Mathematics DRAFT Kindergarten to Grade 4 Curriculum

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
Essential Understanding	**Organizing and representing quantitative information develops additive and multiplicative thinking to make meaningful connections and support problem solving.**				
Guiding Questions	**How can we represent quantities in everyday life with numbers?**	**How can we represent quantities with numbers?**	**How can we represent and interpret quantities with numbers?**	**How can we represent and interpret numbers?**	**How can we interpret and express numbers?**
Learning Outcomes	**Children make meaning of quantities within 10.**	**Students make meaning of and represent quantities within 100.**	**Students make meaning of and represent quantities within 200.**	**Students interpret and represent whole numbers within 1000.**	**Students interpret and express whole numbers within 10 000.**
Conceptual Knowledge	• quantity is “how many” • the purpose of counting is to determine how many (quantify) • quantities can be represented in many ways • each object is counted once and only once (one-to-one correspondence) • the order of words used to count never changes (stable order) • the last number used to count represents the number of objects (cardinality) • the count stays the same regardless of the order in which the objects are counted (order irrelevance) • anything can be counted (abstraction principle)	• the purpose of counting is to determine how many (quantify) • quantities can be represented in many ways, including coins and bills • quantities can be represented symbolically, including “none” represented by 0 • when counting, a quantity includes all of the previous numbers (hierarchical inclusion) • the count stays the same no matter how the objects are arranged (conservation of number)	• the position of a digit in a number determines its value (place value) • grouping by 10 creates patterns in place value (unitizing) to make working with numbers efficient • skip counting is an efficient way of counting larger quantities and can include quantities left over (remainders) • numbers, including 0, occupy space in a visual or spatial representation of quantity • numbers, including 0, can be associated with a specific point on a linear representation of quantity • the position of something can be indicated using ordinal numbers • quantities can be represented symbolically with numerals, including 0 • estimation is used when an exact count is not needed	• place value and unitizing applies to larger numbers • place value is the basis for the base-ten number system • estimation can be applied to larger numbers • there are patterns in how numbers are named and represented symbolically • a visual or spatial representation of quantity can be extended to include larger numbers, up to 1000, and does not have to start at 0	• each place value is 10 times the value of the place to its right • estimation can be applied to larger numbers • there are patterns in how numbers are named and represented symbolically (International System of Units (SI) representation) • a visual or spatial representation of quantity can be extended to include large numbers and does not have to start at 0
Procedural Knowledge	• demonstrate early counting principles, including one-to-one correspondence, stable order, cardinality, order irrelevance, and abstraction • count within 10, forward and backward, starting at any number • relate a numeral, 1 to 10, to a specific quantity • explore different ways to represent whole numbers less than or equal to 10 • build (compose) and break apart (decompose) quantities to 10 concretely • recognize at a glance the quantity in patterned and non-patterned sets to 5 (perceptual subitizing)	• demonstrate early counting principles, including one-to-one correspondence, stable order, cardinality, conservation of number, hierarchical inclusion, order irrelevance, and abstraction • count within 100, forward by 1, starting at any number • count backward from 20 to 0 by 1 • skip count to 100, forward by 5 and 10, starting at 0 • skip count to 20, forward by 2, starting at 0 • relate a numeral to a specific quantity • represent quantities concretely, including with coins and bills • represent quantities pictorially and symbolically • recognize the quantity in patterned and non-patterned sets to 10 (conceptual subitizing)	• decompose numbers using standard form (place value) and non-standard form • skip count forward and backward by 2, 5, and 10, starting at multiples of 2, 5, and 10 respectively • skip count forward by 20 and 25, starting at 0 • determine the monetary value of collections of coins or bills (cents or dollars) of the same denomination • skip count sets, including those with remainders • order numbers using benchmarks on a visual or spatial representation • represent quantities with numbers • relate a numeral to a specific quantity • estimate quantities using referents	• skip count forward and backward by 2, 5, 10, and 100, starting at any number • recognize patterns created by skip counting • count and record the monetary value of collections of coins or bills (limited to either cents or dollars) of varying denominations • estimate quantities using referents • recognize and represent numbers • order numbers using benchmarks on a visual or spatial representation	• skip count by place value • estimate quantities using referents • recognize and represent quantities with numbers • order numbers using benchmarks on a visual or spatial representation

