmetic and geometric sequences.	• Investigate increasing sequences, including the Fibonacci sequence, in multiple representations. • Create and explain increasing or decreasing sequences, including numerical sequences. • Express a numerical sequence to represent a concrete or pictorial sequence. • Recognize arithmetic and geometric sequences.	• Describe the initial term and the constant change in an arithmetic sequence. • Express the first five terms of an arithmetic sequence related to a given initial term and constant change. • Describe the initial term and the constant change in a geometric sequence. • Express the first five terms of a geometric sequence related to a given initial term and constant change.	4.P.Sequences
Time: Duration is described and quantified by time.	Students communicate duration with standard units of time.	• Relate durations of 15 minutes, 20 minutes, 30 minutes, 40 minutes, and 45 minutes to fractions of a circle. • Express time of day using fractions. • Determine duration in minutes using a clock.	• Apply addition and subtraction strategies to the calculation of duration. • Convert between hours, minutes, and seconds. • Compare the duration of events using standard units. • Solve problems involving duration.	4.T.Time
Statistics: The science of collecting, analyzing, visualizing, and interpreting data can inform understanding and decision making..	Students evaluate the use of scale in graphical representations of data.	• Engage in a statistical problem-solving process. • Select an appropriate scale to represent data. • Represent data in a graph using many-to-one correspondence.	• Describe the effect of scale on representation. • Justify the choice of graph used to represent certain data. • Compare different graphs of the same data. • Interpret data represented in various graphs.	4.S.Data

Grade 5

Strand & Organizing idea	Learning Outcome	Skills & Procedures		Mathletics Codes
Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.	Students analyze patterns in place value.	• Relate the names of place values that are the same number of places to the left and right of the ones place. • Express numbers within 10 000 000, including decimal numbers to thousandths, using words and numerals. • Relate a decimal number to its position on the number line.	• Determine a decimal number between any two other decimal numbers. • Compare and order numbers, including decimal numbers. • Express the relationship between two numbers, including decimal numbers, using <, >, or =. • Round numbers, including decimal numbers, to various places according to context.	5.N.Patterns in place value
	Students add and subtract within 1 000 000, including decimal numbers to thousandths, using standard algorithms.	• Investigate addition of an integer and its additive inverse. • Express zero as the sum of integers in multiple ways. • Model the sum of two positive integers. • Model the sum of two negative integers. • Model the sum of a positive and negative integer as the sum of zero and another integer.	• Add any two integers. • Add and subtract numbers, including decimal numbers, using standard algorithms. • Assess the reasonableness of a sum or difference using estimation. • Solve problems using addition and subtraction, including problems involving money.	5.N.Add and subtract within 1 000 000
	Students determine divisibility of natural numbers.	• Investigate divisibility by natural numbers to 10, including 0. Generalize divisibility tests for 2, 3, and 5.	• Determine factors of natural numbers using divisibility tests.	5.N.Divisibility

