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 Français
- 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. October 30, 2025

Vocabulary Legend:

Student language - Important to know

NEW to Grade NEW to Grade

Student language 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





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 34 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





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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 <u>Pearson website</u>. 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 <u>Pearson website</u> 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.
 - o 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.
 - o Grades K-2: Alberta Grades 1-4 alignment guide





2P1 explain and analyze patterns...

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Awareness of patterns supports problem solving in various situations.

Awareness of patterns supports problem solving in various situations.					
2P1 Students explain and analyze patterns in a variety of contexts.					
UNDERSTANDINGS 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.	KNOWLEDGE Change can be an increase or a decrease in the number and size of elements. A hundreds chart is an arrangement of natural numbers that illustrates multiple patterns. Patterns can be found and created in cultural designs.	SKILLS & PROCEDURES 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 1. A pattern core can vary in complexity.	KNOWLEDGE Attributes of elements, such as size and colour, can contribute to a pattern.	SKILLS & PROCEDURES 1. Create and express a repeating pattern with a pattern core of up to four elements that change			

SPECIAL CARE AND ATTENTION

by more than one attribute.

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. <u>Mathematics is the study of patterns</u>. Mathematicians notice, describe and generalize patterns. Students should too.

VOCABULARY

Create Align **Growing patterns** Natural numbers Orient **Hundreds chart** Arrangement **Decrease** 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
 - o <u>Patterns</u>
- Indigenous Culture Based Learning

Warm up

● □ G2P1 WarmUps/MathTalks (Red Deer Public) □ G2P1 FRENCH WarmUps/MathTalks





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Learning

- ir-
- **Edmonton Catholic**
- Pacing Guide
 - Year at a Glance (CESD organized)
 - November:
 - Grade 2 November.pdf
- Curriculum Crates: These are amazing in-depth resources.
 - Gr. 2 Math Students explain and analyze patterns in a variety of contexts (Non-Repeating Patterns I...

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
 - o One/Ten more/less <u>Version 1</u>, <u>Version 2</u>
 - o 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) <u>Student</u>, <u>Student</u> <u>French</u>, <u>Teacher Guide</u>, <u>Teacher Guide</u> <u>French</u>
- Pattern Quest (Mathology) <u>Student</u>, <u>Student</u> <u>French</u>, <u>Teacher Guide</u>, <u>Teacher Guide</u> <u>French</u>
- 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):
 - o 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:
 - o Fish net making
 - Toboggan making
 - o Drum making
 - Wagon making
 - Harness making (dog, horse)
 - o Purse making (moose hide; pelican beak)
 - Blanket / quilt making
 - o Beading (patterns in colours, shapes, counting)
 - Moccasin making

PROFESSIONAL LEARNING





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