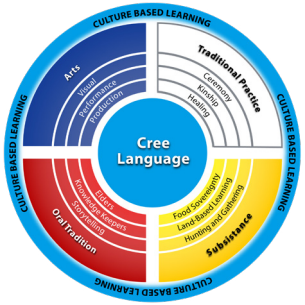
Math



Knowledge	Understanding	Skills & Procedures	ᓀᐦᐃᔭᐤ Nehiyaw Ways of Knowing	Other Suggestions
ORGANIZING IDEA **Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.**				
GUIDING QUESTION **How can place value support organization of number?**				
LEARNING OUTCOME **Students interpret place value within 100 000.**				
For numbers in base-10, each place has 10 times the value of the place to its right. The digits 0 to 9 indicate the number of groups in each place in a number. The value of each place in a number is the product of the digit and its place value. **Numbers can be composed in various ways using place value.** **Numbers can be rounded in contexts where an exact count is not needed.** The less than sign, <, and the greater than sign, >, are used to show the relationship between two unequal numbers. A zero in the leftmost place of a natural number does not change the value of the number. [continued...]	There are infinitely many natural numbers. Every digit in a natural number has a value based on its place. Each natural number is associated with exactly one point on the number line. There are infinitely many natural numbers. [continued...]	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. [continued...]	**Legend of Night and Day** **13 Moons** **Distance – Concept of Zero**	**Include Cree numbers and number system.**

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[continued...] The dollar sign, $, is placed to the left of the dollar value in English and to the right of the dollar value in French. The cent sign, ¢, is placed to the right of the cent value in English and in French.	[continued...] Every digit in a natural number has a value based on its place. Each natural number is associated with exactly one point on the number line.	[continued...] Count and represent the value of a collection of loonies, toonies, and bills as dollars. Recognize French and English symbolic representations of monetary values.		
ORGANIZING IDEA **Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.**				
GUIDING QUESTION **How can processes be established for addition and subtraction?**				
LEARNING OUTCOME **Students apply strategies for addition and subtraction within 1000.**				
Recall of addition and subtraction number facts facilitates addition and subtraction strategies. **Standard algorithms for addition and subtraction are conventional procedures based on place value.** **Estimation can be used to support addition and subtraction in everyday situations, including** • **when an exact sum or difference is not needed** • **to check if an answer is reasonable**	Addition and subtraction strategies can be chosen based on the nature of the numbers. Standard algorithms for addition and subtraction may be used for any natural numbers.	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.	**Mixing and Measuring Common Medicines (2 videos) or** **Distance – Concept of Zero (estimation)** **Trickster and the Ducks**	**Check out the Indigenous games section in Resources on the Instructional Supports webpage.**

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ORGANIZING IDEA **Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.**				
GUIDING QUESTION **How can multiplication and division provide new perspectives of number?**				
LEARNING OUTCOME **Students analyze and apply strategies for multiplication and division within 100.**				
Multiplication and division are inverse mathematical operations. **Multiplication is repeated addition.** **Multiplication can be interpreted in various ways according to context, such as** • **equal groups** • **an array** • **an area** **Division can be interpreted in various ways according to context, such as** • **equal sharing** • **equal grouping** • **repeated subtraction** The order in which two quantities are multiplied does not affect the product (commutative property). The order in which two numbers are divided affects the quotient. Multiplication or division by 1 results in the same number (identity property).	Quantities can be composed and decomposed through multiplication and division.	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. Recognize interpretations of multiplication and division in various contexts.	**Beading (loom x10's)**	

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Numbers can be multiplied or divided in parts (distributive property). **Multiplication strategies include** • **repeated addition** • **multiplying in parts** • **compensation** **Division strategies include** • **repeated subtraction** • **partitioning the dividend** **Products can be expressed symbolically using the multiplication sign, ×, factors, and the equal sign.** **Quotients can be expressed symbolically using the division sign, ÷, dividend, divisor, and the equal sign.** A missing quantity in a product or quotient can be represented in different ways, including • $a \times b = \square$ • $a \times \square = c$ • $\square \times b = c$ • $e \div f = \square$ • $e \div \square = g$ • $\square \div f = g$ **A remainder is the quantity left over after division.**	Sharing and grouping situations can be interpreted as multiplication or division. Multiplication and division strategies can be supported by addition and subtraction.	Investigate multiplication and division strategies. Multiply and divide within 100. 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.		
A multiplication table shows both multiplication and division facts. **Fact families are groups of related multiplication and division numberfacts.**	Multiplication number facts have related division facts.	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.		