	Students multiply and divide natural numbers within 100 000, including with standard algorithms	• Explain the standard algorithms for multiplication and division of natural numbers. • Multiply up to 3-digit by 2-digit natural numbers using standard algorithms. • Divide 3-digit by 1-digit natural numbers using standard algorithms.	• Express a quotient with or without a remainder according to context. • Assess the reasonableness of a product or quotient using estimation. • Solve problems using multiplication and division of natural numbers.	5.N.Multiply and divide within 100 000
	Students interpret improper fractions.	• Relate fractions, improper fractions, and mixed numbers to their positions on the number line. • Count beyond 1 using fractions with the same denominator. • Model fractions, including improper fractions and mixed numbers, using quantities, lengths, and areas.	• Express improper fractions and mixed numbers symbolically. • Express an improper fraction as a mixed number and vice versa. • Compare fractions, including improper fractions and mixed numbers, to benchmarks of 0, ½, and 1.	5.N.Improper fractions
	Students add and subtract fractions with common denominators.	• Investigate the composition and decomposition of a quantity within 1 using unit fractions. • Express the composition or decomposition of fractions with common denominators as a sum or difference. • Compare strategies for adding or subtracting improper fractions to strategies for adding or subtracting mixed numbers.	• Add and subtract fractions with common denominators within 100, including improper fractions and mixed numbers. • Solve problems requiring addition and subtraction of fractions with common denominators, including improper fractions and mixed numbers.	5.N.Add and subtract fractions
	Students employ ratios to represent relationships between quantities.	• Express part-part ratios and part-whole ratios of the same whole to describe various situations.	• Express, symbolically, the same part-whole relationship as a ratio, fraction, decimal, and percentage.	5.N.Ratios
Algebra: Equations express relationships between quantities.	Students interpret numerical and algebraic expressions.	• Evaluate numerical expressions involving addition or subtraction in parentheses according to the order of operations. • Relate repeated addition of a variable to the product of a number and a variable. • Express the product of a number and a variable using a coefficient. • Express the quotient of a variable and a number as a fraction. • Recognize a product with a variable, a quotient with a variable, or a number as a single term. • Write an algebraic expression involving one or two terms to describe an unknown value.	• Evaluate an algebraic expression by substituting a given number for the variable. • Write equations involving one or two operations to represent a situation. • Investigate order of operations when performing inverse operations on both sides of an equation. • Apply inverse operations to solve an equation, limited to equations with one or two operations. • Verify the solution to an equation by evaluating expressions on each side of the equation. • Solve problems using equations, limited to equations with one or two operations.	5.A.Numerical and algebraic expressions
Geometry: Shapes are defined and related by geometric attributes.	Students investigate symmetry as a geometric property.	• Recognize symmetry in nature. • Recognize symmetry in First Nations, Métis, and Inuit designs. • Investigate symmetry in familiar 2-D and 3-D shapes using hands-on materials or digital applications.	• Show the line of symmetry of a 2-D shape. • Describe the order of rotation symmetry of a 2-D shape. • Compare the number of reflection and rotation symmetries of a 2-D shape to the number of equal sides and angles. Classify 2-D shapes according to the number of reflection or rotation symmetries.	5.G.Symmetry
Coordinate Geometry: Location and movement of objects in space can be communicated using a coordinate grid.	Students relate location to position on a grid.	• Locate a point on a coordinate grid given the coordinates of the point. • Describe the location of a point on a coordinate grid using coordinates. • Describe the location of a point on a coordinate grid in relation to the location of another point using positional language.	• Model a polygon on a coordinate grid using coordinates to indicate the vertices. • Describe the location of the vertices of a polygon on a coordinate grid using coordinates.	5.CG.Location and position
Measurement: Attributes such as length, area, volume, and angle are quantified by measurement.	Students estimate and calculate area using standard units	• Relate a centimetre to a square centimetre. • Relate a metre to a square metre. • Relate a square centimetre to a square metre. • Express the relationship between square centimetres, square metres, and square kilometres. • Justify the choice of square centimetres, square metres, or square kilometres as appropriate units to express various areas.	• Estimate an area by comparing to a benchmark of a square centimetre or square metre. • Express the area of a rectangle using standard units given the lengths of its sides. • Compare the perimeters of various rectangles with the same area. • Describe the rectangle with the least perimeter for a given area. • Solve problems involving perimeter and area of rectangles.	5.M.Area
Patterns: Awareness of patterns supports problem solving in various situations.	Students relate terms to position within an arithmetic sequence.	• Represent one-to-one correspondence between positions and terms of an arithmetic sequence in a table of values and on a coordinate grid. • Describe the graph of an arithmetic sequence as a straight line.	• Write an algebraic expression, limited to one operation, that represents correspondence between positions and terms of an arithmetic sequence. • Determine the missing term in an arithmetic sequence that corresponds to a given position.	5.P.Sequences

		• Describe a rule, limited to one operation, that expresses correspondence between positions and terms of an arithmetic sequence.	• Solve problems involving an arithmetic sequence.	
Statistics: The science of collecting, analyzing, visualizing, and interpreting data can inform understanding and decision making..	Students analyze frequency in categorical data.	• Examine categorized data in tables and graphs. Determine frequency for each category of a set of data by counting individual data points. • Identify the mode in various representations of data. • Recognize data sets with no mode, one mode, or multiple modes. • Justify possible answers to a statistical question using mode.	• Discuss potential categories for open-ended questions and closed-list questions in relation to the same statistical question. • Formulate closed-list questions to collect data to answer a statistical question. • Categorize data that was collected using closed-list questions. • Organize counts of categorized data in a frequency table. • Create various representations of data, including with technology, to interpret frequency.	5.S.Data

