The purpose of this document is to provide a possible Year Plan for organizing your units of instruction but more importantly, it provides a possible approach to scaffolding the learning that students will need if they do not have the prerequisite knowledge. Sections highlighted in yellow suggest starting points for addressing the Learner Outcome at a more appropriate entry level. Students will require sufficient time to access prior knowledge so a spiralled approach to the Learner Outcomes will likely be necessary.

Alberta Mathematics Sample Year Plan

Grade 4

Alberta Regional Professional Development Consortia
Adult learning for students' sake

April 2024

This resource has been created by Teachers/Administrators/Directors/Consultants from Zone 4 & 6 with the support and feedback of provincial teachers piloting the course. The purpose is to provide a common starting point for the New Grade 4 Mathematics Curriculum. This guide will be used to offer targeted Professional Learning based on the approximate schedules contained within but is not prescriptive in nature.

What is Mathematics?

Mathematics is a universal language relying on a shared understanding of symbols and procedures to communicate ideas efficiently. It is a powerful tool used every day to solve real-life problems. The beauty of mathematics inspires curiosity about our world and the universe. As a subject, mathematics has historical roots in many cultures and continues to evolve in support of innovations. Mathematics involves learning across various disciplines, including arithmetic, algebra, geometry, statistics, and probability. In all disciplines, procedures may range from counting, calculating, and measuring to analyzing, modelling, and generalizing. Engaging with mathematics allows students to develop logical thinking skills, which contribute to effective decision making and problem solving. Students are able to extend their thinking beyond personal experiences through flexible and collaborative learning opportunities. Experiences with mathematics help students develop appreciation for the patterns and relationships that describe multiple aspects of the world and its future possibilities.Numeracy is a foundational building block of learning and is developed in all subjects in different ways. Central to the development of numeracy, the mathematics curriculum helps students acquire and apply the knowledge and skills necessary to interact with quantitative and spatial information in a variety of situations. Foundational numeracy focuses on counting, comparing, and calculating* with numbers; describing, representing, and measuring shapes and objects; collecting, organizing, and interpreting data; and creating and interpreting diagrams, graphs, and tables. Numeracy skills support real-life pursuits, including telling time, using and managing money, following instructions, finding an address, and reading a schedule. With a focus on numeracy, the mathematics curriculum provides all students with a solid foundation of mathematical knowledge, understanding, and skills to set them up for future success.

Mathematics education is an ongoing process of connecting students' concrete experiences to their comprehension of abstract concepts. A recognition of numbers and their application to counting and comparing form foundational knowledge and skills for students as they encounter a variety of quantitative information in their lives. The development of these skills supports students as they participate in family, community, and cultural activities. As their experiences broaden, students also learn that operations with numbers provide reliable and efficient options to counting and comparing. Students acquire knowledge of basic number facts that can be applied to addition, subtraction, multiplication, and division of larger numbers using commonly recognized algorithms. Students also communicate using conventional mathematical symbols and vocabulary. As students are exposed to more and varied quantitative information, they learn about different number systems and their applications to various situations, such as decimals for money and integers for temperature. In developing algebraic thinking skills, students transfer their understanding of properties of numbers to new or abstract problems.

Although mathematics is often considered the study of numbers, it also provides the tools to interpret spatial information in the world. The earliest mathematical experiences of children involve exploration of the space and objects around them. Mathematics provides the foundations for precisely describing, defining, and measuring spatial information. Students will learn geometric properties that relate to and distinguish shapes. They will also develop an understanding of measurement, progressing from direct comparison, to

Numeracy, Quantitative Information and Spatial Information

the use of non-standard units of measure, to accurately measure with various standard units and tools. Examining shapes through measures and calculations of length, area, volume, and angle will allow students to build a broad understanding of spatial information. Students will extend their application of spatial knowledge and skills from concrete to abstract situations, precisely describing location and movement of shapes in a plane. They will develop knowledge of geometric properties, theorems, and formulas to appreciate complex patterns within traditional cultural designs, to solve immediate real-life problems, and to propose innovations.

Throughout the study of mathematics, students apply their foundational knowledge, understandings, skills, and procedures to solve problems. They visualize and reason to move from what is known to what is sought. Thinking logically about a problem, choosing a strategy, reaching a conclusion, and justifying the solution helps students develop confidence in their mathematical thinking and decision making. These processes are reinforced by both literacy and numeracy skills and continue to develop throughout students' lives to support a wide variety of needs, such as financial literacy.

