Unpacking and Planning for for the New Grade 4 Math

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Central Alberta Regional Consortium

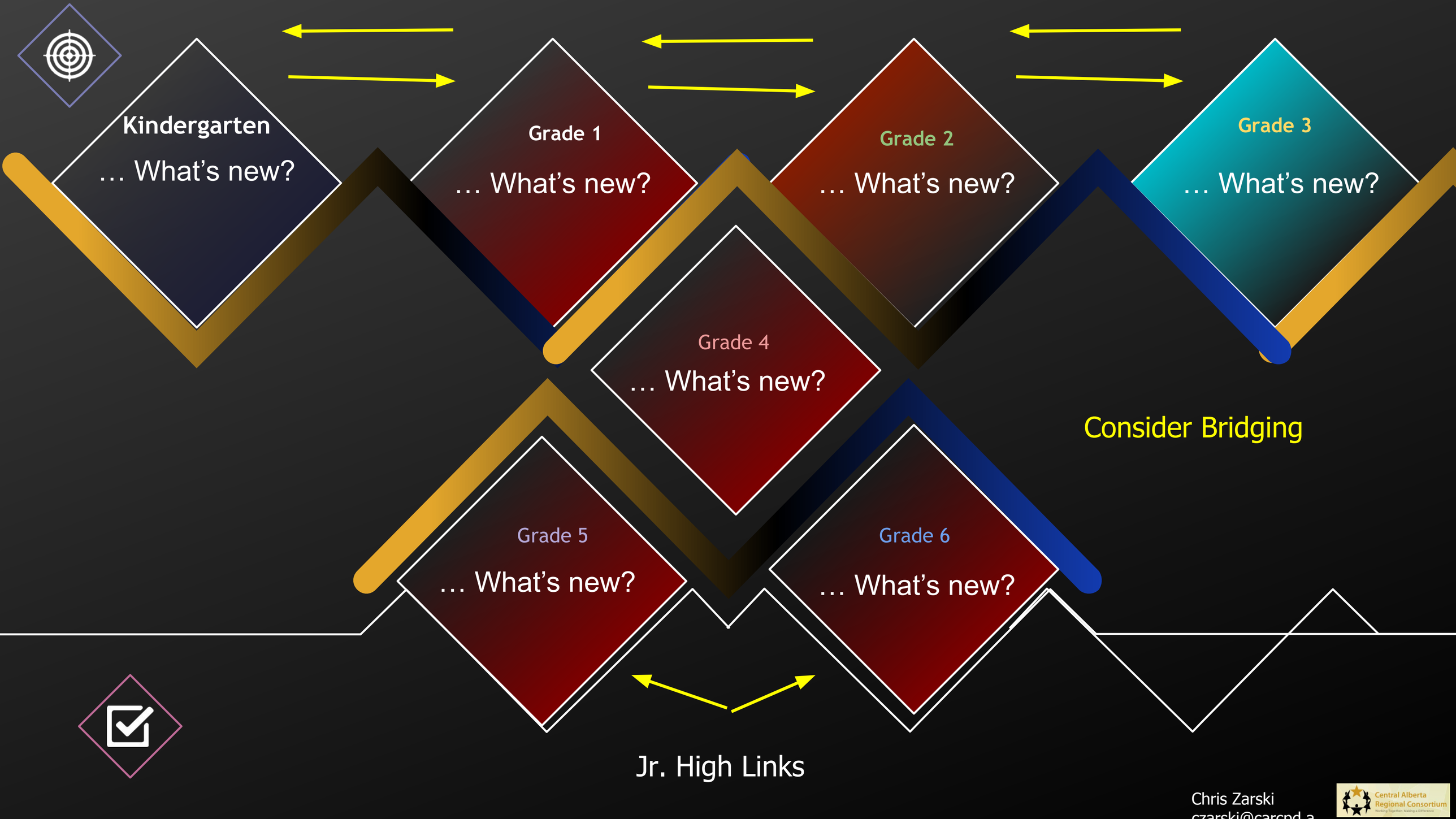
In the spirit of reconciliation, we want to acknowledge that this gathering is taking place on traditional lands across the province of Alberta, home to many diverse First Nations, Métis and Inuit peoples. We acknowledge that this land is a traditional meeting ground giving voice to its original peoples and the story of creation of this country in a way that history has forgotten.

Alberta Regional Consortia

Before we start:

- list the activities/assessments you undertake when you start Grade 4 in any given year.
- Why do you start at these points?

