4 NUMBER

GRADE FOUR MATH: NUMBER
LONG RANGE PLANNING - CESD

Please note:

- These documents may be used to **support planning** for the Grade 4 math curriculum. En Francais
- Financial Literacy has been included here in order to share opportunities for **cross-curricular connections**.
- These documents **will be updated throughout the year,** aligning with the *suggested* Grade 4 Long Range Plan. En Francais
- All included resources are available **at no cost**, however some may require you to download from an outside source.
- Resources from the New Learn Alberta website will require you to login with your google email to access them.

Organizing Ideas:

In order to reduce the size of these documents, each of the Organizing Ideas have their own documents, which you can access below.

- Grade 4 Math - NUMBER - Long Range Planning-CESD
- Grade 4 Math - ALGEBRA - Long Range Planning-CESD
- Grade 4 Math - GEOMETRY - Long Range Planning-CESD
- Grade 4 Math - MEASUREMENT - Long Range Planning-CESD
- Grade 4 Math - PATTERNS - Long Range Planning-CESD
- Grade 4 Math - TIME - Long Range Planning-CESD
- Grade 4 Math - STATISTICS - Long Range Planning-CESD
- Grade 4 Math - FINANCIAL LITERACY - Long Range Planning-CESD

Learning Outcomes:

Moved to tabs on left.

- 4N1 Students apply place value to decimal numbers *Updated October 30, 2025*
- 4N2 Students add and subtract within 10 000, including decimal numbers to hundredths *Updated October 30, 2025*
- 4N3 Students explain properties of prime and composite numbers using multiplication and division *Updated October 30, 2025*
- 4N4 Students multiply and divide natural numbers within 10 000 *Updated November 4, 2025*
- 4N5 Students apply equivalence to the interpretation of fractions. *Updated October 30, 2025*
- 4N6 Students interpret percentages *Updated October 30, 2025*

Vocabulary Legend:

Student language - Important to know	**NEW to Grade**	
Student language	**NEW to Grade**	
Tier 2 words*	Hyperlinked with example or definition	(Professional Language - for the teacher)

Resource Legend:

Teacher Lesson plan | A book in Learning Services or IMC | Video | Printable

APLC SUPPORTING DOCUMENTS

Numbers and Operations Scope and Sequence K-6
This resource provides the Scope and Sequence of outcomes for the Organizational Idea Number and Operations for Alberta K-6 Mathematics.

Webinars

- Session 1: "In this session, we take a look at what could be focused on for the upcoming months in the new Math 4 program. This will assist in planning and instructional strategies as well as resource supports will be provided."
- Session 2: "In this session, we will look at what we might focus on for November and December and towards January. The theme for this session is to make math and the strategies visible to the students to support their learning and thinking. Specifically, we move forward with 4N2 looking at specific supports around Place Value, Addition and Subtraction strategies; 4N3 – unpacking what factors are and how do students define prime and composite numbers; as we move to master 12×12, we review that the product of any two numbers is an area without explicitly providing an area formula;4N4 with Base 10 Blocks and other strategies leaving the bulk of Fraction work to January. Recorded on October 23, 2023."
- Session 3: "In this session, we will look at a review of December plans of Numbers 4N2 and 4N4 and we will review a visual approach to 4N3. We will start our fraction journey in 4N5.1 / 1.2 as well as Algebra 4A1.1 Recorded December 4, 2023."
- Session 4: "In this session, we will look at a review of February outcomes and explore the outcomes 4N5.1 / 5.2 and 4N6 dealing with Fractions, Decimals and Percents for the months of March and April. As well, we will review addition and subtraction to 10 000 and multiplication strategies. The learner outcome of 4T1, Time, will wrap up our session! Recorded

February 13, 2024."
- Renaming the Cuisenaire Rods - fractions and decimals Video

Teaching Combined Classes Webinar

Teaching and Learning of Math Verbs

Single Point Rubrics
- One Point Rubric (Contains Gr ¾ examples)
- Single Point Rubric Explanation and Examples

REMEMBER

Rote memorization focuses on memorizing facts in isolation. This often leads to the belief that math is about memorization and seldom leads to long term retention.

Fluency with facts is developed when students are provided with many opportunities to
- work with facts in a variety of situations, using a variety of models and manipulatives
- connect unknown facts to known facts
- explore patterns within the facts

Other

Important note about LearnAlberta Resources
In order to access LearnAlberta resources, *you must be logged into your LearnAlberta account and have added your teacher certificate number.* If you have not logged in or you have not added your teacher certificate number, you will end up with a "Page not found" error when clicking on one of the links.

Other:
Math Tasks/Manipulatives/Resources

General Manipulatives

Relational Rods
- Relational Rods
  - Slide 1: Each of these 4 images show the number of relational rods in one bag.
  - Slide 2: Images of the relational rods that can be printed or used when making slideshows or handouts.
- Polypad (make a teacher account and make a copy!)
  - This is a simple interactive page that displays each relational rod that is infinitely cloned.

Assessment

Students need opportunities to demonstrate conceptual understanding in a variety of ways, both in formative and summative situations. High quality assessment practices provide opportunities for this when data is triangulated through observations, conversations and product.

Two book series that focus on identifying and analyzing student misconceptions are:
- "Uncovering Student Thinking About Mathematics" Cheryl Rose Tobey et al.
  - In the Common Core Grades 3-6: Alberta Grades 3-6 alignment guide
  - Grades K-8: Alberta K-6 alignment guide
- "Mine the Gap for Mathematical Understanding" by John SanGiovanni et al.
  - Grades K-2: Alberta Grades 1-4 alignment guide
  - Grades 3-5: Alberta Grades 3-6 alignment guide
  - Grades 6-8: Alberta Grades 4-6 alignment guide

4N1 apply place value to decimal numbers

GRADE FOUR MATH: 4N1
LONG RANGE PLANNING - CESD

Number (N)
Quantity is measured with numbers that enable counting, labelling, comparing, and operating.

4N1 Students apply place value to decimal numbers.

UNDERSTANDINGS	KNOWLEDGE	SKILLS & PROCEDURES
1. Decimal numbers are numbers between natural numbers. 2. Decimal numbers are fractions with denominators of 10, 100, etc. 3. The separation between wholes and parts can be represented using decimal notation. 4. Patterns in place value are used to read and write numbers, including wholes and parts.	1. For numbers in base-10, each place has one-tenth the value of the place to its left. 2. Multiplying or dividing a number by 10 corresponds to shifting place value one position to the left or right, respectively. 3. The decimal separator is a point in English and a comma in French. 4. Numbers, including decimal numbers, can be composed in various ways using place value. 5. A zero placed to the right of the last digit in a decimal number does not change the value of the number. 6. The word *and* is used to indicate the decimal point when reading a number.	1. Identify the place value of each digit in a number, including tenths and hundredths. 2. Relate the values of adjacent places, including tenths and hundredths. 3. Determine the value of each digit in a number, including tenths and hundredths. 4. Express numbers, including decimal numbers, using words and numerals. 5. Express various compositions of a number, including decimal numbers, using place value. 6. Recognize decimal notation expressed in English and in French. 7. Round numbers to various places, including tenths. 8. Compare and order numbers, including decimal numbers. 9. Express the relationship between two numbers, including decimal numbers, using <, >, or =. 10. Express a monetary value in cents as a monetary value in dollars using decimal.

SPECIAL CARE AND ATTENTION

Common Misconception
Place value is a complex concept. In the number 8.5, there are 85 tenths not 5 tenths. Learn more at CESD Math Framework: Place Value.

Common Misconception
One of the most common misconceptions we have noticed in students is that the place value chart is a mirror image around the decimal point, and that every “section” has a ones, tens, hundreds”. This causes students to believe there is a “oneths” place after the decimal point, since there is a tenths and hundredths.

Clarification
Grade 3 students focus on place value to 100 000. Grade 5 students focus on place value to 10 000 000. As per an email received from Alberta Education, grade 4 students should remain within the place value limit of 100 000.

