THOMPSON RIVERS UNIVERSITY | Education & Social Work

Bachelor of Education (Elementary) & Bachelor of Education (Secondary) STEM Unit Plan Template

Unit Title:	Patterns and Sorting	Number of Lessons	10	Time (in weeks):	2
Name:	Kyra Doehle	Subject(s):	Math	Grade(s):	Kindergarten

Rationale

This unit is important because it offers students hands-on learning experiences that focus on sorting and patterns. The play-based activities incorporated throughout the unit create memorable learning moments, helping to solidify students' understanding of essential mathematical concepts. By engaging in these activities, students will develop skills in sorting objects based on a single attribute and gain familiarity with the components that constitute patterns. This foundational knowledge will not only enhance their mathematical reasoning but also foster a love for learning through exploration and creativity.

Overview:

Throughout this unit on patterns and sorting, students will engage in a series of experiential lessons designed to deepen their understanding of the key components of patterns and sorting. The unit begins with lessons focused on identifying attributes and sorting objects based on those attributes, laying a strong foundation for pattern recognition. As the unit progresses, students will be introduced to simple patterns and the key vocabulary and rules essential for describing them. By the end of the unit, students will be able to create their own patterns and articulate their structure and core using appropriate mathematical vocabulary.

CORE COMPETENCIES

Communication	Thinking	Personal & Social
• **Communicating** Students communicate by receiving and presenting information. In this unit, students will be given many opportunities to receive information in many different ways, but also present it in many different ways. • **Collaborating** Students combine their efforts with those of others to effectively accomplish learning and tasks. In this unit, students will have opportunities to collaborate and accomplish tasks together in each lesson.	• **Critical and reflective thinking** Students learn to engage in inquiry when they identify and investigate questions, challenges, key issues, or problematic situations in their studies, lives, and communities and in the media. In this unit, students will be given ample opportunities to investigate patterns and sorting independently and cooperatively, helping to establish inquiry. • **Creative thinking** Students may generate creative ideas through free play, engagement with other's ideas, consideration of a problem or	• **Social responsibility** Students build and maintain diverse, positive peer and intergenerational relationships. In this unit, students will have lots of practice working together and sharing materials. This will help them build skills to develop positive peer relationships.

	constraint, and/or because of their interests and passions. In this unit, students will have opportunities to engage with peers' ideas, teacher-assigned tasks, and open-ended discovery all concerning patterns and sorting.	

BIG IDEAS

(multiple subject areas for an integrated unit)

Subject Name: K Math	Subject Name: K Math
Repeating elements in patterns can be identified.	Objects have attributes that can be described, measured, and compared.

LEARNING STANDARDS

Curricular Competencies	Content
Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem-solving	Repeating patterns with two or three elements: - sorting and classifying using a single attribute - identifying patterns in the world - identifying the core - representing repeating patterns in various ways
Use mathematical vocabulary and language to contribute to mathematical discussions	
Model mathematics in contextualized experiences	

Prerequisite Concepts and Skills:

- Basic knowledge of colours, shapes, and size (bigger or smaller)
- Ability to use glue to fasten objects to paper
- Ability to write their name and letters A, B, and C (for labelling the core, and to know whose work is whose)
- Ability to use markers, crayons, and other writing utensils to draw pictures that are relatively similar to properly illustrate patterns.
- Ability to work both collaboratively and independently for short amounts of time
- Active listening skills
- Fine motor skills; can put a bead onto a pipe cleaner, glue smaller objects to paper, arrange smaller objects into pattern grids, draw according to instructions, put blocks together and take them apart, etc.

Teacher Preparation Required:

Lesson #	Teacher Preparation Required
Lesson 1	- Manipulatives ready (hidden around the classroom or things already there noted) - Sorting mats or labels ready
Lesson 2	- Manipulatives ready - Sorting mats or trays labeled and ready
Lesson 3	- Pattern scavenger hunt worksheets printed - Drawing utensils for each student
Lesson 4	- Manipulatives ready - Examples of AB patterns ready - Paper or pattern mats set out

Lesson 5	- Pattern cards or lines of manipulatives for extending ready - Manipulatives ready
Lesson 6	- Repeating pattern examples ready - Manipulatives ready
Lesson 7	- Manipulatives ready (flower stem activity) - Complex pattern examples ready
Lesson 8	- Manipulatives ready - Worksheets printed - Writing utensils
Lesson 9	- Manipulatives ready (blocks best for this one) - Pattern strips ready - Example patterns ready
Lesson 10	- Lots of variety of crafting supplies - Parade "float" bibs printed and hole punched and yarn threaded through - writing utensils

Cross-Curricular Connections:

Social Studies: Connecting ways that individuals and families differ and are the same by creating patterns or sorting.

Arts Education: Creating rhythms that are also patterned using instruments or claps and stomps. Using patterns in art (texture, line, shape, colour, etc.)