Alberta**Regional**Consortia



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Central Alberta Regional Consortium
Working Together. Making a Difference

Grade 4 Document Overview

Architecture and Design of Provincial K–12 Curriculum

Organizing Idea

Guiding Question

Learning Outcome

Knowledge, Understanding, Skills and Procedures

Literacy, Numeracy, and Competencies

Alberta

Document Overview

Numbered Outcomes including Financial Literacy Outcomes

Architecture of the Curriculum

Broad/General Idea or Understanding

More Specific Knowledge,
Understandings, and Skills

Organizing Idea

Guiding Question
&
Learner Outcome

KUSPs

- **Knowledge**
- **Understanding**
- **Skills & Processes**

Organizing Idea

- statement of the learning
- spans all or most grades
- main concepts

Organizing Idea	Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.								
Guiding Question	How can quantity contribute meaning to daily life?			How can quantity be communicated?			How can quantity contribute to a sense of number?		
Learning Outcome	KN1.1 Children investigate quantities to 10.			1N1.1 Students interpret and explain quantities to 100.			2N 1.1 Students analyze quantity to 1000.		
	Knowledge	Understanding	Skills & Procedures	Knowledge	Understanding	Skills & Procedures	Knowledge	Understanding	Skills & Procedures
	Quantity can be represented using objects pictures words numerals	Quantity can be the number of objects in a set.	Recognize a number of familiar objects as a quantity. Represent a quantity in different ways. Relate a numeral to a specific quantity.	A numeral is a symbol or group of symbols used to represent a number. The absence of quantity is represented by 0.	Quantity is expressed in words and numerals based on patterns. Quantity in the world is represented in multiple ways.	Represent quantities using words, numerals, objects, or pictures. Identify a quantity of 0 in familiar situations.	Any number of objects in a set can be represented by a natural number. The values of the places in a four-digit natural number are thousands, hundreds, tens, and ones. Places that have no value within a given number use zero as a placeholder. The number line is a spatial representation of quantity.	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.	Represent quantities using words and natural numbers. Identify the digits representing thousands, hundreds, tens, and ones based on place in a natural number. Relate a number, including zero, to its position on the number line.

Organizing Ideas

Organizing Ideas	K	1	2	3	4	5	6
Number							
Algebra							
Geometry							
Coordinate Geometry							
Measurement							
Patterns							
Time							
Statistics							

Guiding Question

- informed by the organizing idea and frames the learning outcome
- intended to spark curiosity and wonder about the LO
- identifies more specific concepts

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Learning Outcome

- describes what students are required to know, understand, and be able to do by the end of a grade.
- must be assessed and reported.
- discipline (subject) specific
- key concepts to be learned and assessed are identified.

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KUSPs: Knowledge

- how facts and knowledge fit together in a logical and meaningful order
- organized knowledge to understand concepts, skills, and procedures which can be applied to new situations

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KUSPs: Understanding

- Knowledge includes the facts, symbols, rules, principles, and concepts.

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KUSPs: Skills & Procedures

- what students do to demonstrate their knowledge and understanding

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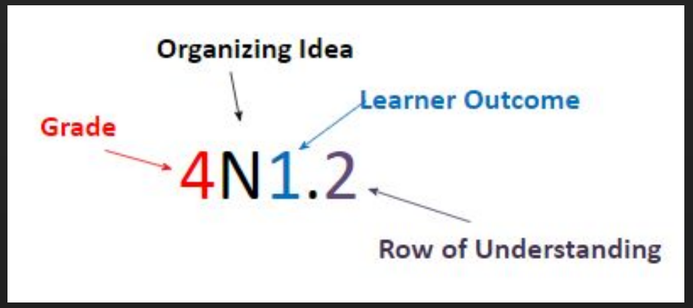
Numbered Outcomes

Mathematics K-6
Numbered Outcomes



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	Grade 3			Grade 4		
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?**			**How can place value facilitate interpretation of number?**		
Learning Outcome	**3N1 Students interpret place value within 100 000.**			**4N1 Students apply place value to decimal numbers.**		
	Knowledge	Understanding	Skills & Procedures	Knowledge	Understanding	Skills & Procedures
	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. 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	Place value is the basis for the base-10 system. Place value determines the value of a digit based on its place in a number relative to the one's place. Place value is used to read, write, and compare numbers.	Identify the place value of each digit in a natural number. Relate the values of adjacent places. Determine the value of each digit in a natural number. Express natural numbers using words and numerals. Express various compositions of a natural number using place value. Round natural numbers to various places. Compare and order natural numbers. Express the relationship between two numbers using <, >, or =. Count and represent the value of a collection of nickels, dimes, and quarters as cents. Count and represent the value of a collection of loonies, toonies, and bills as dollars. Recognize French and English	For numbers in base-10, each place has one-tenth the value of the place to its left. Multiplying or dividing a number by 10 corresponds to shifting place value one position to the left or right, respectively. The decimal separator is a point in English and a comma in French. Numbers, including decimal numbers, can be composed in various ways using place value. A zero placed to the right of the last digit in a decimal number does not change the value of the number. The word *and* is used to indicate the decimal point when reading a number.	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.	Identify the place value of each digit in a number, including tenths and hundredths. Relate the values of adjacent places, including tenths and hundredths. Determine the value of each digit in a number, including tenths and hundredths. Express numbers, including decimal numbers, using words and numerals. Express various compositions of a number, including decimal numbers, using place value. Recognize decimal notation expressed in English and in French. Round numbers to various places, including tenths. Compare and order numbers, including decimal numbers. Express the relationship between two numbers, including decimal numbers, using <, >, or =.