Clarification
“4N1.1a Decimal numbers are numbers between natural numbers.” implies that the number 4 can never be a decimal number as it is not “between”. Ensure you engage in discussion around how 4 and 4.0 are the same, similar, and different. One is more precise than the other but both have a value of 4.

Clarification
“4N1.1b Decimal numbers are fractions with denominators of 10, 100, etc.” implies that all decimal numbers can be written as fractions with a denominator of 10, 100, etc. Decimal numbers are based on the base-10 system but can not always be written with a denominator of 10, 100, etc. Pi cannot. Non-terminating decimals such as ⅔ cannot.

Clarification
Clarification, through email, from Alberta Education, October 31, 2024: “Although students are exploring the LOs: Students apply place value to decimal numbers, Students apply equivalence to the interpretation of fractions, and Students interpret percentages under the Number OI in Grade 4, this is the first-year students have encountered decimal place value, converting between fractions and decimals, and working with percentages. Teachers are not required to combine LOs but have the flexibility to choose activities that best meet their students' needs. Therefore, they can apply these skills to order a combination of a fraction, a decimal, and a percent; however, this would be a challenging skill for students.”

Background
Sometimes we say things in order to help students **do** the math rather than **understand** the math. Those statements can create misconceptions and confusion when the statements no longer hold true at later grades. Learn more about particularly challenging

statements at CESD Math Framework: Equality.

VOCABULARY

Base-10	**Decimal point**	Express	Multiply	Place value
Cents	Denominator	Fraction	Natural Number	Recognize
Comma	Determine	Greater than, >	Numeral	Relationship
Compare	Dollars	**Hundredths**	**One-hundredth**	Round*
Compose / composition	Digit*	Identify	**One-tenth**	**Tenths**
Decimal notation	Divide	Less than, <	Order*	Value*
Decimal numbers	Equal, =	Monetary value	Part	Whole

ASSESSMENTS

Formative Assessment

- "What is the Value of the Digit?" *Uncovering Student Thinking In Mathematics: Grades K-5* pg. 71
- "Rounding Decimals" *Uncovering Student Thinking About Mathematics in the Common Core: Grades 3-5* pg 80
  - Note: Includes numbers to thousandths
- "Representing Decimals" *Uncovering Student Thinking About Mathematics in the Common Core: Grades 3-5* pg. 110/111
- ""Decimals as Numbers *Mine the Gap For Mathematical Understanding: Grades 6-8* pg. 52
- "Representing Decimals" *Mine the Gap For Mathematical Understanding: Grades 3-5* pg. 193
- "Representing Decimals as Numbers" *Mine the Gap For Mathematical Understanding: Grades 3-5* pg. 200
- "Estimating and Rounding Decimals" *Mine the Gap For Mathematical Understanding: Grades 3-5* pg. 209
- "Comparing Decimals" *Mine the Gap For Mathematical Understanding: Grades 3-5* pg. 223

Summative Assessment

- 4N Assessment Questions

INSTRUCTION

High Leverage Instructional Strategies / Practices

- Spend a significant amount of time exploring tenths using dimes and base ten blocks. Change the value of the "100" (flat) or "1000" to 1 so students can apply their previous experience with base ten blocks to their understanding of decimals.

Learning Experiences

APLC

- Curriculum Planning and Assessment Resources
- Indigenous Culture Based Learning in Alberta Curriculum

Warmups

- N1 WarmUps/MathTalks (Red Deer Public) N1 FRENCH Echauffements mathématiques

Math Tasks (Collated by CBE)

- Place value and decimal numbers
  - Activities on a Gattegno Chart: Explore patterns and place value using a Gattegno chart.
  - Round Off Dragon: A fun Math Pickle story and challenge to introduce decimals as students work to get a precise measurement.
  - Comparing Hundredths and Tenths: Another Open Middle challenge to explore the relationship between decimals and decimal fractions.
  - Round the Dice Decimals 1 and Round the Dice Decimals 2: Two versions of a game using dice or dice interactive to develop number sense and rounding involving decimals to the tenth and to the hundredth.
  - Spiralling Decimals: A challenging game to order decimals between 0 and 1. Note | The use of decimal numbers to the thousandths can be a challenge or adjusted to tenths and hundredths.
  - Decimals on a Number Line: An Open Middle problem to create numbers on a number line. Note | The use of decimal numbers to the thousandths can be a challenge

Learning

- CESD - Teacher Created Resources
  - Introducing the Place Value of Decimals: 1 hundred is 1
  - YouTube Videos
    - Part 1

        - Part 2
        - Part 3
    - Number Lines - Decimals + Number lines - Decimals student handout
        - *Although this learner outcome does not state that students must place decimals on a number line, 4N5 includes the following as a Skill and Procedure: "Relate fractions and equivalent decimal numbers to their positions on the number line." It makes sense to introduce it here.*
        - *Note: One slide at the end asks students to identify a decimal between 1.51 and 1.52. This is above grade 4 expectation but was left in there so the slideshow can be used by grade 5 teachers as well.*

- CoreKnowledge Math Units: (This is an amazing in-depth free resource.)
    - From Hundredths to Hundred-thousands
        - Focus:
            - Decimals with Tenths and Hundredths
            - Place-value Relationships through 1,000,000
            - Compare, Order, and Round
            - Add and Subtract
    - If you download the entire unit, you will find
        - Teacher Guide: lesson plans, student tasks, family support materials, assessments, cool downs, and instructional masters.
        - Student Book: Student Tasks
        - Other: PowerPoints

- Edmonton Catholic
    - Pacing Guide
        - Year at a Glance (CESD organized)
        - September
            - Grade 4 September.pdf
        - October
            - Grade 4 October.pdf
        - November
            - Grade 4 November.pdf
    - Curriculum Crates: These are amazing in-depth resources.
        - (FI) 4e année: Math - Nombre: Utilisons les Digi-blocs (october)
        - (FI) 4e année: Math - Algèbre: Maintenir l'équilibre (décembre)
        - Gr. 4 Math - Applying Place Value to Decimal Numbers (Build it, Name it with Digi blocks)
        - Gr. 4 Math - Students Apply Place Value to Decimal Numbers - Clothesline Math Routine
        - Gr. 4 Math - Students apply place value to decimal numbers & Students add and subtract decimal nu…

- NCETM's Related lessons:
    - Composition and calculation: three-digit numbers
- SuperTeacherGuy Videos
    - Decimal Series Pt. 1 - See, Compare & make SENSE of tenths, hundredths and thousandths! (Thousandths is above grade 4)
        - Decimal Squares PDF
    - Decimal Series Pt. 2 - Focus on why each place value is one tenth the size of the previous! (Thousandths is above grade 4)
    - Decimal Series Pt. 3 - Why do we call the first 3 place values tenths, hundredths and thousandths? (Thousandths is above grade 4)

Gizmos on Learn Alberta

- Cannonball Clowns (Number Line Estimation) Students work with number line estimations for a given distance. (whole numbers)
    - Teacher version with answer key
- Comparing and Ordering Decimals Students understand the meaning of whole numbers, tenths, and hundredths.
    - Teacher version with answer key
- Modeling Whole Numbers and Decimals (Base-10 blocks) Students model numbers with base-10 blocks, including ones, tens, hundreds, tenths, and hundredths.
    - Teacher version with answer key
- Modeling Decimals (Area and grid models) Students use area models to understand decimals within the base-10 system.

