2 PATTERNS

GRADE TWO MATH: PATTERNS
LONG RANGE PLANNING - CESD

Please note:

- This document may be used to **support planning** for the Grade 2 math curriculum. En Francais
- Financial Literacy has been included here in order to share opportunities for **cross-curricular connections**.
- This document **will be updated throughout the year,** aligning with the *suggested* Grade 2 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:

- Grade 2 Math - NUMBER - Long Range Planning-CESD
- Grade 2 Math - GEOMETRY - Long Range Planning-CESD
- Grade 2 Math - MEASUREMENT - Long Range Planning-CESD
- Grade 2 Math - PATTERNS - Long Range Planning-CESD
- Grade 2 Math - TIME - Long Range Planning-CESD
- Grade 2 Math - STATISTICS - Long Range Planning-CESD
- Grade 2 Math - FINANCIAL LITERACY - Long Range Planning-CESD

Learning Outcomes:
Moved to tabs on left.

- 2P1 Students explain and analyze patterns in a variety of contexts. *Updated June 2, 2025 (Curriculum wording update)*

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

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

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.

Mathology Kits
Every school in CESD received either one or two Grade 2 Mathology kits. French Immersion schools also received 1 kit.

- These kits are a supplementary kit, and are not intended to be your sole mathematics resource (as is the case with any resource you use).
- These kits are aligned to Alberta curriculum, however, it is still your responsibility to ensure that each activity matches, in case there are errors. (As is the case with any resource you use.)
- Blackline masters can be downloaded from the Pearson website. Make sure you are choosing the Alberta versions! I've also downloaded the Line Masters and placed them within the Grade 2 PLC shared drive. Purchasing schools are allowed to use, print and edit these files. Since every school with Grade 2 received the kits, this shouldn't be an issue around copyright. Please do NOT share them with teachers outside of CESD. Direct them to the Pearson website instead.
- Learning Services will update the Grade 2 Long Range Planning documents with references to the Mathology Kit so you can easily determine where connections exist.
- Access the video from the google meet where we explored the kit here.

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 K-2: Alberta K-3 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

2P1 explain and analyze patterns...

GRADE TWO MATH: 2P1
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Patterns (P)
Awareness of patterns supports problem solving in various situations.

2P1 Students explain and analyze patterns in a variety of contexts.

UNDERSTANDINGS	KNOWLEDGE	SKILLS & PROCEDURES
1. A pattern can show increasing or decreasing change. 2. A pattern is more evident when the elements are represented, organized, aligned, or oriented in familiar ways.	1. Change can be an increase or a decrease in the number and size of elements. 2. A hundreds chart is an arrangement of natural numbers that illustrates multiple patterns. 3. Patterns can be found and created in cultural designs.	1. Describe non-repeating patterns encountered in surroundings, including in art, architecture, cultural designs, and nature. 2. Investigate patterns in a hundreds chart. 3. Create increasing patterns, using sounds, objects, pictures, or actions.
UNDERSTANDINGS	**KNOWLEDGE**	**SKILLS & PROCEDURES**
1. A pattern core can vary in complexity.	1. Attributes of elements, such as size and colour, can contribute to a pattern.	1. Create and express a repeating pattern with a pattern core of up to four elements that change by more than one attribute.

SPECIAL CARE AND ATTENTION

Curriculum Update
2P1.1.SP3 was changed from "Create and express growing patterns using sounds, objects, pictures, or actions." to "Create increasing patterns, using sounds, objects, pictures, or actions."
Background
This is an important learning outcome and should be explored in depth and take up a significant amount of time throughout the school year. Mathematics is a pattern finding subject. Mathematics is the study of patterns. Mathematicians notice, describe and generalize patterns. Students should too.

VOCABULARY

Align	Create	**Growing patterns**	Natural numbers	**Orient**
Arrangement	**Decrease**	**Hundreds chart**	**Non-repeating patterns**	Pattern core
Attributes	Describe	**Increase**	**Organize**	Repeating pattern
Change	Elements*	Investigate		Represent
(Complexity)	Express			

ASSESSMENTS

Summative Assessment
Performance Tasks created by AAC
- Grandmother's Treasure Chest / Le coffre au trésor de ma grand-mère
  - Also addresses 2N1

INSTRUCTION

High Leverage Instructional Strategies / Practices

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

Warm up
- G2P1 WarmUps/MathTalks (Red Deer Public) G2P1 FRENCH WarmUps/MathTalks

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Learning

- Edmonton Catholic's Curriculum Crates: These are amazing in-depth resources.
  - Gr. 2 Maths Students explain and analyze patterns in a variety of contexts.(Indigenous content)
  - In progress Gr. 2 Maths Students explain and analyze patterns in a variety of contexts (Cross curricular with P…

Math Tasks (Collated by CBE)

- Analyzing patterns
  - Repeating Patterns: A task aimed at creating repeating patterns using triangles and other shapes. Note | There is a digital and paper version for this task, which can also be extended as needed for learning levels
  - Poly Plug Pattern: A task to construct and describe repeating patterns on a 25 by 25 grid of dots. Note | See Student Solutions section for examples
  - Mystery Number: A prompt to determine a pattern rule and a missing number or value to engage in mathematical discussion about possibilities.
  - 1 Pattern = Many Patterns: Picture prompts to replace elements to complete patterns. Note | Task can be extended by prompting students to add elements to the ends for more possibilities.

Practice/Review

- Use understanding of patterns to fill out Hundreds Charts puzzles
  - One/Ten more/less Version 1, Version 2
  - Unusual layout Version 1

Opportunities to Connect Outcomes:

- Connect to addition and subtraction. (2N1)
  - What patterns do you see? (5+1=6, 5+2=7, 5+3=8, 5+4=9, 5+5=10) (10-5=5, 9-5=4, 8-5=3, etc.)
  - What patterns do you see in a hundreds chart?

Resources

Books

- Family Fun Day (Mathology) Student, Student - French, Teacher Guide, Teacher Guide - French
- How Numbers Work (Mathology) Student, Student - French, Teacher Guide, Teacher Guide - French
- Namir's Marvellous Masterpieces (Mathology) Student, Student - French, Teacher Guide, Teacher Guide - French
- Back to Batoche (Mathology) Student, Student - French, Teacher Guide, Teacher Guide - French
- Pattern Quest (Mathology) Student, Student - French, Teacher Guide, Teacher Guide - French
- The Best Surprise (Mathology) Student, Student - French, Teacher Guide, Teacher Guide - French

IMC Kit

- Pattern/Fraction Blocks

INDIGENOUS RESOURCES

From ARPDC

- Find objects, describe and identify designs and patterns in the environment and on the land (nature walks):
  - Trees, leaves, branches, pine needles
  - Small animals, insects, fish (spots on squirrels and chipmunks, fish scales)
  - Sky - day or night (start, moon)
- Identify and/or create patterns using examples from activities such as:
  - Fish net making
  - Toboggan making
  - Drum making
  - Wagon making
  - Harness making (dog, horse)
  - Purse making (moose hide; pelican beak)
  - Blanket / quilt making
  - Beading (patterns in colours, shapes, counting)
    - Moccasin making

PROFESSIONAL LEARNING

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