1 PATTERNS

GRADE ONE MATH: PATTERNS
LONG RANGE PLANNING - CESD

Please note:

- This document may be used to **support planning** for the Grade 1 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 1 Long Range Plan. En Francais
- All included resources are **free**, however some may require you to download from an outside source.
- Resources from the Learn Alberta website will require you to login with your google email to access them.

Organizing Ideas:

- Grade 1 Math - NUMBER - Long Range Planning-CESD
- Grade 1 Math - GEOMETRY - Long Range Planning-CESD
- Grade 1 Math - MEASUREMENT - Long Range Planning-CESD
- Grade 1 Math - PATTERNS - Long Range Planning-CESD
- Grade 1 Math - TIME - Long Range Planning-CESD
- Grade 1 Math - STATISTICS - Long Range Planning-CESD
- Grade 1 Math - FINANCIAL LITERACY - Long Range Planning-CESD

Learning Outcomes:
Moved to tabs on left.

- 1P1 Students examine patterns in cycles. *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 1 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 1 PLC shared drive. Purchasing schools are allowed to use, print and edit these files. Since every school with Grade 1 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 1 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

1P1 examine patterns in cycles

GRADE ONE MATH: 1P1
LONG RANGE PLANNING - CESD

Patterns (P)
Awareness of patterns supports problem solving in various situations.

1P1 Students examine patterns in cycles.

UNDERSTANDINGS	KNOWLEDGE	SKILLS & PROCEDURES
1. A pattern that appears to repeat may not be a cycle. 2. A cycle is a repeating pattern that repeats in the same way forever.	1. A cycle can express repetition of events or experiences. 2. Cycles include a. seasons b. day/night c. life cycles d. calendars 3. The same pattern can be represented with different elements. 4. A pattern core is a sequence of one or more elements that repeats as a unit.	1. Recognize cycles encountered in daily routines and nature. 2. Investigate cycles found in nature that inform First Nations, Métis, or Inuit practices. 3. Identify the pattern core, up to four elements, in a cycle. 4. Identify a missing element in a repeating pattern or cycle. 5. Describe change and constancy in repeating patterns and cycles. 6. Create different representations of the same repeating pattern or cycle, limited to a pattern core of up to four elements. 7. Extend a sequence of elements in various ways to create repeating patterns.

SPECIAL CARE AND ATTENTION

Curriculum Update
1P1.1 was changed from "A pattern that appears to repeat may not repeat in the same way forever" to "A pattern that appears to repeat may not be a cycle."

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

Calendar	**Cycle***	**Extend**	Pattern **core**	**Seasons**
Change	**Day/Night**	Identify	Recognize	Sequence
Constancy	Describe	Investigate	Repeating pattern	**Unit**
Create	Elements*	**Life cycles**	Repetition	

ASSESSMENTS

Formative assessment
- How are students describing the patterns? Are they using the core?
- To what extent are students repeating whole group actions, movements, sounds?
- Are students able to extend a pattern?
  - What strategies are students using to extend patterns?
- To what extent are students creating simple patterns?
- Can students identify missing elements?
- Can a student identify and correct errors in a pattern?
- Can students recreate a pattern using different elements?
- Are students having more trouble with a specific type of pattern? (ie. numbers are harder than colors)

INSTRUCTION

High Leverage Instructional Strategies / Practices

- Connect the numbers we say to the numbers on the calendar and the numbers in a hundreds chart (bottoms up, top down, 0-99)

Learning Experiences

GRADE ONE MATH: 1P1
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APLC
- Curriculum Planning and Assessment Resources
  - Patterns
- Indigenous Culture Based Learning

Warmup
- G1P1 Math WarmUps/MathTalks (Red Deer Public) FRENCH G1P1 Math WarmUps/MathTalks

Learning
- Explore patterns in a variety of situations, including
  - Calendar: numbers 1, 2, 3, 4…; numbers are *the same* each month; days: Sun, Mon, Tues…;
  - Hundreds chart
  - Physical manipulatives (square tiles, money)
  - Songs, actions and movements