The foundational knowledge and skills provided by the mathematics curriculum are important contributions to the future success of students. Students will apply abilities in computation, managing information, reasoning, and problem solving in daily life and in future educational pursuits and careers. Mathematics will help students interact in society with confidence and intellectual curiosity. Students will rely on their mathematical knowledge and skills as they continue into adulthood in our interconnected and ever changing world. *Note: Learning outcomes in the Mathematics Kindergarten to Grade 6 Curriculum are intended to be achieved without the support of calculators.

source: *Final Curriculum: Kindergarten to Grade 3 will be implemented starting September 2022. Grades 4 to 6 are available for optional implementation starting September 2022, Introduction, page 1.*

Sample Year at a Glance: Mathematics - Grade 4

September 2023 ---------- November 2023

September	October	November
Number: Quantity is measured with numbers that enable counting, labelling, comparing and operating.		
4N1 Students apply place value to decimal numbers (within 100) • Decimal numbers are numbers between natural numbers • Decimal numbers are fractions with denominators of 10, 100, etc. (introduce with basic money skills/fractions initially - unit fractions of denominator 10 & 100, number lines) • The separation between wholes and parts, including dollars and cents, can be represented using decimal notation.(introduce with basic money skills/fractions initially) • Patterns in place value are used to read and write numbers, including wholes and parts.(relate to money initially) 4N2 Students add and subtract within 10 000, including decimal numbers to hundredths. • Standard algorithms for addition and subtraction may be used for any decimal numbers (initially whole numbers to 1000) 4N4 Students multiply and divide natural numbers within 10 000.(ongoing review of facts to 100 10x10) • Multiplication and division strategies can be chosen based on the nature of the numbers 4N5.1 Students apply equivalence to the interpretation of fractions • There are infinitely many equivalent fractions that	4N1 Students apply place value to decimal numbers (within 100) • Decimal numbers are numbers between natural numbers • Decimal numbers are fractions with denominators of 10, 100, etc. • The separation between wholes and parts, including dollars and cents, can be represented using decimal notation. • Patterns in place value are used to read and write numbers, including wholes and parts.(relate to money) 4N2 Students add and subtract within 10 000, including decimal numbers to hundredths. • Standard algorithms for addition and subtraction may be used for any decimal numbers (whole numbers to 1000 - 5000, dollar amounts < $100) 4N4 Students multiply and divide natural numbers within 10 000.(facts 12 x 12) • Multiplication and division strategies can be chosen based on the nature of the numbers *this should be ongoing throughout the year 4N3 Students explain properties of prime and composite numbers using multiplication and division • Different factors can compose the same product. • Different products can share factors. • A number divided by one of its factors will result in	4N2 Students add and subtract within 10 000, including decimal numbers to hundredths. • Standard algorithms for addition and subtraction may be used for any decimal numbers (move towards 10 000) 4N3 Students explain properties of prime and composite numbers using multiplication and division • Different factors can compose the same product. • Different products can share factors. • A number divided by one of its factors will result in a remainder of 0. 4N4 Students multiply and divide natural numbers within 10 000.(facts 12 x 12) • Multiplication and division strategies can be chosen based on the nature of the numbers *this should be ongoing throughout the year

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September 2023 ---------- November 2023

September	October	November
represent the same number. (limit to money with dimes and pennies initially - review of unit fractions with these values • Exactly one of infinitely many equivalent fractions is in simplest form. (initially limit to money with pennies and dimes - review of unit fractions with these values •) 4N5.2 Students apply equivalence to the interpretation of fractions. • Decimal numbers that terminate (do not repeat) are fractions with denominators of 10, 100, etc. • Fractions and decimal numbers that represent the same number are associated with the same point on the number line (use this part understanding as your initial conversation)	a remainder of 0. 4N5.2 Students apply equivalence to the interpretation of fractions. • Decimal numbers that terminate (do not repeat) are fractions with denominators of 10, 100, etc. • Fractions and decimal numbers that represent the same number are associated with the same point on the number line	
Measurement: Attributes such as length, area, volume, and angle are quantified by measurement.		
	4M1.1 Students interpret and express area • Area is a measurable attribute that describes the amount of two- dimensional space contained within a region. • Area may be interpreted as the result of motion of a length. • An area remains the same when decomposed or rearranged. (Link to math facts 4N4)	4M1.1 Students interpret and express area • Area is a measurable attribute that describes the amount of two- dimensional space contained within a region. • Area may be interpreted as the result of motion of a length. • An area remains the same when decomposed or rearranged.