Grade 6

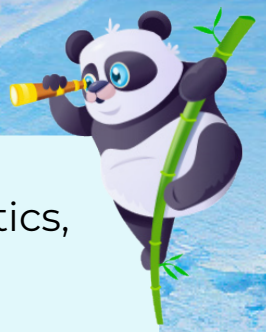
Strand & Organizing idea	Learning Outcome	Skills & Procedures		Mathletics Codes
Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.	Students investigate magnitude with positive and negative numbers.	• Identify negative numbers in familiar contexts, including contexts that use vertical or horizontal models of the number line. • Express positive and negative numbers symbolically, in context. • Relate magnitude to the distance from zero on the number line. • Relate positive and negative numbers, including additive inverses, to their positions on horizontal and vertical models of the number line. • Compare and order positive and negative numbers.	• Express the relationship between two numbers, including positive and negative numbers, using <, >, or =. • Investigate addition of an integer and its additive inverse. • Express zero as the sum of integers in multiple ways. • Model the sum of two positive integers. • Model the sum of two negative integers. • Model the sum of a positive and negative integer as the sum of zero and another integer. • Add any two integers. • Express a difference as a sum.	6.N.Positive and negative numbers
	Students solve problems using standard algorithms for addition and subtraction.	• Solve problems in various contexts using standard algorithms for addition and subtraction.		6.N.Addition and subtraction algorithms
	Students analyze numbers using prime factorization and exponentiation.	• Compose a product in multiple ways, including with more than two factors. • Express the prime factorization of a composite number. • Determine common factors for two natural numbers, using prime factorization.	• Determine divisibility of a natural number from its prime factorization. Identify the base and exponent in a power. • Express the product of identical factors as a power, including within a prime factorization. • Describe the divisibility of numbers represented in various forms.	6.N.Prime factors and exponents
	Students apply standard algorithms to multiplication and division of decimal and natural numbers.	• Explain the standard algorithms for multiplication and division of decimal numbers. • Multiply and divide up to 3-digit natural or decimal numbers by 2-digit natural numbers, using standard algorithms.	• Assess the reasonableness of a product or quotient using estimation. • Solve problems using multiplication and division, including problems involving money.	6.N.Multiplication and division algorithms
	Students relate fractions to quotients.	• Model an equal-sharing situation in more than one way. • Describe an equal-sharing situation using a fraction.	• Express a fraction as a division statement and vice versa. • Convert a quotient from fraction to decimal form using division.	6.N.Fractions to quotients
	Students add and subtract fractions with denominators within 100.	• Recognize two fractions with related denominators. • Determine the factor that relates one denominator to another.	• Express two fractions with common denominators. • Add and subtract fractions. • Solve problems involving addition and subtraction of fractions.	6.N.Add and subtract fractions
	Students interpret the multiplication of natural numbers by fractions.	• Relate multiplication of a natural number by a fraction to repeated addition of the fraction. • Multiply a natural number by a fraction. • Relate multiplication by a unit fraction to division.	• Multiply a natural number by a unit fraction. • Model a fraction of a natural number. • Multiply a fraction by a natural number. • Solve problems using multiplication of a fraction and a natural number.	6.N.Multiply by fractions
	Students apply equivalence to the interpretation of ratios and rates.	• Determine whether two ratios are equivalent. • Determine an equivalent ratio using a proportion. Express a unit rate to represent a given rate, including unit price and speed.	• Relate percentage of a number to a proportion. Determine a percent of a number, limited to percentages within 100%. • Solve problems involving ratios, rates, and proportions.	6.N.Ratios and rates