Mathematics DRAFT Kindergarten to Grade 4 Curriculum

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
Competencies	• Managing Information • Critical Thinking	• Critical Thinking • Communication	• Critical Thinking • Communication	• Critical Thinking • Communication	• Critical Thinking • Communication
Literacy	• Conventions • Vocabulary • Comprehension Strategies	• Conventions • Vocabulary • Comprehension Strategies	• Conventions • Vocabulary • Comprehension Strategies	• Conventions • Vocabulary • Comprehension Strategies	• Conventions • Vocabulary • Comprehension Strategies
Numeracy	• Purpose • Magnitude • Using Numbers • Interpretation and Representation of Quantitative Information • Estimation • Methods or Tools	• Purpose • Magnitude • Using Numbers • Patterns and Relationships • Interpretation and Representation of Quantitative Information • Estimation	• Magnitude • Using Numbers • Patterns and Relationships • Interpretation and Representation of Quantitative Information • Interpretation and Representation of Spatial Information • Estimation	• Magnitude • Using Numbers • Patterns and Relationships • Interpretation and Representation of Quantitative Information • Interpretation and Representation of Spatial Information • Estimation	• Magnitude • Using Numbers • Patterns and Relationships • Interpretation and Representation of Quantitative Information • Interpretation and Representation of Spatial Information • Estimation
Learning Outcomes		**Students make meaning of one-half in familiar contexts.**	**Students make meaning of halves and quarters in familiar contexts.**	**Students make meaning of and represent part-to-whole relationships expressed as fractions.**	**Students demonstrate how part-to-whole relationships are expressed as fractions and decimals.**
Conceptual Knowledge		• objects and sets can be split (partitioned) into two equal-sized parts (halves)	• objects and sets can be partitioned into equal-sized parts in different ways • the part is related to the whole (part-to-whole relationship)	• fractions are numbers used to represent part-to-whole relationships • fraction notation shows the relationship between the whole (denominator) and the number of parts (numerator) • fractions occupy space in a visual or spatial representation of quantity • a fraction can be associated with a specific point on a linear representation of quantity	• fractions are numbers used to represent part-to-whole relationships • decimals are numbers used to represent part-to-whole relationships • the same part-to-whole relationship can be represented with fractions with different denominators (equivalent fractions) • the same part-to-whole relationship can be represented with a fraction and a decimal • place value patterns extend to decimals • fractions and decimals occupy space in a visual or spatial representation of quantity • a fraction or a decimal can be associated with a specific point on a linear representation of quantity
Procedural Knowledge		• split (partition) a set of objects into two equal groups • split (partition) an object into two equal-sized pieces	• count by halves and quarters to one whole concretely or pictorially • partition objects and sets into halves and quarters • describe part-to-whole relationships with halves and quarters	• partition a set, length, and area to create halves, thirds, quarters, fifths, and tenths • represent fractions symbolically • compare different unit fractions from the same set, length, and area • count by unit fractions to build one whole, limited to 1/2, 1/3, 1/4, 1/5, and 1/10 • determine the location of a unit fraction on a linear representation of a whole	• relate fractions and decimals, limited to tenths • represent decimals concretely, pictorially, or symbolically, limited to tenths • make meaning of equivalent fractions concretely or pictorially, limited to denominators of 10 or less • count beyond 1 using improper fractions, limited to same denominator • count beyond 1 using decimals, limited to tenths • compare fractions and decimals to the benchmarks of 0, 1/2, and 1

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
					• determine the location of fractions and decimals on a linear representation of a whole
Competencies		• Critical Thinking • Managing Information	• Critical Thinking • Managing Information	• Communication • Critical Thinking	• Communication • Critical Thinking
Literacy		• Background Knowledge • Vocabulary	• Background Knowledge • Vocabulary • Clarity	• Conventions • Vocabulary • Text Organization	• Conventions • Vocabulary • Text Organization
Numeracy		• Purpose • Magnitude	• Purpose • Magnitude • Interpretation and Representation of Quantitative Information • Communication	• Magnitude • Using Numbers • Interpretation and Representation of Quantitative Information • Interpretation and Representation of Spatial Information • Communication	• Magnitude • Using Numbers • Interpretation and Representation of Quantitative Information • Interpretation and Representation of Spatial Information • Communication
Guiding Questions		**How can we compose and decompose quantities?**	**How can we compose and decompose numbers?**	**How can we flexibly compose and decompose numbers to solve problems?**	**How can we flexibly use additive thinking strategies to solve problems?**
Learning Outcomes		**Students represent composition and decomposition of quantities.**	**Students explore and apply additive thinking strategies**.	**Students represent and solve problems using additive thinking strategies.**	**Students solve problems using refined additive thinking strategies.**
Conceptual Knowledge		• addition and subtraction are operations used to compose and decompose numbers • part-part-whole relationships can be represented using addition and subtraction • two numbers can be added in any order (commutative property)	• addition and subtraction are operations used when applying additive thinking strategies • an addition situation can be represented as a subtraction situation (addition and subtraction are inverse operations) • addition and subtraction are part-part-whole relationships that can be represented symbolically (+, –, =) • numbers can be added in any order (commutative and associative properties)	• additive thinking strategies can be applied to compose and decompose larger numbers • unitizing is used for the purpose of regrouping in addition and subtraction • when subtracting, the order of numbers is important • problems can be solved in different ways • strategies can be chosen based on the nature of the problem • estimation can be used in problem-solving situations, including when an exact value is not needed or to verify a solution • knowledge of single-digit addition and subtraction number facts is used to add and subtract larger numbers	• additive thinking strategies can be applied to whole numbers and decimals • problems can be solved in different ways • strategies can be chosen based on the nature of the problem • some strategies lend themselves to mental math • strategies can be refined over time • additive thinking strategies can be represented with step-by-step procedures (algorithms)
Procedural Knowledge		• explore various ways to compose and decompose quantities • explore patterns in addition and subtraction • represent addition and subtraction strategies concretely, pictorially, or symbolically • add and subtract in joining, separating, and comparing situations	• apply strategies to single-digit addition number facts to a sum of 18 and related subtraction number facts • represent addition and subtraction strategies concretely, pictorially, or symbolically • add and subtract numbers within 100, including 0, without a calculator • recognize patterns in addition and subtraction	• apply concrete, pictorial, symbolic, or mental math strategies • add and subtract in joining, separating, and comparing situations • recognize reliability of a chosen strategy • recall single-digit addition number facts to a sum of 18 and related subtraction number facts • add and subtract numbers within 1000, including 0, without a calculator	• refine concrete, pictorial, symbolic, or mental math strategies • add and subtract in joining, separating, and comparing situations • refine a chosen strategy • add and subtract whole numbers within 10 000, including dollars, without a calculator