Physical and Health Education: Using non-locomotor, locomotor, and manipulative skills to create patterns.

Science: Looking at the patterns in weather and seasonal changes.

Aboriginal Connections/ First Peoples Principles of Learning:

FPPL: Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place).

This unit is centred around the fact that learning is experiential because every lesson has a component of inquiry learning. The unit itself is reflexive because each lesson builds upon what the students learnt in the lessons before until the final lesson where they show a culmination of everything they have learned on their journey. This unit is also reflective because each lesson ends with a piece of reflection and discussion that each student contributes to, having them reflect on what they learnt and how it relates to what they already knew.

Grandfather Teaching: Beaver (Wisdom)

In this unit, I am practicing Beaver by; giving students space to let their individual gifts shape their learning and hosting reflective time after each lesson to allow the kids to respectfully listen to and share with their peers and teachers. .

Universal Design for Learning (UDL)

MULTIPLE MEANS OF REPRESENTATION – I provide for multiple means of representation in this unit in the following ways:

- Prior knowledge of patterns and sorting will be gone over before each lesson
- Each lesson will conclude with a summarizing/reflective period

MULTIPLE MEANS OF ACTION AND EXPRESSION – I provide multiple means of action and expression in this unit in the following ways:

- Each lesson utilizes a different way for students to show and use their learning

MULTIPLE MEANS OF ENGAGEMENT – I provide multiple means of engagement in this unit in the following ways:

- There is a mixture of hands-on, collaborative, and independent learning throughout the unit
- Any discussions will be as interactive as possible
- There are many opportunities for student choice in this unit

Differentiated Instruction (DI):

- Brain breaks/ movement breaks will be used frequently

I am unaware of any specific needs of students as this is a plan that will be catered towards a real class in the future, at that time a more comprehensive DI will be formulated.

Overview of Lessons:

Lesson 1

Name &Time (Minutes Allotted):	**Introduction to Attributes (30 minutes)**
Learning Standards: Curricular Competencies	- Model mathematics in contextualized experiences - Explain and justify mathematical ideas and decisions
Learning Standards: Content	- sorting and classifying using a single attribute
Instructional Objectives	Students will be able to identify basic attributes such as colour, shape, and size in objects.
Assessment:	**Observation:** Monitor student participation during the attribute hunt and sorting activity. Take note of students who can articulate the attributes of the objects. **Conversation:** Ask students questions about the objects they are choosing and why. Also why they are choosing to sort them in certain ways. **Product:** The final set of sorted objects they came up with.
Teaching Strategies:	Active Learning Students engage in hands-on activities, such as the attribute hunt and sorting objects, which encourages them to actively participate in their learning process. Collaborative Learning Students work in small groups to find and sort objects based on assigned attributes, promoting teamwork and peer interaction as they share ideas and reasoning. Inquiry-Based Learning The use of open-ended questions throughout the lesson encourages students to think critically, explore their environment, and articulate their understanding of attributes, fostering a sense of curiosity and exploration.
Materials:	● A collection of colourful objects (e.g., blocks, beads, buttons, or toys) with varying colours, shapes, and sizes.

	• Chart paper or a whiteboard. • Markers or chalk. • Attribute sorting mats or trays (can be made from paper or plastic).
Lesson Activities:	

Introduction/Hook:	Introduction (5 minutes)
	
	• Engage Students: Gather students in a circle. Show them a few colourful objects and ask questions to elicit their prior knowledge. For example:
	  ◦ "What colours do you see?"
	  ◦ "Can anyone tell me about the shapes of these objects?"
	  ◦ "How would you describe the size of this block compared to this one?"
	• Introduce Vocabulary: Highlight the key vocabulary words: colour, shape, and size. Write these words on the board/chart paper for reference.

Body:	Attribute Hunt (10 minutes)
	
	• Set the Scene: Explain that students will go on a mini "attribute hunt" around the classroom to find objects that match certain attributes.
	• Instructions:
	  ◦ Divide the class into small groups (3-4 students each).
	  ◦ Assign each group an attribute (e.g., one group looks for red objects, another for round shapes, and another for large items).
	  ◦ Set a timer for 5 minutes and allow students to explore the classroom, finding items that fit their assigned attributes.
	• Circulate: Walk around to observe and assist students, posing guiding questions to encourage critical thinking, such as:
	  ◦ "What makes this object red?"
	  ◦ "How did you decide this item is a circle?"
	
	Group Sorting Activity (10 minutes)
	
	• Gather Back: After the attribute hunt, have students return to the circle with the objects they've found.
	• Sorting: Place sorting mats or trays in the center and invite students to sort their collected objects based on the attributes they were assigned.