Sample Year at a Glance: Mathematics - Grade 4

September 2023 ---------- November 2023

September	October	November
	• Area is measured with equal-sized units that themselves have area and do not need to resemble the region being measured. • The area of a rectangle can be perceived as square-shaped units structured in a two-dimensional array.	• Area is measured with equal-sized units that themselves have area and do not need to resemble the region being measured. 4M1.2 Students interpret and express area • Area can be estimated when less accuracy is required
Algebra: Equations express relationships between quantities.		
4A1.1 Students represent and apply equality in multiple ways • There are infinitely many expressions that represent the same number. (start with money) • The order in which operations are performed can affect the value of an expression (leave for Nov)		4A1.1 Students represent and apply equality in multiple ways • There are infinitely many expressions that represent the same number. • The order in which operations are performed can affect the value of an expression
Time: Duration is described and quantified with time.		
4T1 Students communicate duration with standard units of time. • Analog clocks can relate duration to a circle. Ongoing - use for number (skip counting, link to unit fractions, link to angles, fractions, conversions; ensure that students have reviewed the unit fraction of time	4T1 Students communicate duration with standard units of time. • Analog clocks can relate duration to a circle. Ongoing - use for number (skip counting, link to unit fractions, link to angles, fractions, conversions; ensure that students have reviewed the unit fraction of time	4T1 Students communicate duration with standard units of time • Analog clocks can relate duration to a circle. Ongoing - use for number (skip counting, link to unit fractions, link to angles, fractions, conversions; ensure that students have reviewed the unit fraction of time.

Sample Year at a Glance: Mathematics - Grade 4

December 2023 ---------- March 2024

December	January	February
Number: Quantity is measured with numbers that enable counting, labelling, comparing and operating.		
4N2 Students add and subtract within 10 000, including decimal numbers to hundredths. ● Standard algorithms for addition and subtraction may be used for any decimal numbers (Tie into Financial Literacy) 4N4 Students multiply and divide natural numbers within 10 000.(facts 12 x 12) ● Multiplication and division strategies can be chosen based on the nature of the numbers *this should be ongoing throughout the year	4N2 Students add and subtract within 10 000, including decimal numbers to hundredths. ● Standard algorithms for addition and subtraction may be used for any decimal numbers (Tie into Financial Literacy) 4N4 Students multiply and divide natural numbers within 10 000.(facts 12 x 12) ● Multiplication and division strategies can be chosen based on the nature of the numbers *this should be ongoing throughout the year	4N5.1 Students apply equivalence to the interpretation of fractions ● There are infinitely many equivalent fractions that represent the same number. (limit to money with dimes and pennies initially) ● Exactly one of infinitely many equivalent fractions is in simplest form. (initially limit to money with pennies and dimes) 4N5.2 Students apply equivalence to the interpretation of fractions. ● Decimal numbers that terminate (do not repeat) are fractions with denominators of 10, 100, etc. ● Fractions and decimal numbers that represent the same number are associated with the same point on the number line (use this part understanding as your initial conversation) 4N6 Students interpret percentages ● Fractions, decimals, and percentages can represent the same part-whole relationship. 4N4 Students multiply and divide natural numbers within 10 000.(facts 12 x 12) ● Multiplication and division strategies can be chosen based on the nature of the numbers *this should be ongoing throughout the year

Sample Year at a Glance: Mathematics - Grade 4

December 2023 ---------- March 2024

December	January	February
Algebra: Equations express relationships between quantities.		
4A1.1 Students represent and apply equality in multiple ways • There are infinitely many expressions that represent the same number. • The order in which operations are performed can affect the value of an expression		
Measurement: Attributes such as length, area, volume and angle are quantified by measure.		
	4M2 Students determine and express angles using standard units. • Angles are quantified by measurement and based on the division of a circle. • An angle is measured with equal- sized units that themselves are angles.	4M2 Students determine and express angles using standard units. • Angles are quantified by measurement and based on the division of a circle. • An angle is measured with equal- sized units that themselves are angles.
Time: Duration is described and quantified with time.		
4T1 Students communicate duration with standard units of time • Analog clocks can relate duration to a circle. Ongoing - use for number (skip counting, link to unit fractions, link to angles, fractions, conversions;ensure that students have reviewed the unit fraction of time	4T1 Students communicate duration with standard units of time • Analog clocks can relate duration to a circle. Ongoing - use for number (skip counting, link to unit fractions, link to angles, fractions, conversions;ensure that students have reviewed the unit fraction of time	4T1 Students communicate duration with standard units of time • Analog clocks can relate duration to a circle. Ongoing - use for number (skip counting, link to unit fractions, link to angles, fractions, conversions;ensure that students have reviewed the unit fraction of time