	Grade 3			Grade 4		
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?**			**How can fractions be characterized in different ways?**		
Learning Outcome	**3N4 Students interpret fractions in relation to one whole.**			**4N5.1 Students apply equivalence to the interpretation of fractions.**		
	Knowledge	Understanding	Skills & Procedures	Knowledge	Understanding	Skills & Procedures
	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, $(\frac{a}{b})$, 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	Equivalent fractions are associated with the same point on the number line. Equivalent fractions can be created by partitioning each equal part of a fraction in the same way. Partitioning a fraction can be interpreted as multiplying the numerator and denominator of a fraction by the same number. A fraction can be simplified to an equivalent form by dividing the numerator and denominator by a common factor. The numerator and denominator of a fraction in simplest form have no common factors. Dividing the numerator and denominator of a fraction by their greatest common factor will achieve simplest form.	There are infinitely many equivalent fractions that represent the same number. Exactly one of infinitely many equivalent fractions is in simplest form.	Model equivalent fractions by partitioning a whole in multiple ways. Determine fractions equivalent to a given fraction. Relate the position of equivalent fractions on the number line. Identify fractions in which the numerator and denominator have a common factor. Simplify a given fraction by dividing the numerator and denominator by a common factor. Express a fraction in simplest form. Compare and order fractions.

& Financial Literacy for K-2

Organizing Idea	Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.					
Guiding Question				4N5.2 Students apply equivalence to the interpretation of fractions.		
				Knowledge	Understanding	Skills & Procedures
				Fractions and decimal numbers can represent the same number. Decimals can be expressed as fractions with a denominator that is equivalent to the place value of the last non-zero digit of the decimal number.	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.	Relate fractions and equivalent decimal numbers to their positions on the number line. Express fractions as decimal numbers and vice versa, limited to tenths and hundredths.

	Grade 3			Grade 4		
Organizing Idea	Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.					
Guiding Question				How can percentages standardize part-whole relationships?		
Learning Outcome				4N6 Students interpret percentages.		
				Knowledge	Understanding	Skills & Procedures
				Percentage is represented symbolically with %. Decimals can be expressed as percentages by multiplying by 100. Percentages can be expressed as decimals by dividing by 100. One percent represents one hundredth of a whole.	Fractions, decimals, and percentages can represent the same part-whole relationship.	Investigate percentage in familiar situations. Compare percentages within 100%. Express the fraction, decimal, and percentage representations of the same part-whole relationship.

LINK

Language Conventions in the Curriculum

Language Conventions

Language Convention	Interpretation for Implementation	Example from Curriculum
including/include(s)	A list following "including" or "include(s)" contains **required** knowledge. Students must know all elements of the list in order to achieve the learning outcome.	Subtraction can be applied in various contexts, **including** • comparing two quantities • taking away one quantity from another • finding a part of a whole
such as	A list following "such as" provides a list of **illustrative examples** that support the learning outcome. Teachers may use any of these examples, or they may choose others.	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
content in parentheses	Words in parentheses are **subject-specific terms** for teachers and parents. These words follow the associated age-appropriate terms for students.	A shape can change orientation or position through slides **(translations)**, turns **(rotations)**, or flips **(reflections)**.

Verbs Are Defined by Context

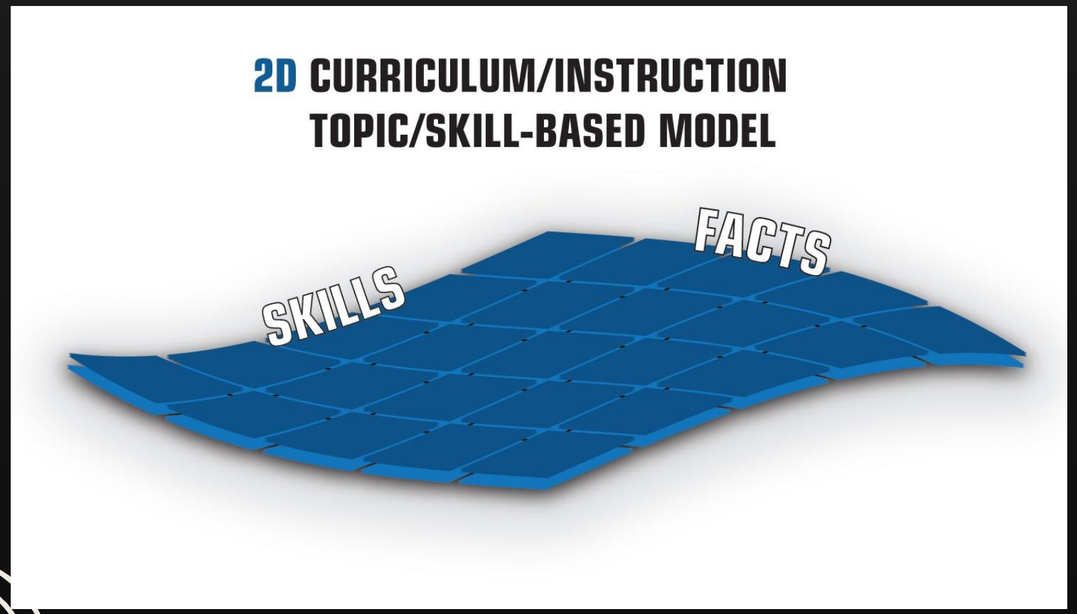
Kindergarten: Number	Grade 1: Geometry	Grade 3: Number
LO: Children **interpret** compositions of quantities within 10.	**LO:** Students **interpret** shape in two and three dimensions.	**LO:** Students **interpret** fractions in relation to one whole.
Verbs from Associated Skills and Procedures	Verbs from Associated Skills and Procedures	Verbs from Associated Skills and Procedures
Identify **Compose** **Recognize**	**Identify** **Model** **Sort** **Compose** **Decompose** **Investigate**	**Model** **Visualize** **Identify** **Name** **Express** **Compare**