Algebra: Equations express relationships between quantities.	Students analyze expressions and solve algebraic equations.	• Evaluate numerical expressions involving operations in parentheses and powers according to the order of operations. • Investigate like terms by modelling an algebraic expression. • Simplify algebraic expressions by combining like terms. • Express the terms of an algebraic expression in a different order in accordance with algebraic properties.	• Simplify algebraic expressions on both sides of an equation. • Solve equations, limited to equations with one or two operations. • Determine different strategies for solving equations. • Verify the solution to an equation by evaluating expressions on each side of the equation. • Solve problems using equations, limited to equations with one or two operations.	6.A.Algebraic equations
Geometry: Shapes are defined and related by geometric attributes.	Students analyze shapes through symmetry and congruence	• Verify symmetry of two shapes by reflecting or rotating one shape onto another. • Describe the symmetry between two shapes as reflection symmetry or rotation symmetry. • Visualize and describe a combination of two transformations that relate symmetrical shapes.	• Describe the symmetry modelled in a tessellation. Investigate tessellations found in objects, art, or architecture. • Demonstrate congruence between two shapes in any orientation by superimposing using hands-on materials or digital applications. • Describe symmetrical shapes as congruent.	6.G.Symmetry and congruence
Coordinate Geometry: Location and movement of objects in space can be communicated using a coordinate grid.	Students explain location and movement in relation to position in the Cartesian plane.	• Relate the axes of the Cartesian plane to intersecting horizontal and vertical representations of the number line. • Locate a point in the Cartesian plane given the coordinates of the point. • Describe the location of a point in the Cartesian plane using coordinates. • Model a polygon in the Cartesian plane using coordinates to indicate the vertices. • Describe the location of the vertices of a polygon in the Cartesian plane using coordinates. • Create an image of a polygon in the Cartesian plane by translating the polygon.	• Describe the horizontal and vertical components of a given translation. • Create an image of a polygon in the Cartesian plane by reflecting the polygon over the x-axis or y-axis. • Describe the line of reflection of a given reflection. • Create an image of a polygon in the Cartesian plane by rotating the polygon 90°, 180°, or 270° about one of its vertices, clockwise or counter-clockwise. • Describe the angle and direction of a given rotation. Relate the coordinates of a polygon and its image after translation, reflection, or rotation in the Cartesian plane.	6.CG.Cartesian plane
Measurement: Attributes such as length, area, volume, and angle are quantified by measurement.	Students analyze areas of parallelograms and triangles.	• Rearrange the area of a parallelogram to form a rectangular area using hands-on materials or digital applications. • Determine the area of a parallelogram using multiplication. • Determine the base or height of a parallelogram using division. • Model the area of a parallelogram as two congruent triangles.	• Describe the relationship between the area of a triangle and the area of a parallelogram with the same base and height. • Determine the area of a triangle, including various triangles with the same base and height. • Solve problems involving the areas of parallelograms and triangles. • Visualize the decomposition of composite areas in various ways. • Determine the area of composite shapes using the areas of triangles and parallelograms.	6.M.Area
	Students interpret and express volume.	• Recognize volume in familiar contexts. • Model volume of prisms by dragging or iterating an area using hands-on materials or digital applications. Create a model of a three-dimensional shape by stacking congruent non-standard units or cubic centimetres without gaps or overlaps. • Express volume in non-standard units or cubic centimetres.	• Visualize and model the volume of various right rectangular prisms as three-dimensional arrays of cube-shaped units. • Determine the volume of a right rectangular prism using multiplication. • Solve problems involving volume of right rectangular prisms.	6.M.Volume
Patterns: Awareness of patterns supports problem solving in various situations.	Students investigate functions to enhance understanding of change.	• Identify the dependent and independent variables in a given situation, including situations involving change over time. • Describe the rule that determines the values of the dependent variable from values of the independent variable. • Represent corresponding values of the independent and dependent variables of a function in a table of values and as points in the Cartesian plane.	• Write an algebraic expression that represents a function. • Recognize various representations of the same function. • Determine a value of the dependent variable of a function given the corresponding value of the independent variable. • Investigate strategies for determining a value of the independent variable of a function given the corresponding value of the dependent variable. • Solve problems involving a function.	6.P.Functions
Statistics: The science of collecting, analyzing, visualizing, and interpreting data can inform understanding and decision making..	Students investigate relative frequency using experimental data.	• Interpret frequency of categorized data as relative frequency. • Express relative frequencies as decimals, fractions, or percentages. • Identify the possible outcomes of an experiment involving equally likely outcomes. • Collect categorized data through experiments.	• Predict the likelihood of an event based on the possible outcomes of an experiment. • Determine relative frequency for categories of a sample of data. • Describe the likelihood of an outcome in an experiment using relative frequency. • Analyze relative frequency statistics from experiments with different sample sizes.	6.S.Data

