

Teaching: Project or save images for printing

Follow these steps to access and download images lesson from Mathology. This guide will help you locate the specific resource for your classroom needs.

1 Click "Lesson"

The screenshot shows the Mathology website interface. At the top, there is a search bar and navigation links for Home, Favourites, Plan, Analytics, Buy Now, and Help. The user's name, Kim Mastromartino, is displayed in the top right corner. The main content area is titled 'Patterns and Expressions' and 'Describing and Extending Patterns (Ontario)'. Below the title, there are five tabs: ABOUT, LESSON, ASSESSMENT, DIFFERENTIATED..., and PRACTICE. The 'LESSON' tab is highlighted with an orange circle. The 'About this lesson' section contains the following text:

Students identify increasing and decreasing patterns in an image.

In pairs, students describe and extend increasing and decreasing patterns made with Colour Tiles.

To consolidate, students share their pattern rules, then explore an increasing pattern that does not increase by the same amount each time.

TAGS: [Grade 3](#) [Activity](#) [Patterning-1](#)

Content Background ▾

Focus

Lesson Focus: Describing and extending increasing and decreasing patterns

On the right side, there is a 'Professional Learning' section with a carousel of images. The first image shows a fairground scene with a Ferris wheel and a carousel. Below the image, the text reads: 'Learning Connections: Patterning & Algebra - Repeating, Increasing, Decreasing'.

2

Click an image.

- Math Mat 22: 1-cm Grid Paper (PDF)
- Assessment Master (PDF) (WORD)
- Coloured pencils
- Exit Ticket (PDF) (WORD)

INSTRUCTIONS

Before (10–15 min)
Discuss any patterns students see in the flowers made from bananas.



For example, the number of flowers increases or decreases by 1, depending on where you start. From the top row, the pattern rule is: Start at 1 and add 1 each time. From the bottom row, the pattern rule is: Start at 5 and take away 1 each

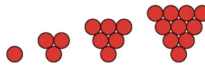
Planning Tool (5-8)

Repeat with the pattern rules for the number of petals on the flowers (i.e., From the top row: Start at 9 and take away 2 each time. From the

CONSOLIDATION

Have students share their pattern rules (e.g., Pattern A: Start with 1 green tile and add 4 blue tiles each time. Pattern B: Start with 9 green tiles and take away 1 tile each time). Ensure students understand why decreasing patterns cannot be extended forever.

Discuss how this pattern grows (e.g., Start with 1 counter, then add 2, then 3, then 4 counters). Have students predict how many counters are in the next term (e.g., 15), then build it to check. Point out that the pattern does not increase by the same number each time.



Brainstorm where students see increasing and decreasing patterns in the world around them (e.g., house/apartment numbers, dates on a calendar, book pages, leap years, songs).

Work with students to highlight two skip-counting patterns on a hundred chart (e.g., skip-counting by 5s and 10s) and have students



Learning Connections: Patterning & Algebra - Repeating, Increasing, Decreasing

3

Example: This items becomes a projectable image

etr.mathology.ca/assets/lessons/en/art/3/pa/mtr3_p1_01-1_large_art.png



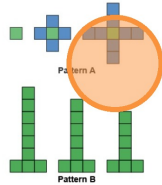
4 Click this image.

Repeat with the pattern rules for the number of petals on the flowers (i.e., From the top row: Start at 9 and take away 2 each time. From the bottom row: Start at 1 and add 2 each time).

Introduce the terms **increasing/growing patterns** and **decreasing/shrinking patterns**.

Working on It (15–20 min)

Give each pair a 1-cm grid. Have coloured pencils and Colour Tiles or linking cubes available. Project one pattern at a time.



What To Do

- Build the pattern with tiles.
 - Describe the pattern.
Is it increasing or decreasing?
How do you know?
 - Build the next 3 terms to extend the pattern.
 - Colour grid squares to record the pattern.
Write the pattern rule.
- Repeat with the other pattern.

Differentiated Support

calendar, book pages, leap years, songs).

Work with students to highlight two skip-counting patterns on a hundred chart (e.g., skip-counting by 5s and 10s) and have students compare these increasing and decreasing patterns.

Research examples of increasing and decreasing patterns in First Nations and Métis art and cultures.

To allow students to show what they have learned in this lesson, go to the **Exit Ticket (PDF) (WORD)** and/or **Practice (PDF) (WORD)**.

Highlight for Students

- Patterns can be extended in many directions.
- In an increasing pattern, the terms grow. In a decreasing pattern, the terms shrink.
- We use a pattern rule to describe an increasing or a decreasing pattern.

WHAT TO LOOK FOR

- Can students reproduce and extend an increasing/a decreasing pattern?
- Can students describe the change from one term to the next?
- Are students able to write the pattern rule? Do they include the start number?
- Can students explain why a decreasing

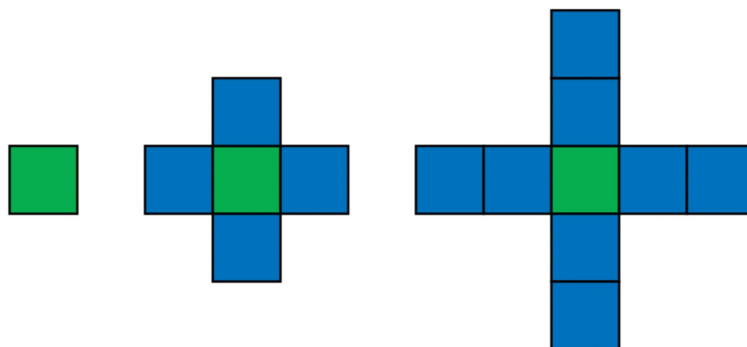


Learning Connections: Patterning & Algebra - Repeating, Increasing, Decreasing

✓ Planning Tool (5-8)

5 This items becomes a projectable image

etr.mathology.ca/assets/lessons/en/art/3/pa/mtr3_p1_01-2a_large_art.png



Pattern A

6 Click this image.

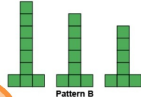
patterns and decreasing/shrinking patterns.