Finding Concepts

2D vs 3D

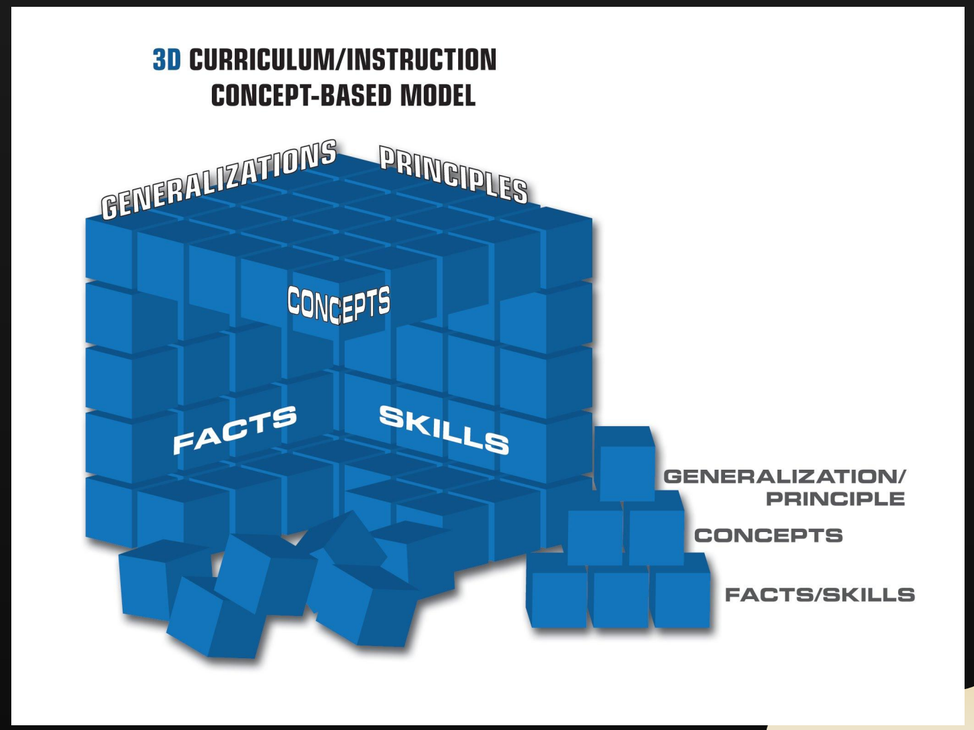
2D

- **Coverage-centered**
  “inch deep, mile wide”



3D

- **Idea-centered**
  facts and skills provide a foundation to understand conceptual, transferable ideas



2D vs 3D

2D

- **Intellectually shallow**

  lacks a conceptual focus to ignite synergistic thinking

3D

- **Intellectual depth**

  a “conceptual lens” or focus, requires mental processing between the lower and conceptual levels of thinking - producing intellectual depth and understanding

2D vs 3D

2D

- **Inability to transfer factual knowledge**

  facts do not transfer; locked in time, place, or situation

3D

- **Intellectual depth**

  a “conceptual lens” or focus, requires mental processing between the lower and conceptual levels of thinking - producing intellectual depth and understanding

So What is a Concept?

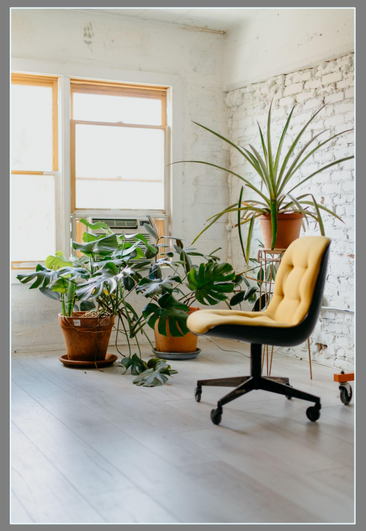
Concepts are...

