


ELEMENTARY MATH PROJECT
Grade 1
Patterning and Algebra
Key Number Concept 2: Repeating Patterns
Sample Week at a Glance

Prior to this week of lessons, students would have had a week of soft start explorations with different materials, being invited to create repeating patterns and doing gallery walks to view, read, label and discuss each others' patterns. The teacher will have been checking in with students to see if they are able to make AB, ABB and ABC patterns and identify the core of each. This week of lessons will focus on students developing flexibility and fluency in the ways they discuss and compare repeating patterns with more than three elements and connect patterning to other areas of math concepts, other areas of learning and personal interests.

Monday	<p>Read Pitter Pattern by Joyce Hesselberth (or similar picture book with illustrations that include patterns) stopping to have students read and describe some of the patterns. Invite students to make connections between the book and patterns they encounter in their own lives.</p> <p>Invite students to think about a day in their life and where and when they might encounter patterns such as in the examples in the book - their clothing, in their home or neighbourhood, their music or sports practice, times in the day, routines, etc. Using pictures, numbers, and words, invite students to draw themselves and the patterns in their lives. This could be in a comic strip format or as a booklet or on a large piece of paper like a story map. Encourage students to add labels (AB notation) to their patterns.</p>  <p>Share and Compare: Invite students to share their personal patterns with a partner and compare the different patterns they identified.</p>
Tuesday	<p>In a pocket chart, on a whiteboard or chart, share a pictorial/visual pattern with four or five elements such as an ABBCD pattern. Ask students to choral read the pattern describing the elements such as long, short, short, medium,</p>

sideways (lines) and then choral label using AB notation. Invite students to describe what they notice about this pattern - what makes it a pattern?

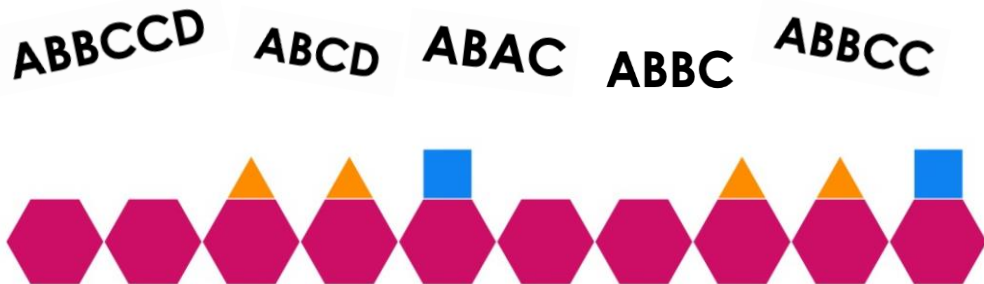
Math Workshop (students choose an area to practice):

-Provide a collection of materials such as pattern blocks, Unifix cubes, glass gems and loose parts or technology loaded with an app such as Mathigon Polypad, alongside cards with the following pattern labels on them: ABBC, ABAC, ABBCC, ABCD, ABCDE, ABBCCD etc. Invite students to create and label these patterns with the materials provided.

-On paper strips, have some repeating patterns drawn out with some parts "missing" (after the core) for students to solve and use similar materials as the drawings to place in the missing spots.

-Have a collection of letter cards or wooden letters (A-E) and invite students to create patterns with materials and then label them with letters.

Small Group Instruction: In small groups, provide two cards with these cores: ABBC and ABAC and ask students to create a repeating pattern for each of them (provide loose parts or pattern blocks) and then as a group compare and describe how the patterns are the same and how they are different. This is an opportunity for formative assessment.



Math Notebook: In their math notebooks or journal, invite students to record one of the patterns they created today using pictures, numbers and words. In their table groups or with a partner, invite students to compare their patterns using mathematical language and vocabulary.

Wednesday

Share some photographs from a book like I See a Pattern Here by Bruce Goldstone or Patterns in Nature by Philip Ball. Invite students to notice and describe patterns they see and to make connections.