    - Teacher version with answer key
- Part-to-part and Part-to-whole Ratios
    - Teacher version with answer key
- Percents, Fractions, and Decimals Students learn how to represent a quantity out of 100 as a decimal, a fraction, and a percent.
    - Teacher version with answer key
- Treasure Hunter (Decimals on the Number line) Students find decimal numbers on a number line.
    - Teacher version with answer key

Games
- MMMathMania- Free Decimal Games
- Deuling Decimals
- Guess My Number - To Hundredths
- Roll 4 Digits

Opportunities to Connect Outcomes:
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Resources
Manipulatives
- Base Ten Blocks
- Money

Virtual Manipulatives
- Mathigon: Polygons, Numbers-various, Tangrams, 3D Solids, Canadian coins, Dominoes, etc.
- Mathsbot.com: Coins (Canadian), Counters, Cuisenaire Rods, Dice, Dominoes, Hundred square, Number Frames, Pattern Blocks, Pentominoes, Rekenrek, Ten Frame, Counters
- MathLearningCenter: Number Chart, Number Frames, Number Rack (rekenrek), Pattern Shapes
- Coolmath4kids: Base ten Blocks
- Interactive 100's Chart
- Interactive Number Line

Printables
- Place Value Number Challenge Sheet
- Place Value Number Challenge Sheet - Hundredths

Game
- Place Value Game or Junk It Game
- Place Value Yahtzee (create numbers up to 6 digits)

Books
- Brody Borrows Money

INDIGENOUS RESOURCES

From APLC
- Pulled directly from Infusing Indigenous Knowledge Into Curriculum
    - Use storytelling to explore concepts related to fractions:
        - Lillian's naming story (pahkih - part; apihtow - half; kahkiyaw - all of it)
        - Wolverine story to introduce parts of a whole
    - Integrate activities such as:
        - Preparing a hide (area, measurement, parting the moose, sharing parts, estimating, identifying shapes, graphing what is shared)
        - Build a frame (how to use a hide to add ot the frame, estimate the rope needed, etc.)
        - Cooking with a campfire (temperature, time, angle of cooking)
        - Tea dance (measurement)
        - Bowl and hand games
    - Discuss how units of measurement came with Europeans; prior to that people used skills related to estimation, trial and error and experience.
    - Use both real life and historical (e. g., fur trading) examples to explore monetary values.

PROFESSIONAL LEARNING

CESD
- Math Framework: Place Value

4N2 +- within 10 000, incl dec nums to hundredth

GRADE FOUR MATH: 4N2
LONG RANGE PLANNING - CESD

Number (N)
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.

UNDERSTANDINGS	KNOWLEDGE	SKILLS & PROCEDURES
1. Standard algorithms for addition and subtraction may be used for any decimal number.	1. Standard algorithms for addition and subtraction of decimal numbers are conventional procedures based on place value. 2. Estimation can be used to check the reasonableness of a sum or difference.	1. Add and subtract numbers, including decimal numbers, using standard algorithms. 2. Assess the reasonableness of a sum or difference by estimation. 3. Solve problems using addition and subtraction, including problems involving money.

SPECIAL CARE AND ATTENTION

Background
Sometimes we say things in order to help students **do** the math rather than **understand** the math. Those statements can create misconceptions and confusion when the statements no longer hold true at later grades. Learn more about particularly challenging statements at CESD Math Framework: Additive Thinking.

Connections
Algebra should and cannot be taught in isolation. Algebra should be constantly infused with this outcome.

VOCABULARY

Addition	**Decimal numbers**	**Hundredths**	Standard algorithms
Assess	Difference*	Place value	Subtraction
Conventional procedures	Estimation	Solve	Sum

ASSESSMENTS

Formative Assessment
- "Adding Decimals" *Uncovering Student Thinking About Mathematics in the Common Core: Grades 3-5* pg. 85
- "Representing Decimals" *Uncovering Student Thinking About Mathematics in the Common Core: Grades 3-5* pg. 110/111
- "Variation B: What's Your Addition Strategy?" *Uncovering Student Thinking In Mathematics: Grades K-5* pg. 135
- "Variation B: What's Your Subtraction Strategy?" *Uncovering Student Thinking In Mathematics: Grades K-5* pg. 143
- "Decimals as Numbers" *Mine the Gap For Mathematical Understanding: Grades 6-8* pg. 52
- "Addition and Subtraction With Decimals" *Mine the Gap For Mathematical Understanding: Grades 6-8* pg. 60
- "Decomposing Decimals" *Mine the Gap For Mathematical Understanding: Grades 3-5* pg. 215
- "Addition with Decimals" *Mine the Gap For Mathematical Understanding: Grades 3-5* pg. 230
- "Subtracting with Decimals" *Mine the Gap For Mathematical Understanding: Grades 3-5* pg. 237
- "Problem Solving with Decimals" *Mine the Gap For Mathematical Understanding: Grades 3-5* pg. 244
- "Working and Problem Solving With Money" *Mine the Gap For Mathematical Understanding: Grades K-2* pg. 263
- "Working and Problem Solving With Money" *Mine the Gap For Mathematical Understanding: Grades K-2* pg. 270

Summative Assessment
Performance Tasks created by AAC
- Taco 'Bout a Party / Un déjeuner de classe
  - Also assesses 4N2
  - Also assesses PEW 4F1: Students examine factors that affect spending
- Fabulous Friend Day
  - Also assesses PEW: Students examine how choices in physical activities affects active living.

PREREQUISITE KNOWLEDGE

-

INSTRUCTION

High Leverage Instructional Strategies / Practices
-

Learning Experiences
APLC

- Curriculum Planning and Assessment Resources
- Indigenous Culture Based Learning in Alberta Curriculum

Warmups
- N2 WarmUps/MathTalks (Red Deer Public) FRENCH N2 WarmUps/MathTalks

Math Tasks (Collated by CBE)
- Adding and subtracting with 10 000
  - The Puzzler (pg. 6) Students are asked to determine sums of consecutive numbers to equal various target numbers.
  - Sum to 10 000 Open Middle problem where students are tasked with finding the closest sum to 10,000 using two 4-digit addends.
  - It was 2010! Students are asked, what could the questions be if the answer is 2010?
- Adding and subtracting including decimals to hundredths
  - Ch-ch-ch-change! (pg. 8) Students are challenged to use the least number of coins to determine a sum using Canadian and Australian currency. Note | A discussion opportunity: How can currency values influence familiarity with skip-counting or adding/subtracting different amounts?
  - Adding Decimals An Open Middle problem that could be changed to subtraction to support practice of both operations.
  - Greatest Difference A challenging Open Middle problem to subtract decimals.

Learning
- CESD - Teacher Created Resources
  - Relational Rods - Decimals - Intro/Adding and Subtracting
    - Open Number lines - student handout
  - Gr 4 Place Decimals between two decimals on Number Lines
  - Gr 4 Deuling Decimals "Game"
- CoreKnowledge Math Units: (This is an amazing in-depth free resource.)
  - Properties of Two-dimensional Shapes
    - Focus:
      - Side Lengths, Angles, and Lines of Symmetry (4G1)
      - Reason about Attributes to solve problems (4N2, Grade 5, Grade 6, above grade 6)
  - If you download the entire unit, you will find
    - Teacher Guide: lesson plans, student tasks, family support materials, assessments, cool downs, and instructional masters.
    - Student Book: Student Tasks
    - Other: PowerPoints
- Edmonton Catholic
  - Pacing Guide
    - Year at a Glance (CESD organized)
    - October
      - Grade 4 October.pdf
    - November
      - Grade 4 November.pdf
  - Curriculum Crates: These are amazing in-depth resources.
    - (FI) 4e année: Math - Nombre: Utilisons les Digi-blocs (october)
      (FI) 4e année : Math - Nombre: Addition et soustraction des nombres décimaux (novembre)
    - Gr. 4 Math - Students apply place value to decimal numbers & Students add and subtract decimal nu…
    - Gr. 4 Math - Applying Place Value to Decimal Numbers (Build it, Name it with Digi blocks)
- NCETM's Related lessons:
  - NCETM's Number, Addition and Subtraction resources: Not yet aligned directly to Grade 4 curriculum. This is forthcoming.