Sample Year at a Glance: Mathematics - Grade 4

March 2024---------- June 2024

March	April	May	June
Number: Quantity is measured with numbers that enable counting, labelling, comparing and operating.			
4N2 Students add and subtract within 10 000, including decimal numbers to hundredths. • Standard algorithms for addition and subtraction may be used for any decimal numbers (Tie into Financial Literacy) 4N4 Students multiply and divide natural numbers within 10 000.(facts 12 x 12) • Multiplication and division strategies can be chosen based on the nature of the numbers *this should be ongoing throughout the year	4N2 Students add and subtract within 10 000, including decimal numbers to hundredths. • Standard algorithms for addition and subtraction may be used for any decimal numbers (Tie into Financial Literacy) 4N4 Students multiply and divide natural numbers within 10 000.(facts 12 x 12) • Multiplication and division strategies can be chosen based on the nature of the numbers *this should be ongoing throughout the year	4N4 Students multiply and divide natural numbers within 10 000.(facts 12 x 12) • Multiplication and division strategies can be chosen based on the nature of the numbers *this should be ongoing throughout the year	• Review of Key Concepts • Deep Dive Connecting Learning • Final Assessment?
Algebra: Equations express relationships between quantities.			
4A1.2 Students represent and apply equality in multiple ways. • An equation is solved by determining an unknown value that makes the left and right sides of the equation equal.(Could revisit equality with money initially - different ways of showing the same amount)			

Sample Year at a Glance: Mathematics - Grade 4

March 2024---------- June 2024

March	April	May	June
Geometry: Shapes are defined and related by geometric attributes.	**Geometry: Shapes are defined and related by geometric attributes.**	Patterns: Awareness of patterns supports problem solving in various situations.	Patterns: Awareness of patterns supports problem solving in various situations.
4G1.1 Students analyze and explain geometric properties. • Geometric properties are measurable. • Geometric properties define a hierarchy for classifying shapes.	4G1.2 Students analyze and explain geometric properties. • A shape resembling a polygon that does not share the defining geometric properties of the polygon is a close approximation	4P1.1 Students interpret and explain arithmetic and geometric sequences. • Sequences may increase or decrease. • Different representations can provide new perspectives of the increase or decrease of a sequence. 4P1.2 Students interpret and explain arithmetic and geometric sequences.. • An arithmetic sequence has a constant difference between consecutive terms. • A geometric sequence has a constant multiplicative change between consecutive terms.	4P1.1 Students interpret and explain arithmetic and geometric sequences. • Sequences may increase or decrease. • Different representations can provide new perspectives of the increase or decrease of a sequence. 4P1.2 Students interpret and explain arithmetic and geometric sequences.. • An arithmetic sequence has a constant difference between consecutive terms. • A geometric sequence has a constant multiplicative change between consecutive terms.
Time: Duration is described and quantified with time.			
4T1 Students communicate duration with standard units of time. • Analog clocks can relate duration to a circle. Ongoing - use for number (skip counting, link to unit fractions, link to angles, fractions, conversions	4T1 Students communicate duration with standard units of time • Analog clocks can relate duration to a circle. Ongoing - use for number (skip counting, link to unit fractions, link to angles, fractions, conversions	4T1 Students communicate duration with standard units of time. • Analog clocks can relate duration to a circle. Ongoing - use for number (skip counting, link to unit fractions, link to angles, fractions, conversions	

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Sample Year at a Glance: Mathematics - Grade 4

March 2024---------- June 2024			
March	**April**	**May**	**June**
		Statistics: The science of collecting, analyzing, visualizing and interpreting data can inform understanding and decision making.	
		4ST1.1 Students evaluate the use of scale in graphical representations of data. ● Representation is part of a statistical problem-solving process. 4ST1.2 Students evaluate the use of scale in graphical representations of data. ● Representation can express many- to-one correspondence by defining a scale. ● Different representations tell different stories about the same data. Could be addressed throughout the year in science/Social as well.	4ST1.1 Students evaluate the use of scale in graphical representations of data. ● Representation is part of a statistical problem-solving process. 4ST1.2 Students evaluate the use of scale in graphical representations of data. ● Representation can express many- to-one correspondence by defining a scale. ● Different representations tell different stories about the same data. Could be addressed throughout the year in science/Social as well.