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
		• add and subtract quantities within 20, including 0, without a calculator • recall single-digit addition number facts to a sum of 10 and related subtraction number facts	• add and subtract in joining, separating, and comparing situations • create and solve problems that involve addition and subtraction	• create and solve problems that involve addition and subtraction • estimate sums and differences as part of a problem-solving process	• add and subtract whole numbers to calculate totals within 100 cents without a calculator • express a preferred strategy for addition and subtraction of whole numbers in algorithmic form • add and subtract decimals, limited to tenths • create and solve problems that involve addition and subtraction • estimate sums and differences as part of a problem-solving process
Competencies		• Managing Information • Communication	• Critical Thinking • Managing Information	• Problem Solving • Communication	• Problem Solving • Critical Thinking
Literacy		• Conventions • Vocabulary • Text Organization	• Conventions • Vocabulary • Text Organization • Comprehension Strategies	• Conventions • Vocabulary • Text Organization • Comprehension Strategies	• Text Organization • Comprehension Strategies • Clarity
Numeracy		• Calculations • Interpretation and Representation of Quantitative Information • Strategies • Methods or Tools	• Calculations • Patterns and Relationships • Interpretation and Representation of Quantitative Information • Strategies	• Task Analysis • Calculations • Interpretation and Representation of Quantitative Information • Strategies • Estimation • Methods or Tools	• Personal Insight • Calculations • Interpretation and Representation of Quantitative Information • Strategies • Estimation • Methods or Tools
Guiding Questions		**How can we share and group quantities in familiar contexts?**	**How can we share and group quantities?**	**How can we share and group with numbers?**	**How can we share and group flexibly to solve number problems?**
Learning Outcomes		**Students explore and represent sharing and grouping situations using quantities within 20.**	**Students make meaning of sharing and grouping situations using quantities within 60.**	**Students represent and apply multiplicative thinking strategies.**	**Students solve problems using refined multiplicative thinking strategies.**
Conceptual Knowledge		• some quantities can be shared or grouped equally • the quantity stays the same no matter how the objects are grouped or shared (conservation of number)	• sharing and grouping situations can have quantities left over (remainders) • even quantities can be grouped by 2 with nothing left over • odd quantities can be grouped by 2 with 1 left over	• multiplication and division are operations used when applying multiplicative thinking strategies • multiplication and division involve a whole, a number of groups, and a quantity in each group • multiplication and division are sharing and grouping situations that can be represented symbolically (×, ÷, =) • a multiplication situation can be represented as a division situation (multiplication and division are inverse operations) • two numbers can be multiplied in any order (commutative property)	• multiplicative thinking strategies can be applied to larger numbers • numbers can be multiplied in any order (commutative and associative properties) • when dividing, the order of numbers is important • problems can be solved in different ways • strategies can be chosen based on the nature of the problem • some strategies lend themselves to mental math • strategies can be refined over time • estimation can be used in problem-solving situations, including when an exact value is not needed or to verify a solution

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
					• division situations may or may not have remainders
Procedural Knowledge		• explore equal-sharing and equal-grouping situations concretely or pictorially • represent equal-sharing and equal-grouping situations concretely or pictorially • apply conservation of number when sharing or grouping	• represent sharing a set into a given number of groups, with or without remainders • represent sharing a set into groups of a given size, with or without remainders • group by twos to identify odd and even numbers	• represent multiplication and division strategies concretely, pictorially, or symbolically • explore patterns in multiplication and division • multiply and divide in sharing, grouping, array, and combination situations, with or without remainders • apply strategies to single-digit multiplication number facts for products to 81 and related division number facts • relate place value to multiplication by 10 • multiply by 0	• refine concrete, pictorial, symbolic, or mental math strategies • recognize patterns in multiplication and division • multiply and divide in sharing, grouping, array, combination, area, and comparison (rate) situations, with or without remainders in context • refine a chosen strategy • recall single-digit multiplication number facts for products to 81 and related division number facts • multiply a 2- or 3-digit number by a 1-digit number, limited to whole numbers, concretely, pictorially, or symbolically, without a calculator • divide a 2-digit number by a 1-digit number, limited to whole numbers, concretely, pictorially, or symbolically, without a calculator • multiply or divide in parts (distributive property) • estimate products and quotients as part of a problem-solving process
Competencies		• Managing Information • Communication	• Critical Thinking • Managing Information	• Critical Thinking • Communication	• Problem Solving • Critical Thinking
Literacy		• Conventions	• Conventions • Vocabulary • Comprehension Strategies	• Conventions • Vocabulary • Text Organization	• Conventions • Text Organization • Comprehension Strategies
Numeracy		• Magnitude • Interpretation and Representation of Quantitative Information	• Magnitude • Interpretation and Representation of Quantitative Information • Strategies	• Calculations • Patterns and Relationships • Interpretation and Representation of Quantitative Information • Strategies	• Calculations • Patterns and Relationships • Interpretation and Representation of Quantitative Information • Strategies • Estimation • Methods or Tools