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ORGANIZING IDEA **Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.**				
GUIDING QUESTION **How can fractions contribute to a sense of number?**				
LEARNING OUTCOME **Students interpret fractions in relation to one whole.**				
The same fraction can represent • **equal parts of one whole length, shape, or object** • **equal groups of one whole quantity** • **equal parts of each equal group in one whole quantity** **The name of a fraction describes its composition as a number of unit fractions.** Fraction notation, $\left(\frac{a}{b}\right)$, relates the numerator, *a*, a number of equal parts, to the denominator, *b*, the total number of equal parts in the whole. Equal numerators or equal denominators can facilitate the comparison of fractions. **A fraction with a numerator that is equal to its denominator is one whole.** **Each fraction is associated with a point on the number line.**	Fractions are numbers between natural numbers. Fractions can represent part-to-whole relationships. A unit fraction describes the size of the equal parts of a fraction. The size of the parts and the total number of equal parts in the whole are inversely related.	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.		Green Meadows Community Garden: Cut the Pie - Snow Day Style! **(fractions)** Alberta Native Friendship Centres Association & Be Fit For Life Network: Move & Play Through Traditional Games **(Inuit bone pull game)** **For a variation, with partners, place the object between your index fingers and each other. Tug of war with a partner. "Tug-off" with others until one person is left. Use data to explore the different fractions ie: girls who have the stick/ total students, boys with the object/ total.**

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ORGANIZING IDEA **Algebra: Equations express relationships between quantities.**				
GUIDING QUESTION **How can equality facilitate agility with number?**				
LEARNING OUTCOME **Students illustrate equality with equations.**				
An equation uses the equal sign to indicate equality between two expressions. **The left and right sides of an equation are interchangeable.**	Two expressions are equal if they represent the same number.	Write equations that represent equality between a number and an expression or between two different expressions of the same number.		
Equations can be modelled using a balance. **A symbol may represent an unknown value in an equation.**	Equations can include unknown values.	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.		

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ORGANIZING IDEA **Geometry: Shapes are defined and related by geometric attributes.**				
GUIDING QUESTION **In what ways might geometric properties refine interpretation of shape?**				
LEARNING OUTCOME **Students relate geometric properties to shape.**				
Geometric properties can describe relationships, including perpendicular, parallel, and equal. Parallel lines or planes are always the same distance apart. Perpendicular lines or planes intersect at a 90° (right) angle. Right angles can be identified using various referents, such as • the corner of a piece of paper • the angle between the hands on an analog clock at 3:00 • a capital letter L **Polygons include** • **triangles** • **quadrilaterals** • **pentagons** • **hexagons** • **octagons** Regular polygons have sides of equal length and interior angles of equal measure.	Geometric properties are relationships between geometric attributes. Geometric properties define a class of polygon.	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.	Dreamcatcher	**Spider Web Geometry: Students research the spider of their choice and then construct a replica of the spider's web, applying principles of geometry. Upon completion students recognize spiders as wildlife; and generalize that people and wildlife share environments. Requires writing materials for use in research; measuring instruments; thread; glue. Optional: photographic materials.** **Dreamcatcher creation: applying the principles of geometry.**
Transformations include • translations • rotations • reflections The distance between any two vertices of a shape is maintained in the image created by a transformation.	**Geometric properties do not change when a polygon undergoes a transformation.**	Examine geometric properties of polygons by translating, rotating, or reflecting using hands-on materials or digital applications.		