Gizmos on LearnAlberta
- Adding Whole Numbers and Decimals (Base-10 blocks) Students learn how to add whole and decimal numbers with regrouping.
  - Teacher version that has answer key

- Subtracting Whole Numbers and Decimals (Base-10 Blocks) Students learn how to subtract whole numbers and decimals using base-10 blocks.
  - Teacher version with answer key
- Sums and Differences with Decimals Students add and subtract decimals with the aid of area models.
  - Teacher version with answer key

Practice/Review
- "Spiders" (Read more here)
  - Addition / Subtraction with related whole numbers and decimals
- Mathsbot.com
  - Printable Bar Models: Promotes Number Bonds [Part-whole mat adaptation] (Addition to 1000)
  - Part-whole Cherry Model: Easily does large numbers. When you choose decimals, it only gives a few, and only in the "parts"
  - Pyramids: Put any number at the top. You change the number of rows to make it easier or harder.
  - More or Less than a Number: You can replace the random numbers with your own numbers.
  - Addition: Questions students can complete online. You can set the number of addends, digits and questions when they open it up. Note: 2 digit addends will always have 3 boxes in case the answer ends up over 100. Students can show answers, which locks it, or check their work, which increases their "checks" count each time. You can include decimals in the digits section (second option)

Puzzlers
- Mathsbot.com
  - Printable Arithmogon Templates: focuses on single digit addition

Opportunities to Connect Outcomes:
-

Resources
Other
- Base ten blocks
- Bills/coins
- Place value mat

INDIGENOUS RESOURCES

From APLC
- Pulled directly from Infusing Indigenous Knowledge Into Curriculum
  - Examine animal populations within the area. Obtain numbers from fish and wildlife.
  - Examine numbers associated with travelling from one point to another.
  - Track distance and time for activities such as hunting.
  - Use topics from Social Studies, Science and Land-based Learning to address the ELO.
  - Use musical examples (e.g., drumming, types of beats, types of songs, hand drumming, algorithms, patterns).
  - Apply concepts to estimates of time, distance and cost involved in attending traditional events (e.g., took half a day to get to location).
  - Use examples that apply traditional knowledge to concepts and skills involving density, states of matter, estimation (e.g., more water in ice than in snow).
  - Explore problems that include examples of bartering, trade and credit.

PROFESSIONAL LEARNING

CESD
- Math Framework: Additive Thinking

Graham Fletcher Progression Videos
- Addition

APLC
- Cuisenaire Rods: Where did they come from?
- Cuisenaire Rods: Part 1: Adding and subtracting (Not specifically about decimals but cuisenaire rods can be used if you talk about the orange rod having a value of 1)
- Cuisenaire Rods: Part 2: Skip counting, factors and multiples

NCETM
- Using Cuisenaire rods: modelling decimals and fractions

4N3 explain properties of prime and composite num

GRADE FOUR MATH: 4N3
LONG RANGE PLANNING - CESD

Number (N)
Quantity is measured with numbers that enable counting, labelling, comparing, and operating.

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

UNDERSTANDINGS	KNOWLEDGE	SKILLS & PROCEDURES
1. Different factors can compose the same product. 2. Different products can share factors. 3. A number divided by one of its factors will result in a remainder of 0.	1. A factor of a number is a divisor of that number. 2. A number is a multiple of any of its factors. 3. A prime number has factors of only itself and one. 4. A composite number has factors other than one and itself. 5. Zero and one are neither prime nor composite numbers.	1. Determine the factors of a number within 100. 2. Describe a number as prime or composite. 3. Determine the first five multiples of a given number within 100. 4. Recognize the greatest common factor (greatest common divisor) of two numbers within 100.

SPECIAL CARE AND ATTENTION

Clarification
The following question was sent to Alberta Education: "Would students be expected to figure out factors for a number like 91 - which is 13 x 7?"

Here is their response.
"The example you provided of finding the factors of the number 91 falls within the curriculum's scope since it is less than 100. As students are only familiar with basic multiplication facts up to 12 × 12 and have not yet explored divisibility rules, teachers may want to consider selecting numbers that are easy to factor. This approach can help develop number sense and enable students to distinguish between prime and composite numbers."

Background
Sometimes we say things in order to help students **do** the math rather than **understand** the math. Those statements can create misconceptions and confusion when the statements no longer hold true at later grades. Learn more about particularly challenging statements at CESD Math Framework: Multiplicative Thinking.

VOCABULARY

Composite number	Division	**Greatest common**	Multiples*	Recognize
Describe	Divisor	Factor / divisor	**Prime number**	Remainder
Determine	Factors*	Multiplication	Product*	

Prime Number: "The English word 'prime' is from the Latin word for first: 'primus.' In a multiplicative sense prime numbers are thus the first numbers, the numbers from which the other numbers all arise (through multiplication). All other numbers (positive integers) are measured by primes, but primes alone are measured only by units. This makes primes first."

ASSESSMENTS

Formative Assessment
- "Classifying Numbers Card Sort" *Uncovering Student Thinking About Mathematics in the Common Core: Grades 3-5* pg. 41

Summative Assessment
- 4N Assessment Questions

INSTRUCTION

High Leverage Instructional Strategies / Practices
-

Learning Experiences
APLC
- Curriculum Planning and Assessment Resources
- Indigenous Culture Based Learning in Alberta Curriculum

Warmups
- N3 WarmUps/MathTalks (Red Deer Public) N3 French WarmUps/Math talks

Math Tasks (Collated by CBE)

- Properties of prime and composite numbers
  - Number Visuals A lesson from youcubed where students investigate visual representations of number as they look for patterns to understand the properties of prime and composite numbers.
  - Tic Tac Toe Products This a strategy-based activity which provides practice to build fluency in single digit multiplication. Note | Students could keep track of the factors selected and corresponding products to explore relationships in various ways.
  - Composite Numbers An Open Middle task that challenges students to create composite numbers, acknowledging a composite number has factors other than one and itself.
  - Abundant Numbers This task is a unique blend of factoring and addition of factors in order to solve a given problem. This activity will help strengthen an ability to determine the factors of a number up to 100. Note | Students can find factors of numbers by generating models of rectangles (including squares) using square tiles or grid paper.

Learning

- CESD Teacher Created Resources
  - Gr 4 Connecting multiplication, prime and composite numbers, and area
  - Grade 4 - Prime and Composite and Common Factors Relational Rods

- CoreKnowledge Math Units (This is an amazing in-depth free resource.)
  - Factors and Multiples
    - Focus:
      - Understand Factors and Multiples (includes Prime/Composite)
      - Find Factor Pairs and Multiples
  - If you download the entire unit, you will find
    - Teacher Guide: lesson plans, student tasks, family support materials, assessments, cool downs, and instructional masters.
    - Student Book: student tasks
    - Other: PowerPoints

- Edmonton Catholic
  - Pacing Guide
    - Year at a Glance (CESD organized)
    - December
      - Grade 4 December.pdf
    - January
      - Grade 4 January.pdf
  - Curriculum Crates: These are amazing in-depth resources.
    - Gr. 4 Math - Students explain properties of prime and composite numbers (Prime Time)

- NCETM's Related lessons: CESD K-6 Alignment document for 'Multiplication and Division'
  - TIMES TABLES: 11 AND 12
    - This is addressed within 'Teaching point 1', 'Teaching point 2', and 'Teaching point 3'.
    - *NOTE: 'Teaching point 4' focuses on divisibility rules for 11 and 12 which is not part of the K-6 curriculum.*
  - DIVISION WITH REMAINDERS
    - This is addressed within 'Teaching point 1', 'Teaching point 2', and 'Teaching point 3'.
    - *Note: 'Teaching point 1' includes pieces above the expectations of grade 4.*
  - MULTIPLICATION: PARTITIONING LEADING TO SHORT MULTIPLICATION
    - This is addressed within all 4 'Teaching points'.
  - DIVISION: PARTITIONING LEADING TO SHORT DIVISION
    - This is addressed within all 4 'Teaching points'.
  - FACTORS, MULTIPLES, PRIME NUMBERS AND COMPOSITE NUMBERS
    - This is addressed within all 5 'Teaching points'.