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
Essential Understanding	**Visualizing and describing spatial relationships through geometry enhances interpretations of the physical world.**				
Guiding Questions	**Where do we find shapes in our world?**	**How can we compare shapes using attributes?**	**How can we identify shapes using geometric properties?**	**How can we classify and model shapes using geometric properties?**	**How can we analyze and describe shapes using geometric properties?**
Learning Outcomes	**Children explore and recognize shapes in their surroundings.**	**Students describe and compare shapes in the environment.**	**Students examine attributes and geometric properties when sorting and comparing shapes.**	**Students classify and create shapes using geometric properties.**	**Students analyze and visualize shapes using geometric properties.**
Conceptual Knowledge	• 2-D and 3-D shapes can be found in our surroundings • size, colour, or number of sides can be used to describe shapes (attributes) • some 3-D shapes roll, stack, or slide • shapes can be combined together to create other shapes	• attributes are characteristics that can be used to compare, sort, and describe shapes • some shapes have matching halves (symmetry) • size and shape are not affected by orientation	• attributes are geometric properties when they are specific to a given shape • geometric properties, including sides, corners (vertices), faces, and edges, are mathematical characteristics used to sort 2-D and 3-D shapes • the faces of 3-D shapes are 2-D shapes	• geometric properties, including sides, vertices, faces, and edges, allow for classification of shapes • geometric properties determine whether a shape is a regular or irregular polygon	• lines that are always the same distance apart (parallel lines) and lines that form an L shape (perpendicular lines) are geometric properties that help classify shapes • geometric properties, including parallel sides and faces, perpendicular sides and faces, and angles at vertices, allow for classification of shapes
Procedural Knowledge	• relate 2-D shapes, including squares, circles, rectangles, and triangles, to objects in our surroundings • sort familiar 2-D shapes by a single attribute and describe the sorting rule • explore rolling, stacking, and sliding attributes of 3-D shapes • compose and decompose composite 2-D shapes	• sort 2-D shapes, including squares, circles, rectangles, and triangles, and 3-D shapes, including cubes, cones, cylinders, and spheres, by a single attribute and describe the sorting rule • relate the attributes of 2-D and 3-D shapes to objects in the environment • describe 2-D and 3-D shapes in varying orientations • compose and decompose composite 2-D shapes • explore symmetry concretely	• determine whether attributes are geometric properties • sort 2-D shapes, including triangles, quadrilaterals, pentagons, hexagons, and octagons, and 3-D shapes, including cubes, cones, cylinders, spheres, and pyramids, by one or two attributes and describe the sorting rule • describe 2-D and 3-D shapes in varying orientations • identify 2-D shapes in composite 2-D shapes and designs • relate the faces of 3-D shapes to 2-D shapes • compose and decompose composite 3-D shapes	• sort 2-D and 3-D shapes by one or two geometric properties and describe the sorting rule • describe regular and irregular polygons, including triangles, quadrilaterals, pentagons, hexagons, and octagons, in varying orientations • replicate composite 2-D and 3-D shapes from verbal instructions, visualization, or memory • model 3-D shapes, including cubes and pyramids, concretely • identify 3-D shapes from different views	• classify quadrilaterals according to geometric properties • describe 3-D shapes, including right rectangular prisms and right triangular prisms, according to geometric properties • model 3-D shapes, including right rectangular prisms and right triangular prisms, concretely
Competencies	• Critical Thinking • Communication	• Critical Thinking • Communication	• Critical Thinking • Managing Information	• Critical Thinking • Creativity and Innovation	• Critical Thinking
Literacy	• Vocabulary • Clarity	• Vocabulary • Comprehension Strategies • Clarity	• Vocabulary • Comprehension Strategies • Clarity	• Access • Vocabulary • Clarity	• Vocabulary • Comprehension Strategies • Clarity
Numeracy	• Purpose • Organization of Data • Spatial Visualization • Interpretation and Representation of Spatial Information • Communication	• Purpose • Organization of Data • Spatial Visualization • Interpretation and Representation of Spatial Information • Communication	• Organization of Data • Spatial Visualization • Interpretation and Representation of Spatial Information • Communication	• Organization of Data • Spatial Visualization • Interpretation and Representation of Spatial Information • Communication	• Organization of Data • Spatial Visualization • Interpretation and Representation of Spatial Information • Communication

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
Guiding Questions			**How can we explore position and movement?**	**How can we express the movement of shapes?**	**How can we interpret the movement of shapes?**
Learning Outcomes			**Students explore and demonstrate position and movement of objects.**	**Students visualize and describe the movement of shapes.**	**Students analyze and demonstrate transformation of shapes.**
Conceptual Knowledge			• slides and flips can describe the movement of objects • moving an object does not change its shape or size • slides and flips can be found in natural and created patterns • symmetry can be created with a flip	• slides (translations), flips (reflections), and turns (rotations) can describe the movement of shapes • lines of symmetry allow for more precise descriptions of reflections • 2-D shapes are congruent if they have the same shape and size • 3-D shapes are congruent if they have the same shape and size	• transformations, including translations, reflections, and rotations, can describe the movement of shapes • directions, including up, down, left, right, clockwise, and counter-clockwise, can be used to describe transformations • rotation is the basis of rotational symmetry in shapes
Procedural Knowledge			• explore slides and flips concretely or pictorially • recognize slides and flips in designs • create 2-D symmetrical designs • recognize that an object is the same size and shape after sliding or flipping	• visualize a slide, flip, or turn and represent the result concretely or pictorially • use slides, flips, or turns to match two congruent shapes • describe a reflection using one line of symmetry • identify 2-D shapes that have line symmetry	• visualize a transformation and representing the result concretely or pictorially • recognize congruency between the original and transformed shape • describe transformations that match two congruent shapes • explore rotational symmetry of 2-D shapes concretely
Competencies			• Managing Information	• Critical Thinking • Communication	• Critical Thinking • Communication
Literacy			• Conventions • Vocabulary	• Conventions • Vocabulary • Comprehension Strategies • Clarity	• Vocabulary • Comprehension Strategies • Clarity
Numeracy			• Patterns and Relationships • Spatial Visualization • Management of Space • Communication	• Spatial Visualization • Management of Space • Interpretation and Representation of Spatial Information • Communication	• Organization of Data • Spatial Visualization • Management of Space • Interpretation and Representation of Spatial Information • Communication
Guiding Questions	**How can we compare objects?**	**How can we compare objects to measure?**	**How can we measure objects?**	**How can we use standard units to express a measurement?**	**How can we relate measurement to perimeter and area?**
Learning Outcomes	**Children compare familiar objects using length and mass.**	**Students compare length and mass of familiar objects using non-standard units.**	**Students compare and describe measures of objects using non-standard units.**	**Students describe and measure objects using standard units.**	**Students determine and express measures related to perimeter and area.**
Conceptual Knowledge	• objects can be compared and ordered according to length using words, including longer, taller, and shorter • objects can be compared and ordered according to mass using words, including heavier and lighter	• length and mass are attributes that can be measured (measurable attributes) • objects can be measured using direct or indirect comparison • measurable attributes can be compared using words, including longest, tallest, shortest, heaviest, and lightest	• a single object may have multiple attributes that are measurable, including mass and length • measuring is a process of comparing attributes using units and tools • length is expressed by counting the total number of identical units without gaps or overlaps	• measuring is a process of comparing attributes using units and tools • centimetre, metre, gram, and kilogram are units in the International System of Units (SI) • width, height, length, and perimeter are all linear measures	• millimetre, centimetre, metre, square centimetre, and square metre are units in the International System of Units (SI) • length, perimeter, and area are related measures • area is the space inside a 2-D shape and is measured in square units