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ORGANIZING IDEA **Measurement: Attributes such as length, area, volume, and angle are quantified by measurement.**				
GUIDING QUESTION **In what ways can length be communicated?**				
LEARNING OUTCOME **Students determine length using standard units.**				
The basic unit of length in the metric system is the metre. Metric units are named using prefixes that indicate the relationship to the basic unit, including • milli: one thousand millimetres in one metre • centi: one hundred centimetres in one metre • deci: ten decimetres in one metre Metric units are abbreviated for convenience, including • m: metre • dm: decimetre • cm: centimetre • mm: millimetre Standard measuring tools show iterations of a standard unit from an origin. Units of length in the imperial system include inch, foot, and yard, related in these ways: • 12 inches in one foot • 36 inches in one yard • 3 feet in one yard Approximate conversions between metric and imperial are useful in real world situations, including • 2 centimetres are approximately 1 inch • 1 metre is approximately 3 feet • 30 centimetres are approximately 1 foot • 1 metre is approximately 1 yard	Length is measured in standard units according to the metric system and the imperial system. **Length can be expressed in various units according to context and desired precision.**	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.	**Distance – Concept of Zero**	

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The perimeter of a polygon is the sum of the lengths of its sides.	Length remains the same when decomposed or rearranged.	Determine the perimeter of polygons. Determine the length of an unknown side given the perimeter of a polygon.		
A benchmark is a known length to which another length can be compared. Length can be estimated using a personal or familiar referent.	Length can be estimated when less accuracy is required.	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.		
ORGANIZING IDEA **Measurement: Attributes such as length, area, volume, and angle are quantified by measurement.**				
GUIDING QUESTION **How can angles broaden an understanding of space?**				
LEARNING OUTCOME **Students interpret angles.**				
Angle defines the space in • corners • bends • turns or rotations • intersections • slopes The arms of an angle can be line segments or rays. **The end point of a line segment or ray is called a vertex.**	**An angle is the union of two arms with a common vertex.** An angle can be interpreted as the motion of a length rotated about a vertex.	Recognize various angles in surroundings. Recognize situations in which an angle can be perceived as motion.		
Superimposing is the process of placing one angle over another to compare angles. A referent is a personal or familiar representation of a known angle.	Two angles can be compared directly or indirectly.	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.**		

Knowledge	Understanding	Skills & Procedures	ᓀᐦᐃᔭᐤ Nehiyaw Ways of Knowing	Other Suggestions
ORGANIZING IDEA **Patterns: Awareness of patterns supports problem solving in various situations.**				
GUIDING QUESTION **How can diverse representations of patterns contribute to interpretation of change?**				
LEARNING OUTCOME **Students analyze patterns in numerical sequences.**				
Ordinal numbers can indicate position in a sequence. Finite sequences, such as a countdown, have a definite end. Infinite sequences, such as the natural numbers, never end.	A sequence is a list of terms arranged in a certain order. Sequences may be finite or infinite.	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.		
Numerical sequences can be constructed using addition, subtraction, multiplication, or division.	A sequence can progress according to a pattern.	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.		

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ORGANIZING IDEA **Time: Duration is described and quantified by time.**				
GUIDING QUESTION **How can duration be communicated?**				
LEARNING OUTCOME **Students tell time using clocks.**				
Clocks relate seconds to minutes and hours according to a base-60 system. The basic unit of time is the second. One second is 1/60 of a minute. One minute is 1/60 of an hour. Analog and digital clocks represent time of day. Time of day can be expressed as a duration relative to 12:00 in two 12-hour cycles. Time of day can be expressed as a duration relative to 0:00 in one 24-hour cycle in some contexts, including French-language contexts.	**Clocks are standard measuring tools used to communicate time.**	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.		

Knowledge	Understanding	Skills & Procedures	ᓯᐦᐃᔭᐤ Nehiyaw Ways of Knowing	Other Suggestions
ORGANIZING IDEA **Statistics: The science of collecting, analyzing, visualizing, and interpreting data can inform understanding and decision making.**				
GUIDING QUESTION **How can representation support communication?**				
LEARNING OUTCOME **Students interpret and explain representations of data.**				
Statistical questions are questions that can be answered by collecting data.	Representation connects data to a statistical question.	Formulate statistical questions for investigation. Predict the answer to a statistical question.	7 Year Cycle **Orienteering Series: Weather Indicators**	
First-hand data is collected by the person using the data. Second-hand data is data collected by others from sources such as websites and social media.	Representation expresses data specific to a unique time and place. Representation tells a story about data.	Collect data using digital or non-digital 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.		

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