- Timeless
- Universal
- Abstract
- Transferable

A concept is ...

- an organizing idea of 1 -2 words
- with distinct attributes
- that are shared across multiple examples





Chair is a Concept

Macroconcept

Character

English Language Arts

Micro-concepts
Protagonist
Antagonist
Confidante
Foil
Dynamic Character
Static Character

Macroconcept

Region

Geography

Micro-concepts
Physical Environment
Landforms
Growth Rates
Cultural Landscape
Topography

Macroconcept

Measurement

Mathematics

Micro-concepts
Units of Measure
Standard unit
Conversion
Estimation
Linear Measure
Vectors

Concepts

“The reason experts remember more
is that what novices see as separate pieces of information, experts see as organized sets of ideas.”

How Students Learn, 2001
National Research Council

Stern, J. *Conceptual Understanding in Classroom Practice.* Delivered 27 April 2020

Grade 4

How can place value facilitate interpretation of number?

4N1 - Students apply place value to decimal numbers.

Knowledge	Understanding	Skills & Procedures
For numbers in base-10, each place has one-tenth the value of the place to its left. Multiplying or dividing a number by 10 corresponds to shifting place value one position to the left or right, respectively. The decimal separator is a point in English and a comma in French. Numbers, including decimal numbers, can be composed in various ways using place value. A zero placed to the right of the last digit in a decimal number does not change the value of the number. The word *and* is used to indicate the decimal point when reading a number.	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.	Identify the place value of each digit in a number, including tenths and hundredths. Relate the values of adjacent places, including tenths and hundredths. Determine the value of each digit in a number, including tenths and hundredths. Express numbers, including decimal numbers, using words and numerals. Express various compositions of a number, including decimal numbers, using place value. Recognize decimal notation expressed in English and in French. Round numbers to various places, including tenths. Compare and order numbers, including decimal numbers. Express the relationship between two numbers, including decimal numbers, using <, >, or =. Express a monetary value in cents as a monetary value in dollars using decimal notation.

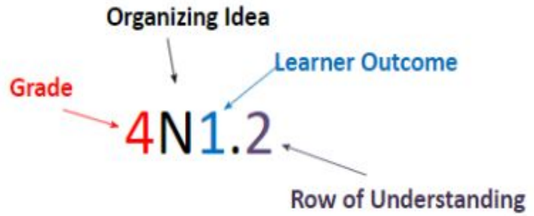
How can place value facilitate interpretation of number?

4N1 Students apply place value to decimal numbers.

Knowledge	Understanding	Skills & Procedures
For **numbers** in base-10, each **place** has one-tenth the **value** of the place to its left. Multiplying or dividing a **number** by 10 corresponds to shifting **place value** one **position** to the left or right, respectively. The **decimal separator** is a **point** in English and a **comma** in French. **Numbers**, including **decimal numbers**, can be composed in various ways using **place value**. A **zero** placed to the right of the last **digit** in a **decimal number** does not change the **value** of the **number**. The word *and* is used to	**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**.	Identify the **place value** of each **digit** in a **number**, including **tenths** and **hundredths**. Relate the **values** of adjacent places, including **tenths** and **hundredths**. Determine the **value** of each **digit** in a **number**, including **tenths** and **hundredths**. Express **numbers**, including **decimal numbers**, using **words** and **numerals**. Express various **compositions** of a **number**, including **decimal numbers**, using **place value**. Recognize **decimal notation** expressed in English and in French.

Curriculum Comparison Document

Grade 4 Curriculum Comparison to the New Alberta Curriculum



N = Number **P= Patterns** **M = Measurement** **Time = T** **Geometry = G** Algebra = A **Statistics = ST**

Outcomes from 2007 Curriculum	**Understandings** from April Draft (New **Understandings**)	New Learner Outcomes, Knowledge and Skills & Procedures	
Number Strand	**NUMBER**		
Specific Outcome 1 <REMOVED> Represent and describe whole numbers to 10 000, pictorially and symbolically.	UNDERSTANDING	LEARNING OUTCOME KNOWLEDGE	SKILLS AND PROCEDURES
Specific Outcome 2 <REMOVED> Compare and order numbers to 10 000.	UNDERSTANDING	LEARNING OUTCOME	SKILLS AND PROCEDURES

N = Number **P= Patterns** **M = Measurement** **Time = T** **Geometry = G** **Algebra = A** **Statistics = ST**

