Alberta Mathematics Sample Year Plan

Grade 5

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.

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 5 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, Quantitative Information and Spatial Information

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

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.*

This document has been designed to consider the Bridging Needs for new implementation. Many of the highlighted areas will be removed in subsequent years.

Sample Year at a Glance: Mathematics - Grade 5

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

September	October	November

Number: Quantity is measured with numbers that enable counting, labelling, comparing and operating. (use money as concept/manipulative and consider FL)

September	October	November
5N1 Students analyze patterns in place value • Place value symmetry extends infinitely to the left and right of the ones place. (introduce with basic money skills/ fraction initially - unit fractionof denominator 10 & 100, number line.s) *** students will need time to learn and be fluent with money concepts first 5N2 Students add and subtract within 1 000 000, including decimal number to thousandths, using standard algorithms • Addition and subtraction of numbers with many digits is facilitated by standard algorithms.(initially whole numbers to 100 - 1 000) 5N4 Students multiply and divide natural number. within 100 000, including with standard algorithms. (limit to math facts of 12x12 review, 2 digit x 1 and 2 digit multiplication) • Standard algorithms are efficient procedures for multiplication and division. * Review of math facts with different strategies should be ongoing	5N1 Students analyze patterns in place value • Place value symmetry extends infinitely to the left and right of the one's place. (introduce to hundredths in context, number line.s, finding numbers between, compare and order with emphasis on money, dollars and cents) *** students will need time to learn and be fluent with money concepts first 5N2 Students add and subtract within 1 000 000, including decimal numbers to thousandths, using standard algorithms • Addition and subtraction of numbers with many digits is facilitated by standard algorithms.(money values ($1.00 - $1000.00) 5N4 Students multiply and divide natural number. s within 100 000, including with standard algorithms. (limit to math facts of 12 x12 review, 2 digit x 1 and 2 digit multiplication) • Standard algorithms are efficient procedures for multiplication and division. * Review of math facts with different strategies should be ongoing	5N1 Students analyze patterns in place value • Place value symmetry extends infinitely to the left and right of the one's place. (introduce to thousandths in context, number line., finding numbers between, compare and order, rounding) 5N2 Students add and subtract within 1 000 000, including decimal numbers to thousandths, using standard algorithms. • Addition and subtraction of numbers with many digits is facilitated by standard algorithms.(estimation included) 5N3 Students determine divisibility of natural number. s • A number is divisible by another number if it can be divided with a remainder of 0. 5N4 Students multiply and divide natural number. s within 100 000, including with standard algorithms. • Standard algorithms are efficient procedures for multiplication and division 2 digit by 1 digit). * Review of math facts with different strategies should be ongoing

Sample Year at a Glance: Mathematics - Grade 5

September 2023 ----------		---------- November 2023
September	**October**	**November**
Geometry: Shapes are defined and related by geometric attributes.		
5G1.1 Students investigate symmetry as a geometric property (also tie intonumber line. and place value, no rotationalsymmetry - see grade 2 folder for some ideas as well) • Symmetry is a property of shapes.		5G1.1 Students investigate symmetry as a geometric property • Symmetry is a property of shapes. • Symmetry can be created and can occur in nature. 5G1.2 Students investigate symmetry as a geometric property.

Sample Year at a Glance: Mathematics - Grade 5

September 2023 ----------		---------- November 2023
September	**October**	**November**
• Symmetry can be created and can occur in nature.(ensure use of visuals for symmetry- see Grade 2 folder for some ideas as well)		• Symmetry is related to other geometric properties.
Coordinate Geometry:Location and movement of objects in space can be communicated using a coordinate grid.		
	5CG1 Students relate location to position on a grid. • Location can describe the position of shapes in space. • Location can be described precisely using a coordinate grid.	
Algebra: Equations express relationships between quantities,.		
	5A1.1 Students interpret numerical and algebraic expression .(tie into math facts, review order of operation) • Numerical expressions represent a quantity of known value. • parentheses change the order of operation in a numerical expression	5A1.1 Students interpret numerical and algebraic expression (5N2 link) • Numerical expressions represent a quantity of known value. • parentheses change the order of operation in a numerical expression