Cuisenaire Rods

- NCETM Video using Cuisenaire Rods to explore prime and composite
  Using Cuisenaire rods exploring factors and primes
- APLC's Part 2: Skip counting, factors and multiples
- NRICH: Cuisenaire Rods

Gizmos on LearnAlberta

- Factor Trees (Factoring Numbers) Students develop understanding of the meaning of prime and composite numbers. They also develop skills in performing a prime factorization of a given number.
  - Teacher version with answer key
- Finding Factors with Area Models Students explore the difference between composite numbers and prime numbers using area models.
  - Teacher version with answer key

Practice/Review

- Mathsbot.com
  - Greatest Common Factors: Use random!
  - Lowest Common Multiples: The outcome doesn't specifically indicate students must do lowest common multiple but since they are expected to find the first 5 common multiples, it could be considered reasonable to introduce the vocabulary of LCM.

Misc

- The Tax Man

Games

- To practice basic multiplication facts
  - Jo Boaler's How Close to 100?
  - Dan Finkle's 100 or Bust
  - SNAKE
  - Alien Multiplication Bump - English, French
  - Monster Division Bump
  - Multiplication Game (Email required to download but it is free)

Opportunities to Connect Outcomes:

-

Resources

Virtual Manipulatives

- NRICH: Cuisenaire Rods

Manipulatives

- Relational Rods
- 1" Square Tiles

INDIGENOUS RESOURCES

From APLC:

- Pulled directly from Infusing Indigenous Knowledge Into Curriculum
  - Integrate activities that include shopping, including estimating drive times and weights.
  - Infuse the Cree language for math terms. Note those math terms that do not have words in the Cree language.
  - Ask students to apply real life land-based learning camp activities (e.g., how many poles needed to make five tipis).
  - Make connections to beading work (e.g., bead sizes, needle sizes, patterns).

PROFESSIONAL LEARNING

LearnAlberta Planning Guide

The following Planning Guide was developed for the 2007 AB Mathematics Program of Studies (PoS). However, the planning process and many of the tasks and assessments still align with the 2022 AB Mathematics Curriculum. Please ensure that the Learning Outcome and Knowledge, Understanding, and Skills and Procedure statements are kept in mind as tasks are selected.

- Factors and Multiples: This Planning Guide was developed for Grade 6 in the 2007 PoS. It contains information and sample activities to explore factors and multiples within 100.

4N4 multiply & divide natural num within 10 000

GRADE FOUR MATH: 4N4
LONG RANGE PLANNING - CESD

Number (N)
Quantity is measured with numbers that enable counting, labelling, comparing, and operating.

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

UNDERSTANDINGS	KNOWLEDGE	SKILLS & PROCEDURES
1. Multiplication and division strategies can be chosen based on the nature of the numbers.	1. Recall of multiplication and division number facts facilitates multiplication and division strategies. 2. Standard algorithms facilitate multiplication and division of natural numbers that have multiple digits. 3. Estimation can be used to check the reasonableness of a product or quotient.	1. Recall and apply multiplication number facts, with factors to 12, and related division number facts. 2. Investigate patterns in multiplication and division of natural numbers by 10, 100, and 1000. 3. Multiply and divide 3-digit natural numbers by 1-digit natural numbers using personal strategies. 4. Examine standard algorithms for multiplication and division. 5. Multiply and divide 3-digit natural numbers by 1-digit natural numbers using standard algorithms. 6. Divide and express a quotient with or without a remainder. 7. Investigate strategies for estimation of products and quotients. 8. Assess the reasonableness of a product or quotient using estimation. 9. Solve problems using multiplication and division.

SPECIAL CARE AND ATTENTION

Background
Sometimes we say things in order to help students **do** the math rather than **understand** the math. Those statements can create misconceptions and confusion when the statements no longer hold true at later grades. Learn more about particularly challenging statements at CESD Math Framework: Multiplicative Thinking.

VOCABULARY

Apply	Estimation	Investigate	Number facts	Quotient
Assess	Examine	Multiplication facts	Patterns	Solve
Digit*	Express	Multiplication strategies	Product*	Standard algorithms
Divide	Facilitate	Multiply	Reasonableness	
Division strategie	Factors*	Natural Number	Recall	

ASSESSMENTS

Formative Assessment
- "Completing Number Sentences" *Uncovering Student Thinking About Mathematics in the Common Core: Grades 3-5* pg. 29
- "Multiplication and Division Sentences (Number Models)" *Uncovering Student Thinking About Mathematics in the Common Core: Grades 3-5* pg. 35
- "Variation: What's Your Multiplication Strategy?" *Uncovering Student Thinking In Mathematics: Grades K-5* pg. 149
- "What's Your Division Strategy?" *Uncovering Student Thinking In Mathematics: Grades K-5* pg. 151
- "Representing Multi-Digit Multiplication" *Mine the Gap For Mathematical Understanding: Grades 3-5* pg. 89 (Note: Some is above grade 4)
- "Reasoning about Multi-Digit Multiplication" *Mine the Gap For Mathematical Understanding: Grades 3-5* pg. 97 (Note: Some is above grade 4)
- "Representing Multi-Digit Division" *Mine the Gap For Mathematical Understanding: Grades 3-5* pg. 104
- "Reasoning about Multi-Digit Division" *Mine the Gap For Mathematical Understanding: Grades 3-5* pg. 113

Summative Assessment
-

INSTRUCTION

GRADE FOUR MATH: 4N4
LONG RANGE PLANNING - CESD

High Leverage Instructional Strategies / Practices

-

Learning Experiences

APLC

- Curriculum Planning and Assessment Resources

Warmups

- N4 WarmUps/MathTalks (Red Deer Public) N4 WarmUps/MathTalks (French)
- Math Flips (Berkeley Everett)

Math Tasks (Collated by CBE)

- Number facts
  - Odd and Even A problem to explore multiplication of odd and even numbers using various representation methods.
  - Fruit Shop Image prompts and questions to look for similarities/differences and connections using the array as a multiplicative structure.
  - Planting Carrots An Open Middle problem that could be used as a framework to create other similar open-ended word problems.
- Multi-digit multiplication
  - Brawny Wall A 3-Act Task to explore a couple multiplication questions using a visual array of paper towel packages.
  - Multiplying a Two-Digit Number by a Single-Digit Number: An Open Middle problem that can provide practice of multiplication to meet constraints. Numbers and constraints could be modified for more challenges.
  - Expert Predictions (Pages 6-8): This Problem of the Week from the University of Waterloo provides opportunity to apply operation skills as well as some information that might be used in a discussion about becoming an "expert" in mathematics.
  - Fare's Fair! A task that explores solving problems using multiplication and division, including problems involving money.
- 3-digit by 1-digit division
  - Sharing is Caring A 3-Act Task to explore division with a variety of divisors.
  - Jumping Jelling Beans A 3-Act Task to explore multiplication and division using visual images in parallelogram (rectangular) and hexagonal arrays. Note | The task can be extended to use 18 as the divisor.
  - Division Rules This challenge explores 3-digit by 1- digit division and encourages students to notice patterns and conjecture, and test rules

.