Math Tasks (Collated by CBE)
- Repeating patterns
  - Sorting: Multiple youcubed lessons to sort emojis, shapes and patterns by noticing similarities and differences. Note | Identifying attributes and sorting are foundational ski
  - Patterns in a Circle: Students explore repeating color patterns in a circle.
  - Repeating Patterns: This task offers students the "opportunity to recognize, make and describe repeating patterns of triangles, and then challenges them to create repeating patterns of their own."
  - Biscuit Decorations: A challenging task that could be solved modelled with concrete materials to explore the pattern. Students can also be introduced to skip-counting and ordinal numbers.
  - Cube Bricks and Daisy Chains: Examples of repeating patterns to use in identifying and describing patterns. The questions in the problem could be used to introduce skip counting using the core of repeating patterns.
  - 1 Pattern = Many Patterns: Picture prompts to engage students in mathematical discussions about how to replace unknown elements to complete patterns. Note | Students can add elements to extend the patterns for more possibilities to engage with task.

Gizmos on LearnAlberta
- Pattern Flip (Patterns) Students work with patterns. Skills developed include determining the next shape in a pattern and finding common multiples of two numbers. This Gizmos will be a challenge for students as they can see the first 8 cards or so and then have to figure out what the 14th, 16th will be.
  - Teacher version with answer key

Opportunities to Connect Outcomes:
- Use 2-d shapes, 3-d objects, coins and bills when creating concrete patterns. (1G1, 1F1)

Resources

Manipulatives
- Square tiles
- Money

Books
- We Can Bead! (Mathology) Student, Student - French, Student - BIG, Teacher Guide, Teacher Guide - French
- A Lot of Noise (Mathology) Student, Student - French, Teacher Guide, Teacher Guide - French
- Midnight and Snowfall (Mathology) Student, Student - French, Teacher Guide, Teacher Guide - French
- The Seasons (PDF) (Website) (Little Cree Books)
  - Kittens love to play! But they had better make sure they are dressed appropriately for the weather!

Videos
- Pump Up the Pattern | Fun Exercise Song for Kids | Jack Hartmann *Exercise song for kids using patterns*
- Patterns! | Mini Math Movies | Scratch Garden *Intro to patterns*
- The Patterns Practice Song | Math Songs | Scratch Garden *Provides a pattern one element at a time and you have to state the last one*
- Banana Banana Meatball Song | Songs For Kids | Dance Along | GoNoodle

IMC Kit

- Pattern/Fraction Blocks

Other
- Walking Together First Nations, Métis and Inuit Perspectives in Curriculum

INDIGENOUS RESOURCES

From ARPDC
- Pulled directly from Infusing Indigenous Knowledge Into Curriculum
  - Use Cree math vocabulary and names for the seasons.
  - Identify patterns and patterns in cycles using examples such as:
    - Beading and feather patterns (complete the pattern) in regalia, moccasins, dream catchers
    - Birch bark biting
    - Migration patterns of birds
    - Tree cycles (flowers, leaves) and tree rings (diameter, radius, circumferences)
    - Day and night cycles, movement of the sun and moon
    - Drumming patterns
  - Use fingers to estimate the sunset: 2 finger width = 15 minutes; 4 finger width = 30 minutes.
  - Life cycles become part of natural law/ sustainability. Investigate examples of life cycles of things around them, such as the life cycle of the moose, fish, insects. (note: Life cycles will be found in Grade 2 Science)
  - Examine the shape of moose calls.

PROFESSIONAL LEARNING

Learn Alberta Planning Guides
The following Planning Guide was developed for the 2007 Program of Studies. 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.
- Repeating Patterns Planning Guide: Step 3 includes sample activities to explore repeating patterns, including one looking at patterns in everyday life that can be identified as cycles (Activity #4).

Misc
- Examples of Indigenous Cycles and Calendars. Not all are appropriate for grade 1 conversations.