Sample Year at a Glance: Mathematics - Grade 5

December 2023 ---------- January 2024

December	January	February
Number: Quantity is measured with numbers that enable counting, labelling, comparing and operating.		
5N4 Students multiply and divide natural number. s within 100 000, including with standard algorithms algorithms. ● Standard algorithms are efficient procedures for multiplication and division (begin with 3 digit by 1 digit, include alternate strategies for division). * Review of math facts with different strategies should be ongoing	5N5 Students interpret improper fraction. ● fraction allow counting and measuring between whole quantities, (begin with review of multiple different unit fraction on a number lnumber line.ine, money could be the starting focus) ● improper fraction and mixed number that represent the same number are associated with the same point on the number line.. (leave for later) * Review of math facts with different strategies should be ongoing	5N5 Students interpret improper fractions. ● fraction allow counting and measuring between wholequantities,. ● improper fraction and mixed number that represent the same number are associated with the same point on the number line.. (interpret related to money initially) 5N6 Students add and subtract fraction with common denominatorsrs. ● fraction with common denominatorss are multiples of the same unit fraction. ● Properties for addition and subtraction of natural number. ● s apply to fractions. * Review of math facts with different strategies should be ongoing
Algebra: Equations express relationships between quantities,		
5A1.1 Students interpret numerical and algebraic Expression (link with 5N4) ● Numerical Expression represent a quantity of known value. ● parentheses change the order of operation in a numerical expression		5A1.2 Students interpret numerical and algebraic Expression. ● Algebraic expression use variables to represent quantities, of unknown value. ● Algebraic expression may be composed of one

December 2023 ----------		---------- January 2024
December	**January**	**February**
		algebraic term or the sum of algebraic and constant terms . (focus more on expression and writing them in real contexts)
Measurement: Attributes such as length, area , volume and angle are quantified by measure.		
	5M1 Students estimate and calculate **area** using standard units. (can also use to review plotting points on a coordinate grid) ● Area can be expressed in various units according to context and desired precision. ● Rectangles with the same **area** can have different perimeters. (edited)	5M1 Students estimate and calculate **area** using standard units ● Area can be expressed in various units according to context and desired precision. ● Rectangles with the same **area** can have different perimeters.

Sample Year at a Glance: Mathematics - Grade 5

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

March	April	May	June
Number: Quantity is measured with numbers that enable counting, labelling, comparing and operating.			
5N5 Students interpret improper fractions. (comparing to benchmarks) ● fraction allow counting and measuring between whole quantitie,. ● improper fraction and mixed number that represent the same number are associated with the same point on thenumber line.. 5N6 Students add and subtract fractions with common denominatorss ● fraction with common denominatorss are multiples of the same unit fraction. ● Properties for addition and subtraction of natural number. ● s apply to fraction. (tie in with improper fractions) * Review of math facts with different strategies should be ongoing	5N7 Students employ ratios to represent relationships between quantitie,. ● A ratio is a comparison of two quantitie, in a specific situation. ● fractions, decimals, ratios, and percentages can represent the same part-whole relationship (tie into money examples) * Review of math facts with different strategies should be ongoing	* Review of math facts with different strategies should be ongoing	● Review of Key Concepts ● Deep Dive Connecting Learning ● Final Assessment?
Algebra: Equation **express relationships between** quantities,			

Sample Year at a Glance: Mathematics - Grade 5

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

March	April	May	June
5A1.2 Students interpret numerical and algebraic Expression. • Algebraic Expression use variables to represent quantities, of unknown value. • Algebraic Expression may be composed of one algebraic term or the sum of algebraic andconstan terms. (Focus more on evaluating Expression in preparation for equations)	5A1.3 Students interpret numerical and algebraicExpression. • Equality is preserved by applying inverse operations to algebraic Expressionon each side of an equation. • The Expression on each side of an equation will be equal when evaluated using the correctsolution.	5A1.3 Students interpret numerical and algebraic Expression. • Equality is preserved by applying inverse operations to algebraic Expression on each side of an equation. • The expression on each side of an equation will be equal when evaluated using the correct solution.	
Measurement: Attributes such as length, area, volume and angle are quantified by measure.		Patterns: Awareness of patterns supports problem solving in various situations.	
	5M1 Studentsestimate and calculate **area** using standard units. • Area can be expressed in various units according to context and desired precision.(link to ratios) • Rectangles with the same **area** can have different perimeters.	5P1 Students relate terms to position within an arithmetic sequence • Each term of an arithmetic sequence corresponds to a natural number. • indicating position in the sequence.	5P1 Students relate terms to position within anarithmetic sequence. • Each term of an arithmetic sequence corresponds to a natural number. • indicating position in the sequence.
		Statistics: The science of collecting, analyzing, visualizing and interpreting data can inform understanding and decision making.	

Sample Year at a Glance: Mathematics - Grade 5

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

March	April	May	June
		5ST1.1 Students analyze frequency in categorical data. ● Frequency is a count of categorized data, but it is not the data value itself. 5ST1.2 Students analyze frequency in categorical data. ● Frequency can be a count of categorized responses to a question. ● Frequency can be used to summarize data. ● Frequency can be represented in various forms Could be addressed throughout the year in Science/Social as well.	5ST1.1 Students analyze frequency in categorical data. ● Frequency is a count of categorized data, but it is not the data value itself. 5ST1.2 Students analyze frequency in categorical data. ● Frequency can be a count of categorized responses to a question. ● Frequency can be used to summarize data. ● Frequency can be represented in various forms Could be addressed throughout the year in Science/Social as well.