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
		• a unit is used to compare measurable attributes • non-standard units must be identical for a count to represent the measure		• the measure of a length stays the same when repositioned or partitioned (conservation of number) • standard units enable a common language around measurement	• the area of a shape stays the same when repositioned or decomposed (conservation of number) • units of measure can be converted for efficiency in different contexts
Procedural Knowledge	• compare the length or mass of one object to another (direct comparison) • order familiar objects by length or mass	• order objects by length or mass using direct comparison • compare two objects indirectly using a third object (indirect comparison) • measure length using many copies of the same non-standard unit	• create a tool to measure length with non-standard units • select non-standard units to estimate, measure, and compare length and mass • measure length using non-standard units, either a single unit used repeatedly or many copies of the same unit • compare and order objects in more than one way using different measurable attributes	• select appropriate standard units and tools to measure, record, and compare length, width, height, and mass • select referents for the units centimetre, metre, gram, and kilogram to estimate length and mass • describe the relationship between centimetres and metres, grams and kilograms • add multiple lengths to determine the total length • estimate, measure, and record perimeter	• describe the relationship between millimetres, centimetres, and metres • justify the selection of units used for measurement • determine perimeter in different contexts • determine area by tiling inside a 2-D shape • estimate area using referents for square centimetre and square metre
Competencies	• Critical Thinking • Managing Information	• Critical Thinking • Managing Information	• Critical Thinking • Managing Information	• Communication • Managing Information	• Critical Thinking • Communication
Literacy	• Vocabulary • Comprehension Strategies	• Vocabulary • Comprehension Strategies	• Vocabulary • Comprehension Strategies • Clarity	• Conventions • Vocabulary • Comprehension Strategies • Clarity	• Conventions • Vocabulary • Comprehension Strategies • Clarity
Numeracy	• Organization of Data • Measurement • Communication	• Organization of Data • Measurement • Units of Measurement • Communication	• Measurement • Units of Measurement • Communication • Strategies • Methods or Tools	• Measurement • Units of Measurement • Communication • Strategies • Estimation • Methods or Tools	• Measurement • Units of Measurement • Conversions • Interpretation and Representation of Spatial Information • Communication • Estimation • Methods or Tools

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
Essential Understanding	**Exploring connections strengthens our understandings of relationships to help us make meaning of the world.**				
Guiding Questions	**How can we describe the relationships between quantities?**	**How can we represent relationships between quantities?**	**How can we represent equal and not equal relationships between quantities?**	**How can we create equations to represent relationships between quantities?**	**How can we represent situations using equations with unknowns?**
Learning Outcomes	**Children explore and communicate the relationship between quantities.**	**Students demonstrate equality as a relationship between quantities.**	**Students represent quantities as equal or not equal.**	**Students create and solve equations that represent quantitative relationships.**	**Students create and solve equations that represent problem-solving situations.**
Conceptual Knowledge	• quantities can be the same or not the same • quantities can be more or less	• equality is a relationship between quantities • equality can be represented symbolically (=) • quantity stays the same no matter how objects are arranged (conservation of number)	• equality and inequality are relationships between quantities • equality and inequality can be represented symbolically (= and ≠)	• equations are representations of equality between two expressions • an equal sign indicates a relationship of equality between two expressions • symbols are used to represent unknown values (unknowns) in equations	• situations or problems can be generalized and represented with equations • equations can be solved to find unknown values • symbols are used to represent unknowns in equations
Procedural Knowledge	• explore same, not same, more, and less concretely or pictorially • describe the relationships between quantities using same, not same, more, or less	• represent equality concretely or pictorially • record equalities using the equal sign (=)	• represent equality and inequality concretely or pictorially • record equalities and inequalities symbolically • change an inequality into an equality concretely or pictorially	• create a one-step equation with one unknown value • solve equations with addition and subtraction concretely, pictorially, or symbolically	• create an equation with an unknown to represent a problem or situation • create a problem for a given equation • solve equations concretely, pictorially, or symbolically
Competencies	• Critical Thinking • Communication	• Critical Thinking • Communication	• Critical Thinking • Communication	• Creativity and Innovation • Problem Solving	• Creativity and Innovation • Problem Solving
Literacy	• Vocabulary • Clarity	• Conventions • Vocabulary	• Conventions • Vocabulary	• Conventions • Vocabulary	• Conventions • Comprehension Strategies
Numeracy	• Magnitude • Interpretation and Representation of Quantitative Information • Communication	• Magnitude • Interpretation and Representation of Quantitative Information • Communication	• Magnitude • Interpretation and Representation of Quantitative Information • Communication	• Calculations • Interpretation and Representation of Quantitative Information • Communication	• Calculations • Interpretation and Representation of Quantitative Information • Communication
Guiding Questions	**How can we explore relationships between pattern elements?**	**How can we express relationships between pattern elements?**	**How can we express patterns in different ways?**	**How can we use patterns to make predictions?**	**How can we use patterns to solve problems?**
Learning Outcomes	**Children explore and describe the relationship between elements in a repeating pattern.**	**Students describe relationships among elements in a repeating pattern.**	**Students represent patterns in various ways.**	**Students analyze a pattern and determine the relationship that produces the pattern rule.**	**Students analyze a pattern and generalize the pattern rule when solving a problem.**
Conceptual Knowledge	• each part (element) of a pattern has attributes, including size, colour, and shape • repeating patterns have a set of elements that repeat • patterns can be described (pattern rule) • patterns can be found everywhere • patterns can be created using objects, images, symbols, sounds, or actions	• patterns can be found in the environment • patterns can be created using objects, images, symbols, sounds, or actions • repeating patterns have a set of elements that repeat (pattern core) • a repeating pattern can be represented in different ways	• a pattern is a sequence that follows a rule • repeating patterns have a pattern core • increasing patterns change according to a rule • patterns can be represented in different ways, including non-linear designs	• repetition and change can create increasing and decreasing patterns • repetition and change can be described with a pattern rule • rules allow for prediction beyond the information at hand	• repetition and change can create increasing and decreasing patterns that model problems • repetition and change can be generalized to solve problems