Grade 7		
Strand & Organizing idea	**Learning Outcome**	**Mathletics Codes**
Develop number sense.	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.	7.N.Divisibility
	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).	7.N.Operations with decimals
	3. Solve problems involving percents from 1% to 100%.	7.N.Percents
	4. Demonstrate an understanding of the relationship between positive terminating decimals and positive fractions and between positive repeating decimals and positive fractions.	7.N.Fractions and 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).	7.N.Add and subtract fractions
	6. Demonstrate an understanding of addition and subtraction of integers, concretely, pictorially and symbolically.	7.N.Add and subtract integers
	7. Compare and order positive fractions, positive decimals (to thousandths) and whole numbers by using: benchmarks, place value, equivalent fractions and/or decimals.	7.N.Compare and order
Use patterns to describe the world and to solve problems.	1. Demonstrate an understanding of oral and written patterns and their equivalent linear relations.	7.PR.Patterns and 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.	7.PR.Table of values
Represent algebraic expressions in multiple ways.	3. Demonstrate an understanding of preservation of equality by: modelling preservation of equality, concretely, pictorially and symbolically, applying preservation of equality to solve equations.	7.PR.Preservation of equality
	4. Explain the difference between an expression and an equation.	7.PR.Expressions and equations
	5. Evaluate an expression, given the value of the variable(s).	7.PR.Evaluate expressions
	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.	7.PR.Linear equations 1
	7. Model and solve, concretely, pictorially and symbolically, problems that can be represented by linear equations of the form: $ax + b = c$, $ax = b$, $x/a = b$, $a = \neq 0$ where a, b and c are whole numbers.	7.PR.Linear equations 2
Use direct and indirect measurement to solve problems.	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.	7.SS.Circles
	2. Develop and apply a formula for determining the area of: triangles, parallelograms, circles.	7.SS.Area
Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.	3. Perform geometric constructions, including: perpendicular line segments, parallel line segments, perpendicular bisectors, angle bisectors.	7.SS.Geometric constructions
Describe and analyze position and motion of objects and shapes.	4. Identify and plot points in the four quadrants of a Cartesian plane, using integral ordered pairs.	7.SS.Cartesian 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).	7.SS.Transformations
Collect, display and analyze data to solve problems.	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.	7.SP.Central tendancy and range
	2. Determine the effect on the mean, median and mode when an outlier is included in a data set.	7.SP.Outliers
	3. Construct, label and interpret circle graphs to solve problems.	7.SP.Circle graphs
Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.	4. Express probabilities as ratios, fractions and percents.	7.SP.Probabilities
	5. Identify the sample space (where the combined sample space has 36 or fewer elements) for a probability experiment involving two independent events.	7.SP.Sample space
	6. Conduct a probability experiment to compare the theoretical probability (determined using a tree diagram, table or other graphic organizer) and experimental probability of two independent events.	7.SP.Theoretical and experimental probability

Grade 8		
Strand & Organizing idea	**Learning Outcome**	**Mathletics Codes**
Develop number sense.	1. Demonstrate an understanding of perfect squares and square roots, concretely, pictorially and symbolically (limited to whole numbers).	8.N.Perfect squares and square roots
	2. Determine the approximate square root of numbers that are not perfect squares (limited to whole numbers).	8.N.Estimate square roots
	3. Demonstrate an understanding of percents greater than or equal to 0%, including greater than 100%.	8.N.Percents
	4. Demonstrate an understanding of ratio and rate.	8.N.Ratio and rate
	5. Solve problems that involve rates, ratios and proportional reasoning.	8.N.Proportional reasoning
	6. Demonstrate an understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially and symbolically.	8.N.Multiply and divide fractions
	7. Demonstrate an understanding of multiplication and division of integers, concretely, pictorially and symbolically.	8.N.Multiply and divide integers
Use patterns to describe the world and to solve problems.	1. Graph and analyze two-variable linear relations.	8.PR.Two-variable linear relations
Represent algebraic expressions in multiple ways.	2. Model and solve problems concretely, pictorially and symbolically, 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.	8.PR.Linear equations
Use direct and indirect measurement to solve problems.	1. Develop and apply the Pythagorean theorem to solve problems.	8.SS.Pythagorean theorem
	2. Draw and construct nets for 3-D objects.	8.SS.Nets
	3. Determine the surface area of: right rectangular prisms, right triangular prisms, right cylinders to solve problems.	8.SS.Surface area
	4. Develop and apply formulas for determining the volume of right rectangular prisms, right triangular prisms and right cylinders.	8.SS.Volume
Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.	5. Draw and interpret top, front and side views of 3-D objects composed of right rectangular prisms.	8.SS.3-D object views
Describe and analyze position and motion of objects and shapes.	6. Demonstrate an understanding of the congruence of polygons.	8.SS.Congruence of polygons
Collect, display and analyze data to solve problems.	1. Critique ways in which data is presented in circle graphs, line graphs, bar graphs and pictographs.	8.SP.Evaluate data displays
Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.	2. Solve problems involving the probability of independent events.	8.SP.Probability of independent events

Mathletics



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