Learning

- CESD (Teacher Created Resources)
  - 2 Digit x 1 Digit Multiplication
    - This strategy is not yet available in detailed form. However, you can use these videos and files in order to build your understanding of the strategy and move forward in your work.
    - You will need access to one of the following:
      - Physical Base Ten Blocks (tens and ones) plus a piece of paper
      - **Printable Base Ten blocks** (print in black and white OR color) plus a piece of paper
      - Virtual Base Ten Blocks (**CPM Tiles** were used in the videos)
      - **Google Slide Deck**
    - YouTube Videos that walk you through the process:
      - **Watch Part 1 on YouTube** - Concrete
      - **Watch Part 2 on YouTube** - Mixed Concrete / Abstract
      - **Watch Part 3 on YouTube** - Abstract
    - Once students understand the area model for 2 digit x 1 digit, use this model for 3 digit by 1 digit, as base ten block models do not work well
  - 2 and 3 Digit x 1 Digit Multiplication Tarsia Activity
  - 4N4 Pirate Ships - 2 Digit by 1 Digit Division with Remainders + Grade 4N4 Pirate Ships
  - 3 Digit by 1 digit division YouTube Videos
    - Part 1
    - Part 2
    - Part 3
- Learning with Howie Hua
  - How can a rectangle help us with division?
  - How can we divide with a rectangle when there's a remainder?
  - How do we do this "new" way of dividing?

-
- You never need to do long division ever again!
- Making sense of the long division algorithm

- CoreKnowledge Math Units: (This is an amazing in-depth free resource.)
  - Area and Multiplication
    - Focus:
      - Concepts of Area Measurement
      - Relate Area to Multiplication (4N4, 4M1)
      - Find Area of Figures Composed of Rectangles
        - Note: Composite figures are not part of grade 4, however, these images are limited to rectangles. Students could be given an opportunity to look for the rectangles within the figures composed of two rectangles and use what they know in order to determine the entire area.
  - Relating Multiplication to Division
    - Focus:
      - ~~*What is Division?*~~ (Grade 3)
      - ~~*Relate Multiplication and Division*~~ (Grade 3)
      - Multiplying Larger Numbers
      - Dividing Larger Numbers
  - Putting It all Together
    - ~~*Fraction Fun*~~ (Grade 3, Grade 5)
    - Measurement and Data (4M1, 4ST1)
    - Multiplication and Division Games (4N4)
    - ~~*Create and Design*~~ (Grade 3)
  - Multiplicative Comparison and Measurement
    - Note: There is a mixture of grade 4, 5 and 6 outcomes in each of these sections. Choose/adapt for this grade.
    - Focus:
      - Multiplicative Comparison
      - Measurement Conversion
      - Let's Put it All To Work
  - Multiplying and Dividing Multi-digit Numbers
    - Note: There is a mixture of grade 4 and 5 outcomes in each of these sections.
    - Focus:
      - Lessons 1-4 Features of Patterns
      - Multi-digit Multiplication
      - Multi-digit Division
      - Let's put it to work: Problem solving with Large numbers
  - Arithmetic in Base Ten
    - Focus:
      - ~~*Using decimals in a shopping context*~~ (Grade 6)
      - ~~*Using diagrams to represent addition and subtraction*~~ (Grade 6)
      - ~~*Adding and subtracting decimals with few non-zero digits*~~ (Grade 6)
      - ~~*Adding and subtracting decimals with many non-zero digits*~~ (Grade 6)
      - ~~*Decimal points in products*~~ (Grade 6, above grade 6)
      - ~~*Methods for multiplying decimals*~~ (above grade 6)
      - ~~*Using diagrams to represent multiplication*~~ (above grade 6)
      - ~~*Calculating products of decimals*~~ (above grade 6)
      - Using the partial quotients method (4N4, Grade 5)
      - Using long division (4N4, Grade 5)
      - Dividing numbers that result in decimals (4N4, Grade 5)
      - ~~*Dividing decimals by whole numbers*~~ (Grade 6)
      - ~~*Dividing decimals by decimals*~~ (above Grade 6)
      - ~~*Using operations on decimals to solve problems*~~ (Grade 6) (Some above grade 6)
      - ~~*Making and measuring boxes*~~ (Grade 6 - but surface area is above grade level)
  - If you download the entire unit, you will find
    - Teacher Guide: lesson plans, student tasks, family support materials, assessments, cool downs, and instructional masters.
    - Student Book: Student Tasks
    - Other: PowerPoints

- Edmonton Catholic

- Pacing Guide
  - Year at a Glance (CESD organized)
  - December
    - Grade 4 December.pdf
  - January
    - Grade 4 January.pdf
- Curriculum Crates: These are amazing in-depth resources.
  - Gr. 4 Math - Students multiply and divide natural numbers within 10 000. (Divide and Conquer: From …
  - Gr. 4 Math - Students multiply and divide natural numbers within 10 000. (Multiplication Mavericks)

- NCETM's Related lessons: CESD K-6 Alignment document for 'Multiplication and Division'
  - TIMES TABLES: 11 AND 12
    - This is addressed within 'Teaching point 1', 'Teaching point 2', and 'Teaching point 3'.
    - *Note: 'Teaching point 4' focuses on divisibility rules for 11 and 12 which are not part of grade 4 curriculum.*
  - DIVISION WITH REMAINDERS
    - This is addressed within 'Teaching point 1', 'Teaching point 2', and 'Teaching point 3'.
    - NOTE: The use of the ≤ symbol and references to inequalities is used in 'Teaching point 1'. This is not part of grade 4 curriculum. However, this language can easily be adjusted to grade 4.
  - CALCULATION: MULTIPLYING AND DIVIDING BY 10 or 100
    - This is addressed within all 7 'Teaching points'.
    - Note: Portions of 'Teaching point 1' and 'Teaching point 2' can also be introduced in grade 3.
  - MULTIPLICATION: PARTITIONING LEADING TO SHORT MULTIPLICATION
    - This is addressed within all 4 'Teaching points'.
- Videos on using relational rods for multiplication.

Cuisenaire Rods
- Education Unboxed:
  - Multiplication of 2 digit by 1 digit numbers
  - Division of 2 digit by 1 digit numbers

Gizmos on LearnAlberta
- Chocomatic (Multiplication, Arrays, and area) Students make connections between arrays, multiplication, and area. Students use repeated addition and/or multiplication with given rectangles to reinforce concepts.
  - Teacher version with answer key

Intelligent Practice
- 4N4 Intelligent Practice Multiplication © Craig Barton

Practice/Review
- MathsBot.com
  - Grid Method: Note: You can enter any whole numbers as the two numbers to multiply. Clicking on each area reveals the result within each area. Does not reveal final answer. Students could use this to check their work, either as they go or at the end.
  - Division Completion Table: Choose random.

Games
- To practice basic multiplication facts
  - Jo Boaler's How Close to 100?
  - Dan Finkle's 100 or Bust
  - SNAKE
  - Alien Multiplication Bump - English, French
  - Monster Division Bump
  - Multiplication Game (Email required to download but it is free)

Puzzlers
- Mathsbot.com
  - Multiplication Grids: The title is prime product grids but you can change them to a 2x2 grid to make more appropriate for grade 4's. You could show the factors and have them figure out the products before working the other way.

- Multiplication Tables: Don't use this as a fill in the blank multiplication table. Instead, remove some of the numbers, to keep it simpler. Jumble one of the coordinates. Show random values. Students have to work out the missing factors and products. Excellent opportunity to work on multiplication and division at the same time.
  - Sample generated.

Opportunities to Connect Outcomes:

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Resources

INDIGENOUS RESOURCES

From APLC:

- Pulled directly from Infusing Indigenous Knowledge Into Curriculum
  - Apply multiplication and division strategies in activities that include understandings and skills such as:
    - Making bannock (measuring, multiplication)
    - Beading (bead size, patterns, needles, thread, tension, pressure)
    - Looming (patterns, subitizing, counting)
  - Discuss how traditional Iractices involved trial and error.

PROFESSIONAL LEARNING

CESD

- Math Framework: Multiplicative Thinking

Graham Fletcher's Progression Video

- Multiplication
- Division

APLC

- Developing Fluency for Basic Number Facts Multiplication & Division (Grades 3-6)

4N5 apply equivalence to the interpr of fractions

GRADE FOUR MATH: 4N5
LONG RANGE PLANNING - CESD

Number (N)
Quantity is measured with numbers that enable counting, labelling, comparing, and operating.