Working on It (15–20 min)

Give each pair a 1-cm grid. Have coloured pencils and Colour Tiles or linking cubes available. Project one pattern at a time.



Pattern A



Pattern B

What To Do

- Build the pattern with tiles.
 - Describe the pattern.
 - Is it increasing or decreasing?
 - How do you know?
 - Build the next 3 terms to extend the pattern.
 - Colour grid squares to record the pattern.
 - Write the pattern rule.
- Repeat with the other pattern.

Differentiated Support

Accommodation: Provide a tower pattern where one tile of the same colour is added each time (e.g., terms with 1, 2, and 3 tiles).

Extension: Have students use tiles to create a pattern for the same pattern rule.

✓ Planning Tool (5-8)

Research examples of increasing and decreasing patterns in First Nations and Métis art and cultures.

To allow students to show what they have learned in this lesson, go to the **Exit Ticket** (PDF) (WORD) and/or **Practice** (PDF) (WORD).

Highlight for Students

- Patterns can be extended in many directions.
- In an increasing pattern, the terms grow. In a decreasing pattern, the terms shrink.
- We use a pattern rule to describe an increasing or a decreasing pattern.

WHAT TO LOOK FOR

- Can students reproduce and extend an increasing/a decreasing pattern?
- Can students describe the change from one term to the next?
- Are students able to write the pattern rule? Do they include the start number?
- Can students explain why a decreasing pattern cannot be extended forever?



Learning Connections: Patterning & Algebra - Repeating, Increasing, Decreasing

7 This items becomes a projectable image or save to your computer to print out.

etr.mathology.ca/assets/lessons/en/art/3/pa/mtr3_p1_01-3_large_art.jpg

What To Do

- Build the pattern with tiles.
- Describe the pattern.
 - Is it increasing or decreasing?
 - How do you know?
- Build the next 3 terms to extend the pattern.
- Colour grid squares to record the pattern.
 - Write the pattern rule.

Repeat with the other pattern.

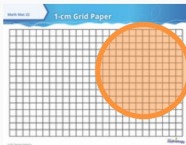
8 Click images to project or save to your computer to print.

Probing Questions

- How is the second term different from the first term?
- How do you know that it is an increasing/decreasing pattern?
- How did you use the pattern to write the pattern rule?
- Could the decreasing pattern continue forever? Why or why not?

Learning Highlights

Images



Interactives

Planning Tool (5-8)

Use the **Counters Tool** or **Colour Tiles Tool** to explore increasing and decreasing patterns. Drag counters or tiles to create an increasing or decreasing pattern. Have students describe the pattern, identify the pattern rule, then extend the pattern.

- [Pearson Canada Counters Tool](#)
- [Pearson Canada Colour Tiles Tool](#)

Use the **Hundred Chart Tool** to explore increasing and decreasing patterns on the hundred chart. With the **Paint**



Learning Connections: Patterning & Algebra - Repeating, Increasing, Decreasing

9 Click "(PDF)" and project or download to your computer for printing.

mathology Search...

Home Favourites Plan Analytics Buy Now Help Kim Mastromartino

pattern rule is: Start at 5 and take away 1 each time.

Repeat with the pattern rules for the number of petals on the flowers (i.e., From the top row: Start at 9 and take away 2 each time. From the bottom row: Start at 1 and add 2 each time).

Introduce the terms **increasing/growing patterns** and **decreasing/shrinking patterns**.

Working on It (15–20 min)
Give each pair a 1-cm grid. Have coloured pencils and Colour Tiles or linking cubes available. Project one pattern at a time.

Pattern A

Pattern B

What To Do

- Build the pattern with tiles.
- Describe the pattern. Is it increasing or decreasing? How do you know?
- Build the next 3 terms to extend the pattern.
- Colour grid squares to record the pattern. Write the pattern rule.

Planning Tool (5-8)

decreasing patterns in the world around them (e.g., house/apartment numbers, dates on a calendar, book pages, leap years, songs).

Work with students to highlight two skip-counting patterns on a hundred chart (e.g., skip-counting by 5s and 10s) and have students compare these increasing and decreasing patterns.

Research examples of increasing and decreasing patterns in First Nations and Métis art and cultures.

To allow students to show what they have learned in this lesson, go to the **Exit Ticket (PDF) (WORD)** and/or **Practice (PDF) (WORD)**.

Highlight for Students

- Patterns can be extended in many directions.
- In an increasing pattern, the terms grow. In a decreasing pattern, the terms shrink.
- We use a pattern rule to describe an increasing or a decreasing pattern.

WHAT TO LOOK FOR

- Can students reproduce and extend an increasing/a decreasing pattern?
- Can students describe the change from one term to the next?

Professional Learning

Learning Connections: Patterning & Algebra - Repeating, Increasing, Decreasing