	● **Demonstrate Sorting:** Model how to sort one or two objects, explaining your reasoning (e.g., "I'm putting this red block in the 'red' tray because it matches the colour."). ● **Encourage Discussion:** Allow students to share their findings and reasoning. Ask questions like: ● "Why did you choose to put that object in this group?" ● "Are there any objects that could belong to more than one group?"
Closure:	Wrap-up Discussion (5 minutes) ● **Reflect:** Facilitate a class discussion to reflect on the day's activities. Ask: ● "What attributes did you find today?" ● "Was it easy or hard to find objects that fit your attribute?" ● "Can you think of other objects that might not be in our classroom but fit our attributes?" ● **Highlight Learning:** Reinforce the vocabulary and concepts learned today, summarizing the importance of attributes in sorting and patterns.

Lesson 2

Name &Time (Minutes Allotted):	**Sorting Objects (30 Minutes)**
Learning Standards: Curricular Competencies	- Model mathematics in contextualized experiences - Explain and justify mathematical ideas and decisions
Learning Standards: Content	- sorting and classifying using a single attribute
Instructional Objectives	Students will be able to sort a collection of objects based on one attribute (e.g., all red items together).
Assessment:	Observation: Monitor student participation during the sorting activity. Take note of students who accurately sort objects based on their chosen attributes and can articulate their reasoning. Conversation: Engage students in discussion by asking questions about their sorting choices, such as why they sorted certain objects together and what attributes influenced their decisions. Product: Assess the final set of sorted objects each student or group presents, evaluating the accuracy of their groupings based on the chosen attribute.
Teaching Strategies:	Hands-On Learning: Students engage with various objects to sort based on attributes, allowing them to practice concepts through direct manipulation. Collaborative Learning:

	Students work in small groups to discuss and share their sorting strategies, fostering peer interaction and cooperative problem-solving. Interactive Discussion: The teacher facilitates guided discussions before and after the activity, prompting students to articulate their reasoning and reflect on their sorting choices.
Materials:	● A collection of various objects (e.g., blocks, buttons, beads, or toys) that vary in colour, shape, and size. ● Sorting mats or trays labelled with attributes (e.g., colour names, shapes). ● Chart paper or a whiteboard. ● Markers or chalk.
Lesson Activities:	
Introduction/Hook:	Review of Previous Lesson (5 minutes) ● Engage Students: Begin with a brief review of Day 1's lesson on attributes. Ask students to share what they remember about identifying colours, shapes, and sizes. ● Reinforce Vocabulary: Remind students of the vocabulary words (colour, shape, size) and write them on the board or chart paper. Introduction to Sorting (5 minutes) ● Explain Sorting: Introduce the concept of sorting by attributes. Explain that sorting helps us organize and make sense of objects by grouping them based on shared characteristics.*- Could read "Sort it Out" by Barbara Mariconda or something similar?* ● Demonstrate Sorting: Use a few objects to demonstrate how to sort. For example, take a mix of coloured blocks and show how to group them by colour, explaining your reasoning as you go.

Body:	Guided Sorting Activity (10 minutes)
	
	● Modelling the Activity: Provide each student with a small assortment of objects.
	● Sorting Instructions:
	  ● Instruct students to sort their objects based on one attribute of their choice (e.g., colour, shape, or size).
	  ● Encourage them to verbalize their sorting rationale as they work (e.g., "I'm putting all the red blocks together because they are the same colour.").

	• **Circulate and Assist:** Walk around the classroom, observing and assisting students as needed. Prompt them with questions to encourage deeper thinking, such as:
	  ◦ "Why did you choose to sort by that attribute?"
	  ◦ "Can you find any objects that might fit into more than one group?"
	
	Group Sharing Session (5 minutes)
	
	• **Gather Students:** After sorting, have students return to their seats or gather in a circle.
	• **Share Group Sorts:** Invite groups or individual students to share their sorting results with the class. Ask questions to facilitate discussion:
	  ◦ "What attribute did you sort by?"
	  ◦ "How did you decide where to place each object?"
	• **Encourage Vocabulary Use:** Prompt students to use terms such as colour, shape, and size in their descriptions.

Closure:	Reflection Activity (5-10 minutes)
	
	• **Discuss Sorting Strategies:** Lead a reflective discussion on the different sorting strategies used by students. Ask:
	  ◦ "What did you notice about the objects you sorted?"
	  ◦ "Were there any challenges you faced while sorting?"
	• **Highlight Key Learning Points:** Summarize the main ideas of sorting by attributes and emphasize the importance of organization in understanding patterns.

Lesson 3

Name &Time (Minutes Allotted):	**Recognizing Patterns in Surroundings (40 minutes)**
Learning Standards: Curricular Competencies	Connect mathematical concepts to each other and to other areas and personal interests
Learning Standards: Content	identifying patterns in the world
Instructional Objectives	Students will be able to recognize and point out simple patterns in their surroundings
Assessment:	**Observation:** Monitor student engagement during the scavenger hunt to see how actively they identify and articulate the patterns they find. **Conversation:** Facilitate discussions by asking students to explain their findings and share their reasoning behind their pattern choices.