4N5 Students apply equivalence to the interpretation of fractions.

UNDERSTANDINGS	KNOWLEDGE	SKILLS & PROCEDURES
1. There are infinitely many equivalent fractions that represent the same number. 2. Exactly one of infinitely many equivalent fractions is in simplest form.	1. Equivalent fractions are associated with the same point on the number line. 2. Equivalent fractions can be created by partitioning each equal part of a fraction in the same way. 3. Partitioning a fraction can be interpreted as multiplying the numerator and denominator of a fraction by the same number. 4. A fraction can be simplified to an equivalent form by dividing the numerator and denominator by a common factor. 5. The numerator and denominator of a fraction in simplest form have no common factors. 6. Dividing the numerator and denominator of a fraction by their greatest common factor will achieve simplest form.	1. Model equivalent fractions by partitioning a whole in multiple ways. 2. Determine fractions equivalent to a given fraction. 3. Relate the position of equivalent fractions on the number line. 4. Relate multiplying the numerator and denominator of a fraction by the same number to multiplying by 1. 5. Identify fractions in which the numerator and denominator have a common factor. 6. Simplify a given fraction by dividing the numerator and denominator by a common factor. 7. Express a fraction in simplest form. 8. Compare and order fractions.
1. Decimal numbers that terminate (do not repeat) are fractions with denominators of 10, 100, etc. 2. Fractions and decimal numbers that represent the same number are associated with the same point on the number line.	1. Fractions and decimal numbers can represent the same number. 2. 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.	1. Relate fractions and equivalent decimal numbers to their positions on the number line. 2. Express fractions as decimal numbers and vice versa, limited to denominators that are 10 or 100.

SPECIAL CARE AND ATTENTION

Curriculum Update
4N5.2.SP2 was changed from “Express fractions as decimal numbers and vice versa, limited to tenths and hundredths.” to “Express fractions as decimal numbers and vice versa, limited to denominators that are 10 or 100.”

Clarification
4N5.2b states “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.” Not all decimals can be expressed in this way. It should be changed to “most decimals” or reference the idea of terminating decimals.

Clarification
Clarification, through email, from Alberta Education, October 31, 2024: “Although students are exploring the LOs: Students apply place value to decimal numbers, Students apply equivalence to the interpretation of fractions, and Students interpret percentages under the Number OI in Grade 4, this is the first-year students have encountered decimal place value, converting between fractions and decimals, and working with percentages. Teachers are not required to combine LOs but have the flexibility to choose activities that best meet their students' needs. Therefore, they can apply these skills to order a combination of a fraction, a decimal, and a percent; however, this would be a challenging skill for students.”

Background
Sometimes we say things in order to help students **do** the math rather than **understand** the math. Those statements can create misconceptions and confusion when the statements no longer hold true at later grades. Learn more about particularly challenging statements at CESD Math Framework: Fractions.

VOCABULARY

GRADE FOUR MATH: 4N5
LONG RANGE PLANNING - CESD

Associated	**Equivalence**	Identify	Number line	**Simplest form**
Common Factor	Equivalent form	**Improper fraction**	Numerator	**Simplified / simplify**
Compare	**Equivalent fractions**	Infinite	Order	**Tenths**
Decimal numbers	Express	**Mixed number**	Partition	**Terminate**
Denominator	**Greatest common**	Model	Position	Whole
Determine	Factor	Multiply	Relate	
Divide	**Hundredths**	**Non-zero** Digit*	Represent	

ASSESSMENTS

Formative Assessment

- "Equivalent Fractions Card Sort" *Uncovering Student Thinking About Mathematics in the Common Core: Grades 3-5* pg. 102
- "Comparing to 1/2" *Uncovering Student Thinking About Mathematics in the Common Core: Grades 3-5* pg. 116
- "Variation: Comparing to 1/2" *Uncovering Student Thinking About Mathematics in the Common Core: Grades 3-5* pg. 121
- "Is It Simplified?" *Uncovering Student Thinking In Mathematics: Grades K-5* pg. 110
- "Comparing Fractions" *Mine the Gap For Mathematical Understanding: Grades 3-5* pg. 171
- ""Reasoning about Fractions *Mine the Gap For Mathematical Understanding: Grades 3-5* pg. 177

Summative Assessment

-

INSTRUCTION

High Leverage Instructional Strategies / Practices

-

Learning Experiences

APLC

- Curriculum Planning and Assessment Resource
- Indigenous Culture Based Learning in Alberta Curriculum

Warmups

- N5 WarmUps/MathTalks (Red Deer Public) N5 WarmUps/MathTalks (FRENCH)

Math Tasks (Collated by CBE)

- Equivalent fractions
  - Fractional Wall A version of fraction strips that prompts work with equivalent fractions.
  - Equivalent Fractions An Open Middle question to explore three equivalent fractions.
  - Creative Math Prompt Fraction task that asks, what do you notice? What do you wonder?
  - Tumbling Down A very short animation to spark curiosity about equivalent fractions.
  - Benchmark Fractions Another Open Middle challenge to place fractions on a number line.
  - Equivalent Fractions This Open Middle problem allows students to explore how to determine fractions equivalent to a given fraction.
- Relate fractions and decimals
  - Fraction to Decimal An Open Middle prompt to create an equivalent fraction and decimal.
  - Comparing Fractions to Decimals 1 and Comparing Fractions to Decimals 2 Open Middle tasks to compare a fraction to a decimal.
  - Same But Different Prompts to compare two symbolic representations of numbers using the routine Alike and Different or Same But Different.
    - Equivalent
    - Not equivalent
    - Zero at end of decimal

Learning

- CESD Teacher Created Resources
  - Number Lines - Fractions + Number lines - Fractions Student Handout
    - *Note: Three slides focus on improper fractions, which are above grade 4 curriculum but have been included so the same document can be used for grade 5.*
  - 4N5 Equivalent Fractions with Relational Rods - Teacher Instructions
    - Gr 4 Equivalent Fractions - Relational Rods (Adapted from APLC)
    - Messy Math Moments Matter Video
    - You can find the student handouts used inside this document: Grade 4 Student Handouts CKMath_G4U2_FractionEquivalenceAndComparison_SR_W1.pdf.pdf This

"workbook" has been adapted from the CoreKnowledge Fraction Equivalence and Comparison student workbook to align with Alberta outcomes. It is important to note that this resource is not intended to be printed out as workbooks and given to students. Use your professional judgment to thoughtfully select aspects of this document to use with your students.

- BTC - Fractions on a Number Line

- CoreKnowledge Math Units (This is an amazing in-depth free resource.)
  - Fractions as Numbers
    - Focus:
      - ~~*Introduction to Fractions*~~ (Grade 3)
      - Fractions on the Number Line (3N4, Grade 4, Grade 5)
      - Equivalent Fractions (Grade 4)
      - Fraction Comparisons (3N4, Grade 4, Grade 5)
  - Fraction Equivalence and Comparison
    - Focus:
      - Size and Location of Fractions
      - Equivalent Fractions
      - Fraction Comparison
  - If you download the entire unit, you will find
    - Teacher Guide: lesson plans, student tasks, family support materials, assessments, cool downs, and instructional masters.
    - Student Book: student tasks
    - Other: PowerPoints

- NCETM's Related lessons: CESD K-6 Alignment document for Fractions
  - Finding equivalent fractions and simplifying fractions
    - This is addressed within 'Teaching point 1', 'Teaching point 2', and 'Teaching point 3'.
  - Linking fractions, decimals and percentages
    - This is addressed within 'Teaching point 1' and 'Teaching point 2'.
    - Note: 'Teaching point 4' and 'Teaching point 5' are addressed within 4N6.
    - *Note: 'Teaching point 3' is addressed within 6N4 and 6N7.*
    - *Note: 'Teaching point 6' is addressed within 6N8.*

- Edmonton Catholic
  - Pacing Guide
    - Year at a Glance (CESD organized)
    - February
      - Grade 4 February.pdf
  - Curriculum Crates: These are amazing in-depth resources.
    - Gr. 4 Math - Students apply equivalence to the interpretation of fractions.
- The "I have You Need" routine provides students with an opportunity to become fluent with addition and subtraction facts with fractions. Grade 4 focuses on common denominators so your focus is on fractions that make 1. Ie.I want 3 one-thirds. I have 1 one-third. "You need 2 one-thirds". I have 2 one-thirds. "You need 1 one-third."
- Mathsbot.com
  - Equivalent Fractions, Decimals and Percentages: Can be used as discussion or practice. You can choose to include: fraction, simplified, decimal, percentage, improper but all are based on a decimal fraction of tenths.