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
Procedural Knowledge	• identify examples and non-examples of patterns • describe patterns • reproduce, extend, and create repeating patterns with two or three elements	• describe patterns, including how patterns repeat • reproduce, extend, and create repeating patterns with two to four elements • translate a repeating pattern from one representation to another	• create repeating patterns with three to five elements in the pattern core • create an increasing pattern from a pattern rule • translate a pattern from one representation to another	• create increasing patterns using addition and decreasing patterns using subtraction • determine a rule for a given pattern • create a pattern from a given rule • predict the next step or part (term) of a pattern	• create patterns using addition, subtraction, multiplication, or division • recognize when a pattern can be used to solve a problem • determine a pattern rule and apply it to a problem
Competencies	• Critical Thinking • Communication	• Critical Thinking • Communication	• Communication • Managing Information	• Critical Thinking • Managing Information	• Critical Thinking • Problem Solving
Literacy	• Conventions • Vocabulary • Text Organization • Clarity	• Vocabulary • Text Organization • Clarity	• Vocabulary • Text Organization	• Comprehension Strategies • Text Organization	• Comprehension Strategies • Text Organization
Numeracy	• Purpose • Patterns and Relationships • Organization of Data • Communication	• Patterns and Relationships • Organization of Data • Communication	• Patterns and Relationships • Organization of Data • Communication	• Calculations • Patterns and Relationships • Organization of Data • Probability • Communication	• Purpose • Calculations • Patterns and Relationships • Organization of Data
Guiding Questions	**How can we explore the relationship between time and events?**	**How can we relate time to events?**	**How can we measure time and cycles in a variety of contexts?**	**How can we measure and communicate time and cycles?**	**How can we measure and communicate the passage of time?**
Learning Outcome	**Children explore and describe relationships between time and experiences.**	**Students describe relationships between time and experiences.**	**Students connect units of time to various representations.**	**Students relate time to clocks and cycles.**	**Students measure the passage of time with clocks and cycles.**
Conceptual Knowledge	• events can be sequenced in time • time can be experienced through seasons • First Nations, Métis, and Inuit relate time to changes in nature	• events can be compared and sequenced in time • time can be experienced in cycles and patterns, including seasons • First Nations, Métis, and Inuit traditional cultural activities are connected to seasons • time can be measured	• a calendar can show relationships between months, weeks, and days • analog clocks show relationships between minutes and hours • First Nations, Métis, and Inuit recognize that patterns of the sun and moon provide a sense of time • personal referents for time can be used to estimate duration	• a clock is a tool for measuring time based on cycles • analog clocks show relationships between minutes and hours • digital clocks display hours and minutes • there are relationships between analog and digital clocks • First Nations, Métis, and Inuit relate time to human life cycles and seasons • units of time are selected according to context	• there is a relationship between a 12-hour clock and a 24-hour clock • the second is the International System of Units (SI) base unit for time • there are relationships between seconds, minutes, and hours • units of time can be converted for efficiency in different contexts • passage of time can be measured in various ways • First Nations, Métis, and Inuit communicate the passage of time by recording significant events within natural cycles
Procedural Knowledge	• describe a sequence of events using time vocabulary in familiar contexts, including before, after, then, next, and a long time ago • connect lived experiences and cultural events to time • explore how seasons are cycles of time	• describe a sequence of events using time vocabulary in familiar contexts, including yesterday, today, tomorrow, morning, afternoon, evening, past, present, and future • connect lived experiences and cultural events to time • explore cultural stories of First Nations, Métis, and Inuit that describe traditional activities in relation to seasons	• relate personal or cultural events to a date on a calendar • compare days to weeks and months to years • relate units of time on a clock, including minutes to quarter-hour, half-hour, and hour • connect sun and moon patterns to time references, including cycles of day and night	• read and record time to the hour, half-hour, and quarter-hour using analog clocks • relate digital clock time to analog clock time • relate time to seasonal and human life cycles, including First Nations' medicine wheels • select appropriate units of time based on context • compare events that have different durations using standard units	• measure time in relation to seasons and events, including First Nations' Winter Counts, and other traditional knowledge • read and record time using digital and analog clocks, including 24-hour clocks • calculate elapsed time in hours and minutes • estimate duration for a sequence of familiar events • convert units of time, including hours to minutes and minutes to seconds