Outcomes from 2007 Curriculum	**Understandings** from April Draft (New **Understandings**)	New Learner Outcomes, Knowledge and Skills & Procedures	
Number Strand	**NUMBER**		
Specific Outcome 1 <REMOVED> Represent and describe whole numbers to 10 000, pictorially and symbolically.	**UNDERSTANDING**	**LEARNING OUTCOME** **KNOWLEDGE**	**SKILLS AND PROCEDURES**
Specific Outcome 2 <REMOVED> Compare and order numbers to 10 000.	**UNDERSTANDING**	**LEARNING OUTCOME** **KNOWLEDGE**	**SKILLS AND PROCEDURES**
Specific Outcome 3 Demonstrate an understanding of addition of numbers with answers to 10 000 and their corresponding subtractions (limited to 3- and 4-digit numerals) by: • using personal strategies for adding and subtracting • estimating sums and differences • solving problems involving addition and subtraction. **Specific Outcome 11** Demonstrate an understanding of addition and subtraction of decimals (limited to	**UNDERSTANDING** Standard algorithms for addition and subtraction may be used for any decimal number..	**LEARNING OUTCOME** **4N2 Students add and subtract within 10 000, including decimal numbers to hundredths.** **KNOWLEDGE** Standard algorithms for addition and subtraction of decimal numbers are conventional procedures based on place value. Estimation can be used to check the reasonableness of a sum or difference.	**SKILLS AND PROCEDURES** Add and subtract numbers, including decimal numbers, using standard algorithms. Assess the reasonableness of a sum or difference by estimation. Solve problems using addition and subtraction, including problems involving money.

Specific Outcome 4 <REMOVED> Apply the properties of 0 and 1 for multiplication and the property of 1 for division.	**UNDERSTANDING**	**LEARNING OUTCOME** **KNOWLEDGE**	**SKILLS AND PROCEDURES**
Specific Outcome 5 Describe and apply mental mathematics strategies to determine basic multiplication facts to 9 × 9 and related division facts. **Specific Outcome 6** Demonstrate an understanding of multiplication (2- or 3-digit by 1-digit) to solve problems by: • using personal strategies for multiplication with and without concrete materials • using arrays to represent multiplication • connecting concrete representations to symbolic representations • estimating products • applying the distributive property. **Specific Outcome 7** Demonstrate an understanding of division (1-digit divisor and up to 2-digit dividend) to solve problems by: • using personal strategies for dividing with	**UNDERSTANDING** 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.	**LEARNING OUTCOME** **4N3 Students explain properties of prime and composite numbers using multiplication and division.** **KNOWLEDGE** A factor of a number is a divisor of that number. A number is a multiple of any of its factors. A prime number has factors of only itself and one. A composite number has factors other than one and itself. Zero and one are neither prime nor composite numbers	**SKILLS AND PROCEDURES** Determine the factors of a number within 100. Describe a number as prime or composite. Determine the first five multiples of a given number within 100. Recognize the greatest common factor (greatest common divisor) of two numbers within 100.
	UNDERSTANDING Multiplication and division strategies can be chosen based on the nature of the numbers.	**LEARNING OUTCOME** **4N4 Students multiply and divide natural numbers within 10 000.** **KNOWLEDGE** Recall of multiplication and division number facts facilitates multiplication and division strategies. Standard algorithms facilitate multiplication and division of natural numbers that have multiple digits. Estimation can be used to check the reasonableness of a product or quotient.	**SKILLS AND PROCEDURES** Recall and apply multiplication number facts, with factors to 12, and related division number facts. Investigate patterns in multiplication and division of natural numbers by 10, 100, and 1000. Multiply and divide 3-digit natural numbers by 1-digit natural numbers using personal strategies. Examine standard algorithms for multiplication and division. Multiply and divide 3-digit natural numbers by 1-digit natural numbers using standard algorithms.

Link

Sample Year at a Glance

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

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.

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 00) • 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)	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	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

Sample Year at a Glance: Mathematics - Grade 4

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.

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 Link	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

2+2=4

42:9

x

+

+

%

b

a

c

Taking Inventory

September 2022 ---------- 2022

September	October

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.(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 a remainder of 0.

How can place value facilitate interpretation of number?

4N1 Students apply place value to decimal numbers.

Knowledge	Understanding	Skills & Procedures
For numbers in base-10, each place has one-tenth the value of the place to its left. Multiplying or dividing a number by 10 corresponds to shifting place value one position to the left or right, respectively. The decimal separator is a point in English and a comma in French. Numbers, including decimal numbers, can be composed in various ways using place value. A zero placed to the right of the last digit in a decimal number does not change the value of the number. The word *and* is used to indicate the decimal point when reading a number.	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.	Identify the place value of each digit in a number, including tenths and hundredths. Relate the values of adjacent places, including tenths and hundredths. Determine the value of each digit in a number, including tenths and hundredths. Express numbers, including decimal numbers, using words and numerals. Express various compositions of a number, including decimal numbers, using place value. Recognize decimal notation expressed in English and in French. Round numbers to various places, including tenths. Compare and order numbers, including decimal numbers. Express the relationship between two numbers, including decimal

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)

2+2=4

Notes: How do you leverage money?