	Product: Evaluate the completed scavenger hunt checklists and drawings to assess students' ability to recognize and represent different patterns visually.
Teaching Strategies:	**Active Exploration:** Students engage in a hands-on scavenger hunt to discover patterns in their environment, promoting active learning through exploration. **Collaborative Discussion:** Students work in small groups to share their findings, fostering communication and teamwork while enhancing their understanding of patterns.
Materials:	● Pattern scavenger hunt worksheet ● Markers or crayons
Lesson Activities:	
Introduction/Hook:	Introduction (5 minutes) ● Recap previous lessons on attributes and introduce the day's objective: recognizing patterns in the environment. ● Show a few visual examples of patterns (e.g., stripes, polka dots) and ask students to share where they've seen patterns.- What is a pattern? It is something that is arranged according to a rule.

Body:	Pattern Scavenger Hunt Activity (25 minutes)
	
	● Instructions (2 minutes):
	  ● Explain that students will go on a "Pattern Scavenger Hunt" in the classroom.
	  ● Distribute the scavenger hunt worksheet and explain that each student will find four different patterns in the classroom and draw them in the four different boxes.
	● Execution (23 minutes):
	  ● Divide students into small groups (or individually) and allow them to explore.
	  ● Have them find and draw patterns they see in the classroom.

Closure:	Group Sharing and Reflection (10 minutes) ● Regroup and have each group share one pattern they found.

	● As groups share, create a quick visual chart on the board or chart paper, noting the types of patterns discovered.

Lesson 4

Name &Time (Minutes Allotted):	**Creating Simple AB Patterns (40 minutes)**
Learning Standards: Curricular Competencies	- Represent mathematical ideas in concrete, pictorial, and symbolic forms - Model mathematics in contextualized experiences
Learning Standards: Content	- repeating patterns with 2-3 elements - representing repeating patterns in various ways
Instructional Objectives	Students will be able to create simple AB patterns using objects like beads or blocks.
Assessment:	Observation: Observe students as they create their AB patterns to assess their engagement and ability to follow the pattern structure. Product: Evaluate the completed patterns for accuracy in following the AB format and creativity in colour choices. Conversation: Facilitate discussions during sharing time to gauge students' understanding by having them explain their patterns and the reasoning behind their colour choices.
Teaching Strategies:	Modelling: The teacher demonstrates how to extend patterns on the whiteboard, providing a clear visual example for students to follow. Collaborative Learning: Students work in pairs or small groups to extend their given patterns, promoting teamwork and encouraging peer support. Hands-On Manipulatives: Using physical objects like beads or blocks allows students to engage kinesthetically, reinforcing their understanding of pattern extension through tactile experience.
Materials:	● Colourful beads or blocks (two distinct colours) ● Pattern cards (examples of AB patterns) ● White paper or pattern mats ● Markers or crayons ● Chart paper for group display
Lesson Activities:	
Introduction/Hook:	Introduction (5 minutes) ● Recap Previous Lesson: ● Review what students learned about recognizing patterns in their surroundings.

	● Introduce Today's Objective:
	  ● Explain that students will create their own AB patterns using colourful objects.
	● Show Examples:
	  ● Display pattern cards that illustrate simple AB patterns (e.g., red-blue-red-blue).

Body:	## Guided Practice (10 minutes)
	● Demonstrate Creating Patterns:
	  ● Use a document camera or whiteboard to demonstrate how to create an AB pattern using beads or blocks.
	  ● Create an example together as a class (e.g., "Let's make a red-blue pattern!").
	● Encourage Students to Contribute:
	  ● Ask students to help choose the next colour in the pattern and explain why it fits the AB pattern structure.
	## Independent Activity (15 minutes)
	● Hands-On Creation:
	  ● Distribute beads or blocks to each student or group.
	  ● Instruct students to create their own AB patterns using the materials provided. (could create bracelets with pipe cleaners and beads)
	● Encourage Creativity:
	  ● Allow students to create multiple patterns if time permits and to experiment with different combinations.

Closure:	## Sharing and Discussion (7 minutes)
	● Group Sharing:
	  ● Have students present their AB patterns to the class.
	  ● Encourage them to describe their patterns, explaining the order of colours (e.g., "This is a red-blue pattern.").
	● Display Patterns:
	  ● Use chart paper to display some of the patterns created by students for others to see.
	## Closing (3 minutes)
	● Recap the Lesson:

	● Review the concept of AB patterns and praise students for their creativity. ● Preview Next Lesson: ● Briefly mention that they will learn about extending patterns in the next class.