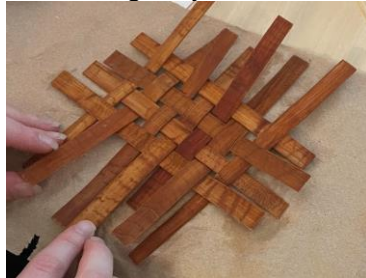
Go on a pattern walk outdoors to a park or neighbourhood. Invite students to look for repeating patterns in nature, on buildings, etc. Stop and have students describe and compare the patterns they are finding. Take photographs of the patterns the students find. Students may bring clipboards with them and draw and label the different patterns they find. Next, invite students to collect some "natural loose parts" that are available on the ground such as fallen leaves, twigs, stones, shells, or cones. Invite students to create repeating patterns with these natural materials and to create them in lines or different shapes. Invite students to do a gallery walk, take photographs of their patterns and discuss and compare how their patterns are the same and how they are different.



Closing Discussion: Either outdoors or back in the school, share two of the photographs taken of patterns seen and created outdoors and invite students to turn and talk in small groups about what connections they are making and where they might see other patterns like this in their daily lives or in the world around them.

Thursday

Introduce a local cultural practice that has patterning embedded in the process and item such as Coast Salish cedar weaving. Share a video or images of the process and some of the items created. Invite students to make connections to something they have done or created that involves patterns.



Math Workshop (students choose an area of interest to investigate):

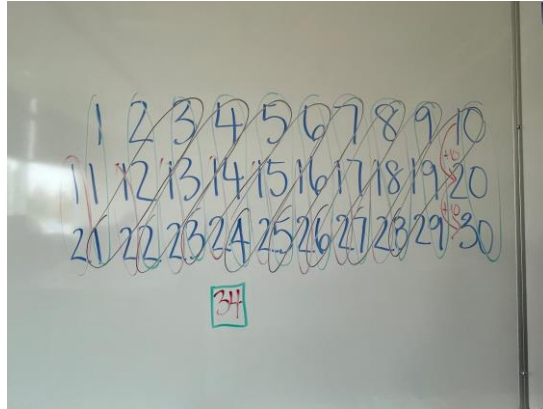
- Photographs of weaving and textiles from many cultures with clipboards with paper for students to record their observations and record the pattern
- Provide construction paper and scissors for students to do paper weaving. Consider providing a QR code to scan to a short video showing how to do paper weaving.
- Provide a collection of rhythm instruments for students to create musical patterns with. Ask them to create a pattern notation of their music on small whiteboards or clipboards.
- Provide templates or paper and crayons/pencils for students to design their own clothing that includes repeating patterns.

Closing Circle: Invite students to bring something they created or thought about to the carpet. Ask them to consider how they used patterning in their investigations. What connections are you making?

Friday

Choral Counting: 1-30 by 1's starting at 1, teacher records the count on whiteboard or chart as students are counting together orally in unison. Invite students to turn and talk with a partner or small group and look for patterns they notice in the record of the choral count. Have students share what patterns they found and annotate the record of the count with the patterns they

describe. Note that this routine supports students making connections between the development of their counting and beginning understanding of place value.



Provide students with different choices of how numbers are organized in our world such as calendar pages, a number line/measuring tape or clock. Invite students to notice and name the different repeating patterns they notice in how the numbers are organized. Invite students to do a number pattern search in the classroom or school or do their own choral counts in small groups, recording the number patterns they find on small whiteboards.

Reflection on Learning: Ask students to share what they learned about patterns this week, what they are still curious about and what learning goal they have for themselves regarding patterning.

Many students will likely demonstrate proficiency with repeating patterns after this week of lessons. If you think your students need more practice with repeating patterns, you may repeat similar lessons for the next week by changing the materials or picture books used or find other math connections in a series of lessons such as connecting patterns and shapes or patterns and science/local plants and trees.