- Work within 100, leave decimals out initially
- Learn money and values
- Put together 2 digit whole number dollar amounts
- Count out bills to end in a 2-digit whole dollar amount
- Make change to a dollar, $5.00, $10.00, change for $100.00
- Addition and subtraction by counting back change
- Compare money amounts
- Describe a 2 digit/3 digit dollar amount in place value terms
- Practice reading and writing 3 digit numbers - relate to $100/$10/loonies
- Regroup money - use mats *** must be comfortable and fluent in money
- Dice rolling, write largest number and smallest number
- Multiply dice
- Subitizing cards
-

How can understanding of addition and subtraction be extended to decimal numbers?		
4N2 Students add and subtract within 10 000, including decimal numbers to hundredths.		
Knowledge	Understanding	Skills & Procedures
Standard algorithms for addition and subtraction of decimal numbers are conventional procedures based on place value. Estimation can be used to check the reasonableness of a sum or difference.	Standard algorithms for addition and subtraction may be used for any decimal numbers.	Add and subtract numbers, including decimal numbers, using standard algorithms. Assess the reasonableness of a sum or difference using estimation. Solve problems using addition and subtraction, including problems involving money.

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)

Notes:

- Could use dominos turned sideways
- Read and write 3 digit numbers
- Compare numbers

How can multiplication and division characterize the composition of numbers?

4N3 Students explain properties of prime and composite numbers using multiplication and division.

Knowledge	Understanding	Skills & Procedures
A factor of a number is a divisor of that number. A number is a multiple of any of its factors. A prime number has factors of only itself and one. A composite number has factors other than one and itself. Zero and one are neither prime nor composite numbers.	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.	Determine the factors of a numbe within 100. Describe a number as prime or composite. Determine the first five multiples of a given number within 100. Recognize the greatest common factor (greatest common divisor) of two numbers within 100.

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.

Notes:

- Skip counting
- Work on number facts 10x10
- Factor composite numbers within 100 (factor trees)
- Money arrays
-

How can multiplication and division be interpreted?

4N4 Students multiply and divide natural numbers within 10 000.

Knowledge	Understanding	Skills & Procedures
Recall of multiplication and division number facts facilitates multiplication and division strategies. Standard algorithms facilitate multiplication and division of natural numbers that have multiple digits. Estimation can be used to check the reasonableness of a product or quotient.	Multiplication and division strategies can be chosen based on the nature of the numbers.	Recall and apply multiplication number facts, with factors to 12,and related division number facts. Investigate patterns in multiplication and division of natural numbers by 10, 100, and 1000. Multiply and divide 3-digit natural numbers by 1-digit natural numbers using personal strategies. Examine standard algorithms for multiplication and division. Multiply and divide 3-digit natural numbers by 1-digit natural numbers using standard algorithms. Divide and express a quotient with or without a remainder. Investigate strategies for estimation of products and quotients. Assess the reasonableness of a product or quotient using estimation. Solve problems using multiplication and division

4N4 Students multiply and divide natural numbers within 10 000.(facts to 100 10x10)

- Multiplication and division strategies can be chosen based on the nature of the numbers

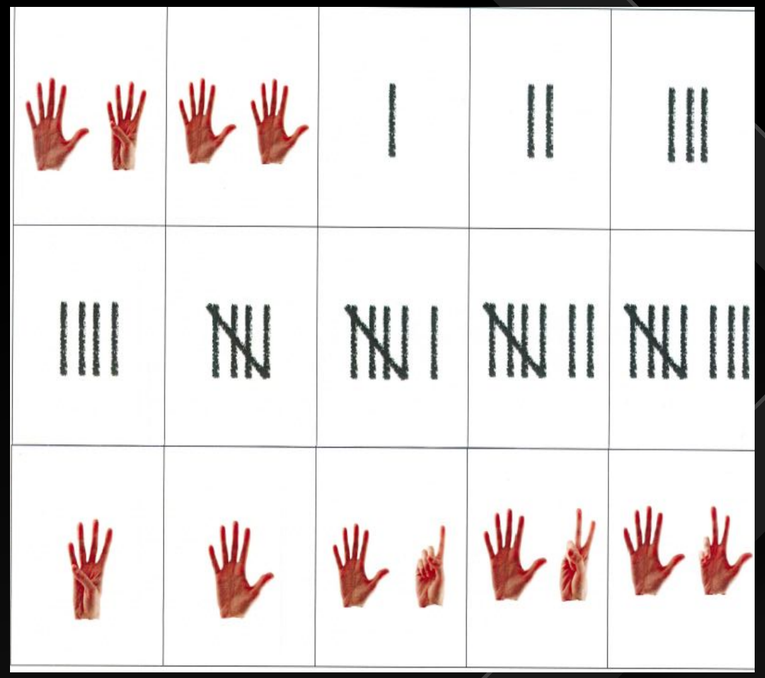
4N5.1 Students apply equivalence to the interpretation of fractions

- There are infinitely many equivalent fractions that

Notes:

- Dice rolling, write largest number and smallest number
- Multiply dice
- Subitizing cards
- Arrays of money
- Multiplication with money amounts
- Closest to 100 grid board