Lesson 5

Name &Time (Minutes Allotted):	**Extending Patterns (40 minutes)**
Learning Standards: Curricular Competencies	- Use reasoning to explore and make connections - Model mathematics in contextualized experiences
Learning Standards: Content	- representing repeating patterns in various ways - repeating patterns with 2-3 elements
Instructional Objectives	Students will be able to extend a given pattern by adding the next elements in the sequence (e.g., continuing a red-blue-red-blue pattern).
Assessment:	Observation: Monitor student engagement and participation during the pattern extension activity to assess their understanding. Product Assessment: Evaluate the completed pattern extension worksheets to ensure students can accurately extend patterns. Conversation: Facilitate discussions during sharing time to gauge students' understanding of how they approached extending their patterns.
Teaching Strategies:	Modelling: The teacher demonstrates how to extend patterns on the whiteboard, providing a clear visual example for students to follow. Collaborative Learning: Students work in pairs or small groups to extend their given patterns, promoting teamwork and encouraging peer support. Hands-On Manipulatives: Using physical objects like beads or blocks allows students to engage kinesthetically, reinforcing their understanding of pattern extension through tactile experience.
Materials:	● Pre-made pattern cards (with various AB patterns) ● Manipulatives (e.g., beads, blocks, or coloured paper) ● Whiteboard and markers ● Chart paper for displaying student work
Lesson Activities:	
Introduction/Hook:	Introduction (5 minutes) ● Recap Previous Lesson: ● Review what students learned about creating AB patterns. ● Introduce Today's Objective:

	● Explain that students will learn how to extend patterns by adding the next elements in a sequence. ● Show Examples: ● Use the whiteboard to display a simple pattern (e.g., red-blue-red-blue) and ask students what comes next.
Body:	Guided Practice (10 minutes) ● Demonstrate Pattern Extension: ● Show students a few pre-made pattern cards and ask them to identify the pattern. ● Guide the class in extending a pattern together (e.g., continuing the sequence: red-blue-red-blue-?). ● Encourage Participation: ● Ask questions like, “What comes after this?” to engage students in discussion. Independent Activity (15 minutes) ● Hands-On Extension: ● Distribute manipulatives to pairs or small groups and provide each group with a different pattern card (or line of manipulatives at their desks) ● Instruct students to extend their given patterns. Sharing and Discussion (7 minutes) ● Group Sharing: ● Invite groups to present their extended patterns and explain how they determined what came next. ● Collective Discussion: ● Discuss the different patterns created, emphasizing the concept of extending patterns.
Closure:	Closing (3 minutes) ● Recap the Lesson: ● Review key points about extending patterns and praise students for their efforts. ● Preview Next Lesson:

	● Briefly mention that they will learn about identifying the core of a pattern in the next class.

Lesson 6

Name &Time (Minutes Allotted):	**Identifying the Core of a Pattern (40 minutes)**
Learning Standards: Curricular Competencies	- Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem-solving - Use mathematical vocabulary and language to contribute to mathematical discussions
Learning Standards: Content	- identifying the core - representing repeating patterns in various ways
Instructional Objectives	Students will be able to identify the core of a repeating pattern (e.g., "red-blue" is the core of the pattern red-blue-red-blue) and understand that the core must repeat a minimum of three times to be considered a pattern.
Assessment:	Observation: Monitor student participation during the core identification activity to assess understanding. Product Assessment: Evaluate completed patterns to ensure students can accurately identify the core of various patterns and understand the repetition requirement. Conversation: Facilitate discussions during sharing time to gauge students' understanding of how they identified the cores of their patterns and their adherence to the three-time repetition rule.
Teaching Strategies:	Direct Instruction with Emphasis: The teacher explicitly explains the concept of a pattern core and stresses that it must repeat at least three times, ensuring students grasp this critical aspect of pattern recognition. Hands-On Learning: Students engage with manipulatives to create their own patterns, allowing them to apply their understanding of pattern cores in a tactile and visual manner.
Materials:	● Pattern cards with various repeating patterns ● Manipulatives (e.g., coloured blocks or beads) ● Whiteboard and markers ● Chart paper for group display
Lesson Activities:	
Introduction/Hook:	Introduction (5 minutes) ● Recap Previous Lesson: ● Review what students learned about extending patterns. ● Introduce Today's Objective:

	● Explain that students will learn how to identify the core of a pattern, which is the part that repeats. ● Emphasize Core Repetition: ● Clearly state that for a pattern to be considered a pattern, the core must repeat at least three times (e.g., "red-blue" must occur at least three times in a sequence to form a valid pattern).
Body:	Guided Practice (10 minutes) ● Demonstrate Core Identification: ● Display various pattern cards (or drawn patterns on the board) and ask students to identify the core for each one. ● Highlight Repetition: ● As you identify cores, reiterate the importance of the core repeating a minimum of three times. For example, show the pattern "red-blue-red-blue" and confirm that "red-blue" is the core, which repeats four times. ● Class Participation: ● Encourage students to come up to the board to mark the core of a given pattern, emphasizing the three-time repetition rule. Independent Activity (15 minutes) ● Hands-On Practice: ● Distribute manipulatives and have students create their own patterns, ensuring they use a core that repeats at least three times. ● Share their patterns with elbow partners and have them identify the core. Sharing and Discussion (7 minutes) ● Group Sharing: ● Invite students to share their patterns and the identified cores with the class. ● Collective Discussion: ● Discuss the similarities and differences in cores among the patterns shared, reinforcing the idea that the core must repeat at least three times to form a valid pattern.
Closure:	Closing (3 minutes)

