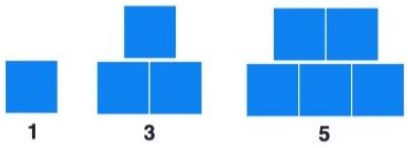
COASTMETRO

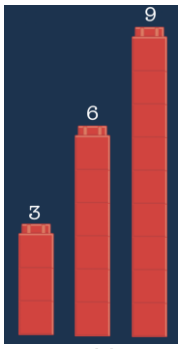
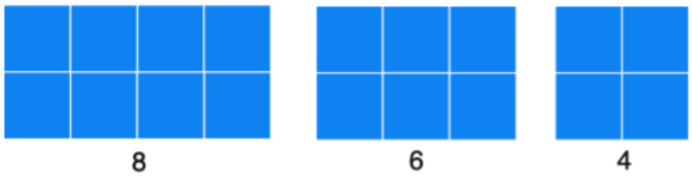
ELEMENTARY MATH PROJECT

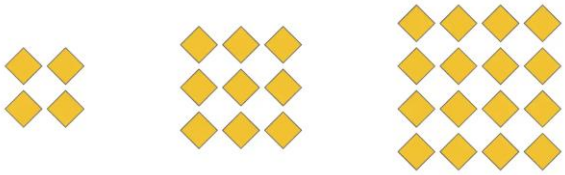
Grade 3
Patterning and Algebra
Key Number Concept 1: Increasing & Decreasing Patterns
Sample Week at a Glance

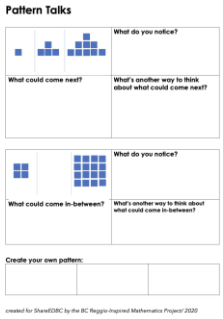
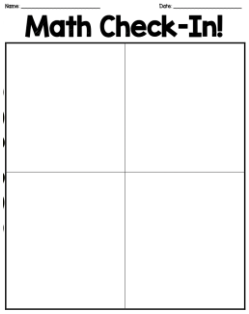
Grade 3 students will be introduced to patterns. Students will have developed prior understanding to explore and practice repeated patterns in kindergarten to grade 2 and increasing patterns in grade 2. Students in grade 3 continue with exploring and practicing increasing (growing) patterns and are being introduced to decreasing (shrinking) patterns. Students will make connections between increasing and decreasing patterns and be introduced to pattern rules by describing how each and every element of the pattern is described, including the first element.

This sample week would be placed at the beginning of patterning, after students have reviewed the foundations.

Monday	**Focus:** Creating and describing increasing patterns using a variety of materials. Introduction to pattern rule. **Before:** Provide students with Unifix cubes to play with creating patterns. Discuss and practice creating an increasing (growing) pattern as a class and what is the pattern rule. Use concrete materials, pictures, and numbers ● Pattern rules (describing patterns), to show understanding of where the pattern starts and describe how the pattern continues. Explore what is changing in the pattern and what stays the same. ● Ex. 4, 6, 8,… adding by 2 ○ The pattern rule is: start at 2 and keep adding 2. ● Ex.  ○ Questions to consider: ■ What would come next? ■ What would come before? (if applicable) ■ What is the pattern rule? **During:** Invite students to find different materials (ex. pattern blocks, colored tiles, blocks). Have students explore creating different increasing (growing) patterns.

	Have “Questions to Consider” visible for students to consider. Possible student examples:  Start at 3 and keep adding 3.  Start at 10 and double it. **After:** Closing circle - Have students share their increasing pattern with a partner (If there is enough time, have students share their findings with the class). Go through questions to consider.
Tuesday	**Focus:** Creating and describing decreasing patterns using a variety of materials. Continuing on with the pattern rule. **Before:** Provide students with Unifix cubes to play with creating patterns. Discuss and practice creating a decreasing (shrinking) pattern as a class and what is the pattern rule. Use concrete materials, pictures, and numbers ● Pattern rules (describing patterns), to show understanding of where the pattern starts and describe how the pattern continues. Explore what is changing in the pattern and what stays the same. ● Ex. 9, 6, 3… decrease by 3 ○ The pattern rule is: start at 9 and decrease by 3. ● Ex.  **During:** Invite students to find different materials (ex. pattern blocks, colored tiles, blocks). Have students explore creating different decreasing (shrinking) patterns. Have “Questions to Consider” visible for students to consider. **After:**

	Closing circle - Have students share their decreasing pattern with a partner (If there is enough time, have students share their findings with the class). Go through questions to consider.
Wednesday	**Focus:** Creating and describing increasing and decreasing patterns using visuals. Continuing on with the pattern rule. **Before:** Present visual pattern images to your class ● Refer to Fawn Nguyen's website: visualpatterns.org for samples or create your own. ● Make sure visuals are large enough for students to see. ○ Questions to consider: ■ What would come next? ■ What would come before? (if applicable) ■ What is the pattern rule? ● Have students share their ideas with partners and then the whole class. Example:  4, 8, 16… ○ What would come next? **32** ○ What would come before? **0** ○ What is the pattern rule? **Start at 4 and double it** **During:** After providing whole class examples. Invite students to create their own visual patterns that will be posted around the class to share. **After:** Invite students to do a gallery walk to share their visual pattern creations.
Thursday	**Math Workshop:** ● Provide students with different pattern rules and a variety of manipulatives to practice creating patterns. ● Provide students with "Pattern Talks" (p.31) from "Investigating Patterns" a K-3 multi-lesson exploration (BC Reggio-Inspired Mathematics Project).

	 ● Four quadrant math check-in with increasing and decreasing questions.  ● Teacher led small group instruction: provide white boards or paper to explore different increasing and decreasing patterns. Additional suggested technology station: Provide students with iPads. Create a QR code to Mathigon.org to create increasing patterns on Polypad.
Friday	Before: Share some images of land art involving patterns such as those by James Brunt or Andy Goldworthy. Invite students to describe the patterns they see. During: Take students on a math walk to explore patterns within nature and their community. Using natural loose parts found outdoors (twigs, leaves, rocks, cones, shells, etc) invite students to create the first three terms of increasing or decreasing patterns. The class can then visit each other's patterns and complete the fourth term with materials or by drawing it with sidewalk chalk if the students have created the patterns on or near concrete areas. After: To consolidate their understanding about patterns from this week, invite students to share and compare a pattern they created outdoors today with a pattern they created with materials or visuals in-class earlier in the week.

For the following, week continue the development of understanding increasing and decreasing patterns through investigating number patterns. Patterns involving "skip counting" or multiples

helps to bridge additive and multiplicative thinking and students can use hundred charts and number lines as tools to support their understanding of number patterns.