







Topic: Patterns and algebra

Describing patterns involving objects and numbers

Lesson concepts

-  Patterns — Pattern/non-pattern
-  Patterns — Describing patterns
-  Patterns — Repeating
-  Patterns — Spatial (non-linear)
-  Patterns — Growing patterns
-  Patterns — Continuing patterns

Today students will:

- describe repeating and growing patterns.

Resources

Digital

Learning object — Sound and movement patterns

Sheet

Sheet 1 — Number board 0–129

Find and prepare

Clothes pegs or blocks, coloured counters or natural objects (for example, leaves, petals, small stones) to make patterns

Paper squares and circles

Key terms

element, growth pattern, repeating pattern, sequence

For definitions and explanations of terms, please see the [Glossary](#).

Lesson

Introduce the lesson

Say to students

‘ In the lesson today, we will find, talk about, draw and make patterns. Patterns are made up of a number of units that repeat. ’

Explain to students

‘ Patterns are all around. They help you predict what comes next. Repeating patterns have a part that is repeated. The parts that are repeated could be colours, shapes, pictures, symbols, sounds or movements. ’

- Look around the environment to identify repeating visual patterns and non-patterns (such as those found on fabric, borders and wrapping paper).

Focus questions

Q. *What part of the pattern is the same each time?*

A. For example: There is a square then a circle, a square then a circle, a square then a circle.

Q. *What comes next in this pattern?*

A. For example: a square

Q. *How many times does the pattern repeat?*

A. For example: three times

Q. *How could you describe or 'read' this pattern?*

A. For example: square, circle, square, circle, square, circle

Q. *If I 'read' the pattern backwards, from right to left, is it still a pattern?*

A. Yes.

Q. *Why?*

A. The parts of the pattern still repeat.

- Read or say a familiar rhyme with students to identify repeating sound patterns (such as identify the rhyming sounds in 'Twinkle, twinkle little **star**, how I wonder what you **are**').
- Discuss repeating movement patterns with students (such as the movements of tying shoelaces, dancing, forming a letter such as 'm' repeatedly).

Describe and continue repeating patterns

- Create a simple repeating pattern with materials (such as pegs, blocks or leaves).

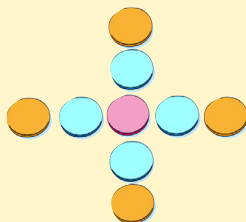


- Ask students to:
 - describe the repeating element in the pattern (in the example shown, the repeating element is blue bear, yellow bear, blue bear, yellow bear)
 - continue the pattern in both directions (in the example shown, place a yellow bear before the first blue bear, and place a blue bear after the last yellow bear).

Note

Some students may need extra practice to consolidate learning before continuing.

The patterns created do not need to be linear but can repeat in different directions.



- Ask students to:
 - create a simple repeating pattern
 - describe the repeating element in the pattern
 - continue the pattern in all directions.

Focus questions

Q. *What pattern have you made?*

A. For example: blue counter, yellow counter, blue counter, yellow counter in each direction

Q. *How could you use numbers to describe the pattern?*

A. For example: 1, 1, 1, 1 in each direction

Q. *What is the same in your pattern?*

A. For example: the repeat of the blue counter and yellow counter

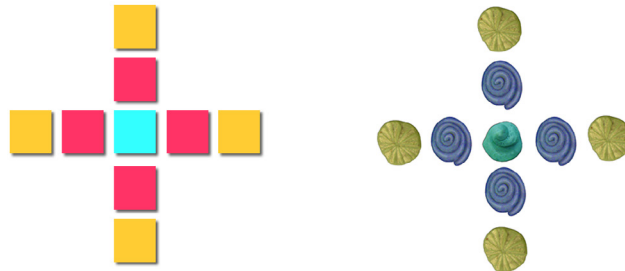
Q. *How do you know that you have continued the pattern correctly?*

A. For example: I have repeated the blue counter and the yellow counter.

Explain to students

‘ This pattern can be copied using different materials. ’

- Ask students to:
 - explore different ways of representing the repeating pattern with other materials



- describe the patterns made
- explain how the patterns are similar.

Focus questions

Q. *How would you describe your pattern?*

A. For example: red square, yellow square in each direction

Q. *How did you copy this pattern using different materials?*

A. For example: blue shell, green shell in each direction

Q. *What information helped you to make the pattern with different materials?*

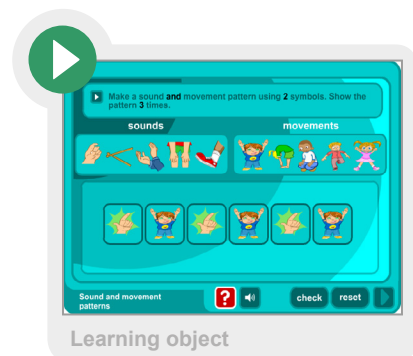
A. For example: I could see that the pattern was red square, yellow square, so I followed it using blue and green shells.

Q. *Why do you think these patterns are similar?*

A. For example: They each have items repeated in each direction.

- Open the **Learning object — Sound and movement patterns**.

This learning object allows students to create sound and movement patterns. Students can perform the pattern once they have created it.



- Ask students to:
 - select two symbols to represent a sound or movement
 - repeat the pattern three times
 - check that their pattern is correct.

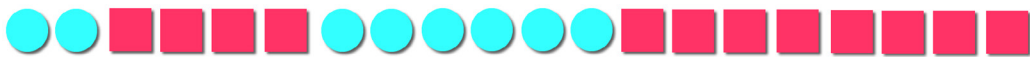


- Show students how the sound and movement pattern they created could be represented with words (click, star jump, click, star jump, click, star jump) and objects as shown.



Describe and continue growing patterns

- Create a growing pattern by 2s using materials such as paper shapes.



- Ask students to:
 - describe the pattern
 - continue the pattern.

Focus questions

Q. *How would you describe this pattern?*

A. For example: It grows by 2 each time — 2 blue, 4 red, 6 blue, 8 red.

Q. *Why do you think it is a growing pattern?*

A. For example: The elements grow bigger.

Q. *How are repeating patterns different to growing patterns?*

A. For example: Repeating patterns don't have parts that get bigger or smaller.

Q. *What numbers could you use to describe the pattern?*

A. 2, 4, 6, 8

Q. *What do you notice about the numbers used?*

A. They get bigger by 2 each time.

Reinforce to students

“ In the 2s counting pattern, the total increases by 2 in each step. ”

Focus questions

- Q. *How do you know what number will come next?*
A. I know that 10 will come next because 10 is 2 more than 8.
- Q. *What pattern can you see?*
A. A 2s counting pattern
- Q. *How does this pattern help you to count?*
A. For example: I can tell what number comes next.

Describe number patterns

Explain to students

‘ You will now look for number patterns on a number board. ’

- Display **Sheet 1** — [Number board 0–129](#).
- Show students that the 0 to 9 sequence is repeated in each row (that is, the numbers 0 to 9 appear in the top row and the numbers 0 to 9 appear as the last digit of numbers in the rows beneath).
- Ask students to count in rhythm as they say the 1s number sequence from 0 to 129.

Focus questions

- Q. *How do you know what number will come next?*
A. For example: The numbers are in order; the numbers follow a pattern.
- Q. *What pattern can you see?*
A. For example: All the numbers ending in 0 are under the number 0, the numbers 0 to 9 are repeated in each row.
- Q. *How does this pattern help you count?*
A. For example: I know what numbers come next because they follow a pattern.