	● Recap the Lesson: ● Review key points about identifying the core of patterns and the importance of the core repeating at least three times, praising students for their participation. ● Preview Next Lesson: ● Briefly mention that they will learn to create more complex patterns in the next class.

Lesson 7

Name &Time (Minutes Allotted):	**Creating more Complex Patterns (AAB and ABC) (40 minutes)**
Learning Standards: Curricular Competencies	- Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem-solving - Use mathematical vocabulary and language to contribute to mathematical discussions
Learning Standards: Content	- identifying the core - representing repeating patterns in various ways
Instructional Objectives	Students will be able to create more complex repeating patterns, such as AAB (red-red-blue) or ABC (red-yellow-blue).
Assessment:	Observation: Monitor student engagement and participation during the pattern creation activity to assess understanding. Product Assessment: Evaluate the completed patterns to ensure students can accurately create and describe AAB and ABC patterns. Conversation: Facilitate discussions during sharing time to gauge students' understanding of the structure of their patterns and their ability to articulate their thought processes.
Teaching Strategies:	Hands-On Learning: Students engage in a tactile exploration of patterns by using manipulatives to create their own AAB and ABC patterns, allowing them to visualize and physically manipulate the structures they are learning about. Peer Collaboration and Sharing: Students present their patterns to classmates, fostering a collaborative learning environment where they can articulate their thought processes and receive feedback, enhancing their understanding through peer interaction.
Materials:	● Whiteboard and markers ● Flower stem activity sets ● Chart paper for displaying student patterns
Lesson Activities:	
Introduction/Hook:	Introduction (5 minutes) ● Recap Previous Lesson:

	● Review the concept of identifying the core of a pattern and the importance of repetition. ● Introduce Today's Objective: ● Explain that students will learn to create more complex patterns, specifically AAB and ABC patterns. ● Show Examples: ● Use the whiteboard to demonstrate AAB and ABC patterns, highlighting the structure of each (e.g., AAB: red-red-blue, ABC: red-yellow-blue).
Body:	## Guided Practice (10 minutes) ● Demonstrate Pattern Creation: ● Create an AAB pattern with the class, encouraging students to suggest colours for each part of the pattern. ● Explore ABC Patterns: ● Transition to an ABC pattern, guiding students through the creation process and asking for input on colours and sequence. ● Class Participation: ● Invite students to come to the front and add to the patterns on the board as a collaborative effort. ● Be sure to ask about what the core of the pattern is and how they know it is a pattern. ## Independent Activity (15 minutes) ● Hands-On Creation: ● Provide materials for students to create their own patterns using the flower stem activity (flower with a pattern core labelled and a pipe cleaner attached, student create the correct pattern on the flower stem with beads.) ## Sharing and Discussion (7 minutes) ● Group Sharing: ● Have students present their patterns to the class, explaining whether they created an AAB or ABC pattern and describing its structure and core. ● Collective Analysis: ● Encourage classmates to ask questions about each pattern presented, fostering a dialogue about the differences and similarities between the patterns.

Closure:	Closing (3 minutes)
	
	● Recap the Lesson:
	  ● Summarize the key points learned about creating more complex patterns and praise students for their creativity and efforts.
	● Preview Next Lesson:
	  ● Briefly mention that they will learn how to represent these patterns in different ways in the next class.

Lesson 8

Name &Time (Minutes Allotted):	**Representing Patterns in Different Ways (40 minutes)**
Learning Standards: Curricular Competencies	- Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem-solving
Learning Standards: Content	- representing repeating patterns in various ways
Instructional Objectives	Students will be able to represent the same pattern using different materials or methods (e.g., drawing, using manipulatives, or clapping).
Assessment:	Observation: Monitor student engagement and participation during the representation activity to assess understanding. Product Assessment: Evaluate the completed worksheets to ensure students can accurately represent patterns in multiple ways. Conversation: Facilitate discussions during sharing time to gauge students' understanding of the flexibility in pattern representation.
Teaching Strategies:	Multimodal Learning: By allowing students to represent patterns through various methods (manipulatives, drawing, and sound), the lesson caters to different learning styles and strengthens understanding by engaging multiple senses. Interactive Sharing: Encouraging students to present their patterns and representations fosters a collaborative classroom environment, promoting peer learning and enhancing communication skills as they articulate their thought processes and receive feedback from classmates.
Materials:	● Coloured blocks, beads, or other manipulatives ● Drawing paper and crayons/markers ● Rhythm instruments (e.g., tambourines, clappers, or just hands for clapping) ● Whiteboard and markers ● Pattern representation worksheets for recording different methods
Lesson Activities:	

Introduction/Hook:	## Introduction (5 minutes)
	● Recap Previous Lesson:
	  ● Review the concepts of AAB and ABC patterns and the importance of creating patterns.
	● Introduce Today's Objective:
	  ● Explain that students will learn to represent the same pattern in various ways, emphasizing creativity and flexibility in pattern representation.