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
		• estimate and measure time using non-standard units • compare the duration of activities	• compare events of different durations using non-standard units	• estimate duration of an event using a referent	
Competencies	• Communication • Managing Information	• Communication • Managing Information	• Communication • Critical Thinking	• Managing Information • Critical Thinking	• Managing Information • Critical Thinking
Literacy	• Background Knowledge • Vocabulary • Clarity	• Background Knowledge • Vocabulary • Comprehension Strategies • Clarity	• Background Knowledge • Vocabulary • Comprehension Strategies	• Conventions • Vocabulary • Comprehension Strategies	• Conventions • Background Knowledge • Comprehension Strategies
Numeracy	• Patterns and Relationships • Time • Communication	• Patterns and Relationships • Units of Measurement • Communication • Time • Estimation	• Patterns and Relationships • Units of Measurement • Time • Methods or Tools	• Patterns and Relationships • Measurement • Units of Measurement • Time • Estimation • Methods or Tools	• Calculations • Patterns and Relationships • Measurement • Units of Measurement • Conversions • Time • Estimation • Methods or Tools

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
Essential Understanding	**Engaging with various forms of communication and expression allows us to represent and interpret our understandings of the world in multiple ways.**				
Guiding Questions	**How can we answer questions with data?**	**How can we collect and represent data?**	**How can we represent and describe data?**	**How can we interpret data?**	**How can we represent data efficiently?**
Learning Outcomes	**Children describe data in response to a given question.**	**Students represent and describe data in response to a given question.**	**Students represent and describe data in response to student-generated questions.**	**Students represent and interpret data to answer questions.**	**Students represent and interpret data when solving problems.**
Conceptual Knowledge	• data can be collected to answer a question • data can be represented concretely (concrete graphs) • a graph is a way to communicate mathematically about data	• data can be used to answer a question • data can be represented concretely (concrete graphs) or pictorially (pictographs) • a graph is a way to communicate mathematically about and describe data	• data can be represented pictorially (pictographs) or graphically (bar graphs) • graphs and tables are ways to organize and communicate mathematically about data	• bar graphs can represent first-hand or second-hand data • data can be used to answer questions • graphs and tables are ways to organize, communicate, and facilitate the interpretation of data	• tables are chosen based on the size of the data set • scale allows a single symbol to represent a number of items (many-to-one correspondence) • to organize and communicate more efficiently, larger data sets can be graphed using a scale • data can be used to solve problems
Procedural Knowledge	• collect first-hand data • represent data in concrete graphs using one-to-one correspondence • describe data in a graph using comparative vocabulary, including more, less, same, and not same	• collect and classify first-hand data • represent data in concrete graphs and pictographs using one-to-one correspondence • describe data in a graph using comparative vocabulary, including more, less, most, greatest, least, same, and not same	• formulate simple questions to collect first-hand data • collect first-hand data • organize data using tables, tally marks, and counts • construct pictographs and bar graphs using one-to-one correspondence • extract information from a table or a graph	• formulate relevant questions to collect first-hand data • organize first-hand or second-hand data using tables, tally marks, and line plots • construct bar graphs and line plots using one-to-one correspondence • extract information from a table or a graph to make comparisons and inferences	• clarify the problem • construct bar graphs and pictographs using a scale • justify inferences and draw conclusions from data • solve a problem using data
Competencies	• Communication • Managing Information	• Communication • Managing Information	• Communication • Managing Information	• Communication • Managing Information	• Managing Information • Problem Solving
Literacy	• Access • Vocabulary • Clarity • Modes and Media	• Access • Vocabulary • Clarity • Modes and Media	• Develop Questions • Access • Vocabulary • Clarity • Modes and Media	• Develop Questions • Access • Vocabulary • Modes and Media	• Conventions • Access • Evaluate • Vocabulary • Comprehension Strategies • Modes and Media
Numeracy	• Task Analysis • Collection of Data • Interpretation of Data • Interpretation and Representation of Quantitative Information • Communication	• Task Analysis • Organization of Data • Collection of Data • Interpretation of Data • Interpretation and Representation of Quantitative Information • Communication	• Task Analysis • Organization of Data • Collection of Data • Interpretation of Data • Interpretation and Representation of Quantitative Information • Communication	• Task Analysis • Organization of Data • Collection of Data • Interpretation of Data • Interpretation and Representation of Quantitative Information • Communication	• Task Analysis • Organization of Data • Interpretation of Data • Interpretation and Representation of Quantitative Information • Communication