Additional Starting Points



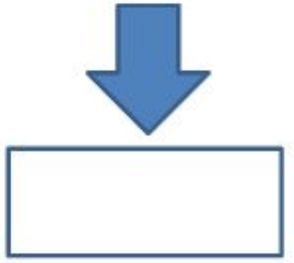
MONEY

APP


twenty
three
4

Place Value Chart Beginning with Money (Loonie, $5, $10, $50, $100)



Resource Folder

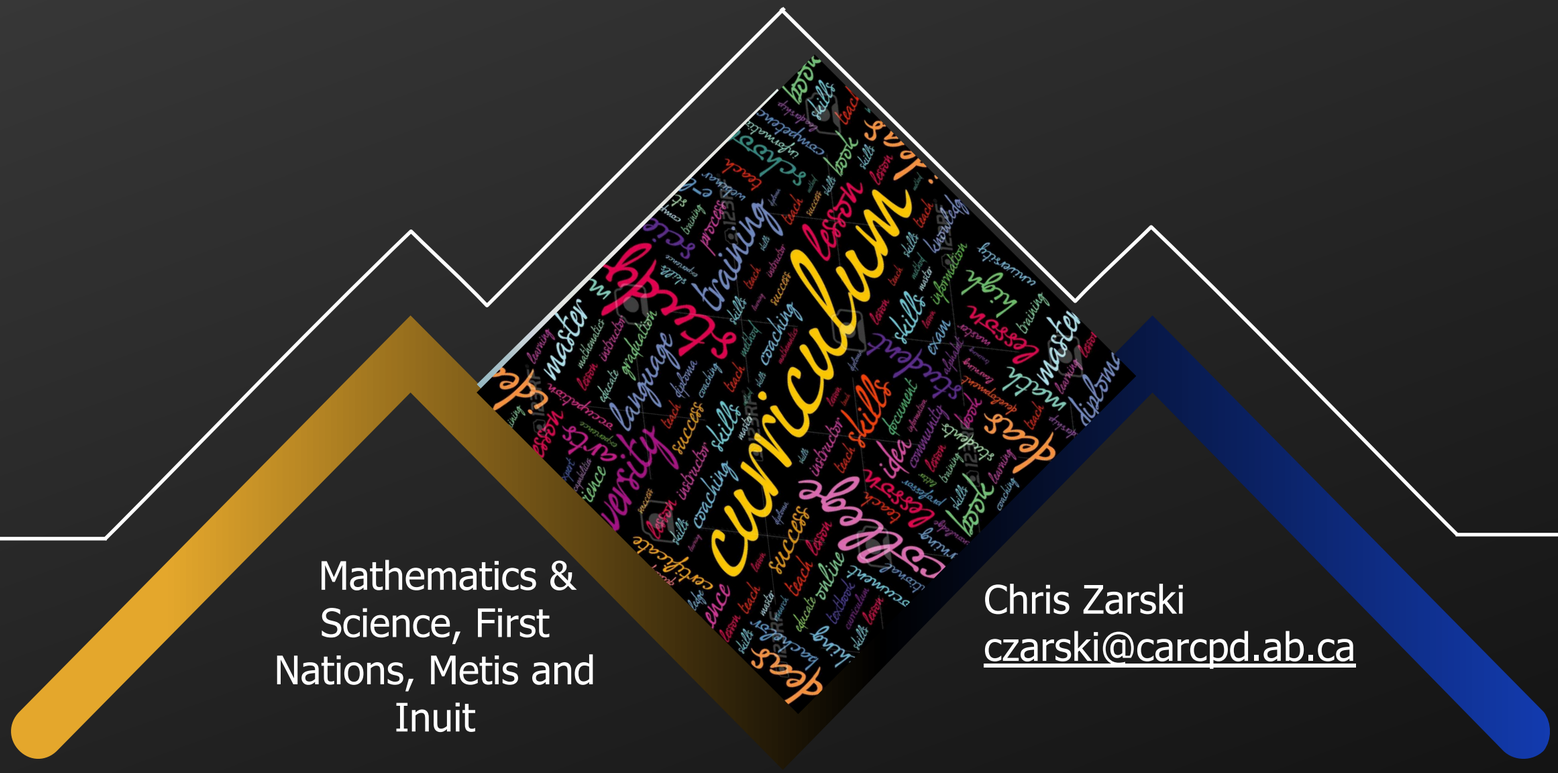
Parent Summary

www.arpdc.ab.ca
www.movingforwardcurriculum.ca (Shutting down June 30)

Alberta Regional Consortia

Planning Sessions

Session 1 - Sept/Oct June 5
Session 2 - Nov/Dec Oct 23
Session 3 - Jan/Feb Dec 4
Session 4 - Mar/Apr Feb 13
Session 5 - May/June April 16



Mathematics & Science, First Nations, Metis and Inuit

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Thank You!

Please don’t hesitate to connect.