Body:	## Guided Practice (10 minutes)
	● Demonstrate Pattern Representation:
	  ● Show a simple pattern (e.g., red-blue-red) using manipulatives. Ask students how they can represent the same pattern in a different way.
	● Explore Different Methods:
	  ● Illustrate how to draw the pattern on the whiteboard and then represent it through clapping or using instruments or the students themselves in line.
	● Class Participation:
	  ● Involve students by asking them to suggest additional ways to represent the same pattern, encouraging creativity.
	  ● *Could play Pattern Bingo as well*
	
	## Independent Activity (15 minutes)
	● Choose a Pattern to Represent:
	  ● Provide a selection of patterns on the whiteboard and allow students to choose one to represent.
	● Create Multiple Representations:
	  ● Students will use manipulatives to build the pattern, draw it on paper, and practice clapping or using instruments to represent the rhythm of the pattern.
	● Recording Representations:
	  ● Distribute pattern representation worksheets where students can document their chosen pattern and the method they used to represent it.
	- *Could do "Is It A Pattern" sorting activity instead or as well*
	
	## Sharing and Discussion (7 minutes)
	● Group Sharing:
	  ● Invite students to share their chosen pattern and the different ways they represented it with the class.
	● Discuss the Variety of Representations:

	● Encourage classmates to ask questions about the methods used and discuss the benefits of representing patterns in multiple ways.
Closure:	Closing (3 minutes) ● Recap the Lesson: ● Summarize key points about the importance of representing patterns in different forms and praise students for their creativity. ● Preview Next Lesson: ● Mention that they will be moving towards filling in missing elements in patterns in the next class.

Lesson 9

Name & Time (Minutes Allotted):	**Finding Missing Elements in Patterns (40 minutes)**
Learning Standards: Curricular Competencies	- Use reasoning to explore and make connections - Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem-solving
Learning Standards: Content	- repeating patterns with two or three elements
Instructional Objectives	Students will be able to identify and fill in the missing elements in a given pattern (e.g., red-__-red-blue).
Assessment:	Observation: Monitor student engagement and participation during the filling-in-missing elements activity to assess understanding. Product Assessment: Evaluate the completed patterns to ensure students can accurately identify and fill in missing elements in various patterns. Conversation: Facilitate discussions during sharing time to gauge students' understanding and reasoning skills.
Teaching Strategies:	Collaborative Learning: Encourage students to work in pairs or small groups while filling in missing elements. This promotes discussion and allows them to share strategies and reasoning. Collaborative learning enhances critical thinking as students articulate their thought processes and learn from their peers' perspectives.
Materials:	● Manipulatives (coloured blocks, beads, etc.) ● Whiteboard and markers ● Chart paper for group practice ● Pencils and crayons
Lesson Activities:	
Introduction/Hook:	Introduction (5 minutes) ● Recap Previous Lesson:

	● Review the concept of representing patterns in different ways and the importance of understanding patterns. ● Introduce Today's Objective: ● Explain that students will focus on identifying and filling in missing elements of patterns, highlighting how this skill helps in understanding pattern sequences.
Body:	## Guided Practice (10 minutes) ● Demonstrate Filling in Missing Elements: ● Use the whiteboard to display a pattern with missing elements (e.g., red-__-red-blue) and model how to determine what should go in the blank. ● Class Participation: ● Involve students by asking for their input on what should fill the blank, guiding them through the reasoning process. ## Independent Activity (15 minutes) ● Manipulative Practice: ● Use the pattern strips with missing elements and have students fill in the missing space with the correct object ● Messy Patterns: Allow students to use manipulatives (blocks work best) to physically create patterns with one element missing or one mistake. When students are done with creating their "messy patterns" they give it to another student to "fix" it. ## Sharing and Discussion (7 minutes) ● Group Sharing: ● Invite students to share their completed patterns with the class, explaining how they determined what went in the missing spaces. ● Discussion of Strategies: ● Encourage students to discuss different strategies they used to identify the missing elements, reinforcing problem-solving skills.
Closure:	## Closing (3 minutes) ● Recap the Lesson:

	● Summarize key points about identifying and filling in missing elements in patterns, emphasizing the importance of understanding the sequence. ● Preview Next Lesson: ● Briefly mention that in the final lesson, they will create and describe their own patterns based on what they've learned throughout the unit.