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
Essential Understanding	**Applying logical thought and creativity enables us to achieve outcomes, solve problems, and develop computational thinking skills.**				
Guiding Questions	**Why is it important for us to follow instructions carefully?**	**Why is it important for us to create clear instructions?**	**How can we make sure instructions lead to the desired outcome?**	**How can we work together to improve instructions that include repetition?**	**How can we solve a problem with an algorithm?**
Learning Outcomes	**Children follow a process while engaging in a learning experience that achieves a desired outcome.**	**Students follow a determined process and create an original process that achieves a desired outcome.**	**Students design and test a simple process that achieves a desired outcome.**	**Students collaboratively design and monitor a process with repetitions that achieves a desired outcome.**	**Students collaboratively create and justify an algorithm that solves a problem.**
Conceptual Knowledge	• instructions can take many forms, including verbal and visual forms • steps in instructions are sequenced in a logical way to achieve a desired outcome	• instructions can take many forms, including verbal, visual, and written forms • sequencing is used to order steps in instructions in a way that will always produce the desired outcome • instructions are informed by cues around us	• precise instructions can be followed by people or machines • instructions may not always achieve the desired outcome • order of steps may or may not affect the outcome	• computational thinking as a problem-solving process can include instructions and repetitions • instructions must consider the input information and the output information (data) • instructions may be simplified by repeating steps • instructions may be simplified by repeating steps • order of steps may be changed to achieve a different outcome	• computational thinking can include the application of algorithms • an algorithm is a step-by-step procedure of operations on data • everyday problems can be solved using algorithmic thinking • algorithms can vary in efficiency based on contexts and users • different algorithms can lead to the same outcome
Procedural Knowledge	• follow a sequence of two steps related to a learning experience • engage in activities that involve following instructions • recognize when instructions do not correspond to actions • explore the differences in outcomes when the order of steps is changed	• follow 2- or 3-step instructions to achieve a desired outcome • sequence 2 or 3 steps to achieve a desired outcome • exchange ideas to achieve a desired outcome requiring a 1- to 3-step process • create 1- to 3-step instructions to achieve a desired outcome • recognize when instructions do not correspond to actions	• explain instructions in own words • predict the outcome of 3- to 4-step instructions • test a sequence of steps to verify the outcome • exchange ideas to achieve a desired outcome requiring a 3- to 4-step process • remove or fix (debug) any errors in a set of instructions	• create instructions with repetition to achieve a desired outcome • exchange ideas and share responsibilities when designing and monitoring a process that achieves a desired outcome • adjust instructions to achieve a different outcome	• consider contributions of others when creating algorithms • design an algorithm to solve a stated problem • review the reliability and efficiency of an algorithm • adjust an algorithm to obtain a different outcome
Competencies	• Problem Solving • Managing Information	• Problem Solving • Creativity and Innovation	• Problem Solving • Creativity and Innovation	• Collaboration • Problem Solving	• Collaboration • Problem Solving
Literacy	• Comprehension Strategies • Text Organization • Intent	• Text Organization • Comprehension Strategies • Intent	• Vocabulary • Comprehension Strategies • Clarity • Intent	• Vocabulary • Comprehension Strategies • Clarity • Intent	• Evaluate • Vocabulary • Comprehension Strategies • Intent
Numeracy	• Purpose • Location and Direction • Communication	• Purpose • Using Numbers • Location and Direction • Communication	• Purpose • Task Analysis • Location and Direction • Communication • Estimation	• Purpose • Task Analysis • Location and Direction • Communication • Methods and Tools	• Purpose • Task Analysis • Strategies • Methods and Tools

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
Essential Understanding	**Developing and affirming identity contributes to well-being and understandings of self and one another.**				
Guiding Questions	**How can we explore mathematics through everyday experiences?**	**How can we use mathematics in various activities?**	**How can I view myself as a mathematician?**	**How can I work like a mathematician?**	**How can I solve problems like a mathematician?**
Learning Outcome	**Children explore mathematics through activities that provide positive experiences.**	**Students engage with mathematics in various activities.**	**Students engage with mathematics to build perseverance and confidence.**	**Students develop practices and habits that support their identities as mathematicians.**	**Students apply mathematical thinking and habits to solve problems.**
Conceptual Knowledge	• some activities involve play with numbers (quantitative information) • some activities involve play with shapes (spatial information)	• mathematics is all around us • there are a variety of ways to engage with mathematics • everyone can learn and do mathematics • everyone makes and learns from errors	• everyone who engages with mathematics is a mathematician • mathematicians make and learn from errors • mathematicians persevere when seeking solutions	• risk taking can support positive interactions and confidence with mathematics • mathematicians notice, wonder about, and discuss mathematics • everyone can apply mathematics in authentic situations • errors are opportunities to develop deeper understanding	• embracing challenges supports positive interactions and confidence with mathematics • mathematicians take risks and persevere when solving problems • mathematicians apply and refine strategies to solve problems • mathematicians explain their thinking
Procedural Knowledge	• construct with materials as mathematical play • engage in activities that involve mathematical play • engage in different activities that support curiosity with mathematics • persevere through obstacles that arise in mathematical play • share experiences related to mathematical play	• engage in activities that support curiosity with mathematics • work together with others (collaborating) to develop understanding of mathematical concepts • persevere through obstacles that arise in mathematical experiences • share experiences and ideas related to mathematical play	• engage in activities that support curiosity with mathematics • collaborate to develop understanding of mathematical concepts • persevere through obstacles that arise in learning and doing mathematics • share strategies related to mathematical play	• engage in activities or non-routine problems that support mathematical risk-taking and curiosity • collaborate to enhance understanding of mathematical concepts • persevere when seeking solutions • reflect on strengths that lead to success • discuss strategies related to mathematical play or non-routine problems	• explore challenging activities or non-routine problems that support productive struggle • apply creativity and logic to persevere when seeking solutions • seek out and solve authentic problems • investigate different methods to solve a problem • recognize and describe strengths related to solving problems • explain or justify a strategy or solution
Competencies	• Personal Growth and Well-being • Managing Information	• Managing Information	• Personal Growth and Well-being • Managing Information	• Personal Growth and Well-being	• Problem Solving • Critical Thinking
Literacy	• Personal Insight • Comprehension Strategies • Clarity	• Personal Insight • Comprehension Strategies • Clarity	• Personal Insight • Comprehension Strategies • Clarity	• Personal Insight • Comprehension Strategies • Clarity	• Personal Insight • Comprehension Strategies • Clarity
Numeracy	• Purpose • Personal Insight • Task Analysis • Communication	• Purpose • Personal Insight • Task Analysis • Communication	• Purpose • Personal Insight • Task Analysis • Communication	• Purpose • Personal Insight • Task Analysis • Communication	• Purpose • Personal Insight • Task Analysis • Communication