Gizmos on LearnAlberta

- *Adding Fractions (Fraction Tiles)* - Despite the title, this Gizmos can be used to explore equivalent fractions
- Equivalent Fractions (Fraction Tiles) Students develop understanding of the parts and the wholes in fractions.
  - Teacher version with answer key
- Fraction, Decimal, Percent (Area and Grid Models) Students develop understanding of percent, fractions, and decimals in relation to a number line. They express equivalence between percent, fractions, and decimals. Teacher version with answer key
- Fractions Greater than One (Fraction Tiles) Students learn about fractions, specifically understanding the meaning of a fraction, converting from improper number to mixed number, and adding fractions of the same denominator.
  - Teacher version with answer key
- Modeling Decimals (Area and grid models) Students use area models to understand decimals within the base-10 system.
  - Teacher version with answer key
- Modeling Fractions (Area Models) Students explore the meaning of numerator and denominator, and consider, visually, what happens when you increase/decrease either.
  - Teacher version with answer key

GRADE FOUR MATH: 4N5
LONG RANGE PLANNING - CESD

Opportunities to Connect Outcomes:

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Resources

- Mathsbot.com
  - Number Line: Can show decimals or fractions (simplified, improper, mixed)

INDIGENOUS RESOURCES

From APLC:

- Pulled directly from Infusing Indigenous Knowledge Into Curriculum
  - Integrate activities involving sharing food (e.g., baking a pie or cooking a round bannock to share).
  - Model examples such as dividing the bannock equally among students.
  - Track attendance and use total days attended or missed to identify and/or estimate fractions.

PROFESSIONAL LEARNING

CESD

- Math Framework: Fractions

APLC

- Using Pattern Blocks to teach Fractions (tutorial videos)

NCETM

- Using Cuisenaire rods: modelling decimals and fractions

LearnAlberta Planning Guides

The following Planning Guide was developed for the 2007 AB Mathematics Program of Studies (PoS). However, the planning process and many of the tasks and assessments still align with the 2022 AB Mathematics Curriculum. Please ensure that the Learning Outcome and Knowledge, Understanding, and Skills and Procedure statements are kept in mind as tasks are selected.

- Fractions: This Planning Guide was developed for Grade 5 in the 2007 Program of Studies. It contains information and sample tasks to explore equivalent fractions.

4N6 interpret percentages

GRADE FOUR MATH: 4N6
LONG RANGE PLANNING - CESD

Number (N)
Quantity is measured with numbers that enable counting, labelling, comparing, and operating.

4N6 Students interpret percentages.

UNDERSTANDINGS	KNOWLEDGE	SKILLS & PROCEDURES
1. Fractions, decimals, and percentages can represent the same part-whole relationship.	1. Percentage is represented symbolically with %. 2. Decimals can be expressed as percentages by multiplying by 100. 3. Percentages can be expressed as decimals by dividing by 100. 4. One percent represents one hundredth of a whole.	1. Investigate percentage in familiar situations. 2. Compare percentages within 100%. 3. Express the fraction, decimal, and percentage representations of the same part-whole relationship.

SPECIAL CARE AND ATTENTION

Clarification
Clarification, through email, from Alberta Education, October 31, 2024: "Although students are exploring the LOs: Students apply place value to decimal numbers, Students apply equivalence to the interpretation of fractions, and Students interpret percentages under the Number OI in Grade 4, this is the first-year students have encountered decimal place value, converting between fractions and decimals, and working with percentages. Teachers are not required to combine LOs but have the flexibility to choose activities that best meet their students' needs. Therefore, they can apply these skills to order a combination of a fraction, a decimal, and a percent; however, this would be a challenging skill for students."

Clarification
Clarification, through email, from Alberta Education, November 4, 2024: "Although students are exploring the LOs: students apply place value to decimal numbers, students explain properties of prime and composite numbers using multiplication and division, and students apply equivalence to the interpretation of fractions in Grade 4, this is the first year that students have encountered decimal place value and converting between fractions and decimals. Teachers are not required to combine LOs but have the flexibility to choose activities that best meet their students' needs. As a result, they can apply these skills to create equivalent fractions and convert between fractions and decimal numbers even when the fraction's denominator doesn't match the place value of the decimal's last non-zero digit, but this may be a challenging skill for students. At this grade, students lack benchmark knowledge to directly convert 1/4 to 0.25."

Background
Sometimes we say things in order to help students **do** the math rather than **understand** the math. Those statements can create misconceptions and confusion when the statements no longer hold true at later grades.

VOCABULARY

Compare	Express	Investigate	**Percents /**	Represent
Decimals	Fraction	Multiply	**Percentages / %**	Symbolically
Divide	**Hundredth**	Part	Relationship	Whole

ASSESSMENTS

Formative Assessment
- "Is It Equivalent?" *Uncovering Student Thinking In Mathematics: Grades K-5* pg. 104

Summative Assessment
-

INSTRUCTION

High Leverage Instructional Strategies / Practices
-

Learning Experiences
APLC
- Curriculum Planning and Assessment Resource

Warmups
- N6 WarmUps/MathTalks (Red Deer Public) N6 WarmUps/MathTalks FRENCH

GRADE FOUR MATH: 4N6
LONG RANGE PLANNING - CESD

Math Tasks (Collated by CBE)

- Interpret percentages
  - Open Middle Problems The following problems are Open Middle problems involving percentages of a given value.
    - Percent of a Quantity
    - Related Percentages
    - Percentages
  - How Many Bags of Chips Will There Be? Images of multi-pack bags of potato chips that can be used to engage students in exploration strategies to write fractions, decimals and percentages for the same part-whole relationship. Note | Technology might be used to explore numbers in class preferences as well as the 54 Classic Mix problem as this is beyond scope of learning outcome.
  - Doughnut Percents A team-building task to explore relationships between fractions, decimals and percentages.
- Relating fractions, decimals, percent
  - Fractions Decimals and Percentages Desmos This activity uses hundred grids to visually show fractions, decimals and percentages.
  - Battery – Fraction, Decimal, Percent This activity allows students to explore, and learn equivalencies of percentages, decimals, and fractions by examining battery life.
  - Matching Fractions, Decimals & Percent A digital matching activity that builds connections in the interconnected relationship with fractions, decimals and percent. Note | Non-digital resources are provided in this task to accompany the virtual element.

Learning

- CESD's Files - Created by CESD teachers
  - Introducing the Place Value of Percents
- Edmonton Catholic
  - Pacing Guide
    - Year at a Glance (CESD organized)
    - May
      - Grade 4 May.pdf
  - Curriculum Crates: These are amazing in-depth resources.
    - Gr. 4 Math: Students interpret percentages (Giving 100%!)

Gizmos on LearnAlberta

- Fraction, Decimal, Percent (Area and Grid Models) Students develop understanding of percent, fractions, and decimals in relation to a number line. They express equivalence between percent, fractions, and decimals. Teacher version with answer key
- Percents, Fractions, and Decimals Students learn how to represent a quantity out of 100 as a decimal, a fraction, and a percent.
  - Teacher version with answer key

Opportunities to Connect Outcomes:

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Resources

INDIGENOUS RESOURCES

PROFESSIONAL LEARNING