Lesson 10

Name & Time (Minutes Allotted):	**Pattern Parade! (45 minutes)** - could be two lessons (one for creation and one for presentation)
Learning Standards: Curricular Competencies	- Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem-solving - Use mathematical vocabulary and language to contribute to mathematical discussions
Learning Standards: Content	- repeating patterns with two or three elements
Instructional Objectives	Students will be able to create their own patterns and describe the core and structure of the pattern using appropriate vocabulary.
Assessment:	Observation: Monitor student engagement during the creation and parade to assess their understanding and enthusiasm for patterns. Product: Collect and review the cards to ensure students can articulate the core and structure of their patterns. Conversation: Assess students' ability to communicate about their patterns and support one another during presentations.
Teaching Strategies:	Modelling and Demonstration: Present various examples of patterns using different materials to help students visualize strong patterns and understand the concept of a "core." Peer Collaboration: Encourage students to work in pairs or small groups during the pattern creation phase to foster discussion, idea sharing, and peer feedback, enriching their learning experience.
Materials:	● Craft supplies (coloured paper, markers, feathers, fabric scraps, stickers, glue, scissors, pompoms etc.) ● Music for the parade (optional) ● Space for displaying patterns (classroom, hallway, etc.) ● Pattern Parade “floats” (bibs) ● Camera or recording device (optional, for documentation)
Lesson Activities:	
Introduction/Hook:	Introduction (5 minutes) ● Recap Previous Lessons:

	● Briefly review the concepts of patterns learned throughout the unit, emphasizing the importance of recognizing, creating, and describing patterns. ● Introduce the Pattern Parade: ● Explain that today will be a celebration of their learning, where students will showcase their patterns in a fun parade format.
Body:	Creating Patterns (15 minutes) ● Pattern Creation Time: ● Provide students with craft supplies to create their unique patterns. Encourage them to be creative and use various materials to represent their patterns (as long they can be attached to their parade float bibs) ● Pattern Description Cards: ● Each student should fill out a pattern parade float bib detailing their pattern, including what the core of their pattern is. Setting Up the Parade (5 minutes) ● Arrange Students and Patterns: ● Organize students in a line for the parade. Ensure they have their patterns ready to display. Set up a designated area for the parade and display their creations along the route. ● Practice Marching: ● Allow students to practice marching in line while having their float bibs on, encouraging them to share their excitement and be proud of their work. Pattern Parade (15 minutes) ● Begin the Parade: ● Start the parade with music (if available). As students march one at a time, they should showcase their patterns, proudly displaying them to classmates and teachers. ● Presenting Patterns: ● As they pass by, each student can briefly describe their pattern to the audience, explaining the core and how it repeats. Encourage classmates to cheer and celebrate each presentation.

Closure:	Reflection and Closing (5 minutes) ● Group Reflection: ● After the parade, gather students for a reflection session. Ask questions like: ● What did you enjoy most about creating your patterns? ● What was your favourite pattern that you saw during the parade?

Resources:

Patterns and Sorting Learning Progression
Lesson 3- Patterns Scavenger Hunt Worksheet.pdf
Lesson 7 Flower Stem Patterns.pdf
Lesson 8 Pattern Recorder.pdf
Pattern Core Bingo.pdf
Lesson 10 Pattern Parade Bib.pdf
@Numberblocks- Orange Level Two | Full Episodes 26-28 | #HomeSchooling - 4:32 for Pattern Palace
Pump Up the Pattern | Fun Exercise Song for Kids | Jack Hartmann

Extra Activities to Use:

- Sorting Ourselves: sorting and creating patterns with ourselves (colour of shirts, hair colour, etc.)
- Creating Patterns with Nature: if it is a nice day outside we can go and create patterns in nature
- Smarties/M&Ms sorting activity
- Read pattern and sorting books
- Partner extending patterns game - Student A closes their eyes, while Student B has a long, rectangular-shaped piece of cardboard in front of them. Student B creates a pattern using manipulatives on top of the cardboard, leaving just enough room for Student A to extend the pattern when they open their eyes
- Is It A Pattern? Sorting Game
- Ice cube trays, pompoms and tweezers to make creating patterns a little more fun

Extensions to Unit:

- Indigenous artwork investigation to see different patterns
    - Beading in Indigenous communities- learn a bit about beading and then try beading ourselves using pony beads and string or pipe cleaners.
- Having pattern-creating centers with different activities that the students could circulate through.
- More practice on finding the core and making sure the core repeats three times to form a pattern.
- Spending more time inquiring about what patterns exist in the world and where we have seen them.
- Pattern creation activities for early finishers to do while waiting for the next activity throughout the year for extra practice.

Reflections and Revisions