

MATHS






Lessons 38–39

Prep

Topic: Patterns and algebra

Patterning with number

Lesson concepts

-  **Number** — Quantity
-  **Number** — Counting
-  **Patterns** — Continuing patterns
-  **Patterns** — Pattern/non pattern
-  **Patterns** — Describing patterns

Today students will:

- ▶ identify patterns within counting sequences
- ▶ use patterning to represent quantities.

Resources

Sheet

Sheet — Numbers 0 to 9

Find and prepare

range of materials to create patterns
(for example: buttons, blocks, shells, ice-block sticks)

dice

dominoes

everyday items showing numbers in sequence
(for example: computer keyboard, phone)

Key terms

count, pattern, same, describe,
copy, non-pattern, continue,
create, number, quantity,
arrangement, represent,
increasing, decreasing,
growing, repeating

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

Lesson

Introduce the lesson

Explain that students will identify patterns in counting sequences and use patterning to represent quantities in this lesson.

Connect counting sequences to patterning

Recall forward and backward counting sequences.

Demonstrate and discuss with students how they could make patterns while chanting counting sequences.

Students may count with repetitions such as:

- alternating steps
- moving two steps forwards then two back
- varying pitch patterns (starting with a high voice and going lower as they count)
- a step, hop or step, step hop pattern
- following hopscotch patterns
- putting their hands on their head then shoulders
- moving up and down stairs (forward and backward counting).

Focus questions

Q: *What is the pattern that you are using?*

Q: *How could you move in a pattern as you count?*

Q: *How could you speak or sing in a pattern as you count?*

Q: *How could you remember that pattern?*

Explore patterns made by counting in activities such as:

- counting to a set number and students substituting a nonsense word (for example: 1, 2, 3, 4, banana, 6, 7, 8, 9, banana)
- chanting rhymes such as 'One potato, two potatoes, three potatoes, four ...'
- counting cups and turning every second cup upside-down.

Focus questions

Q: *What is repeated in this pattern?*

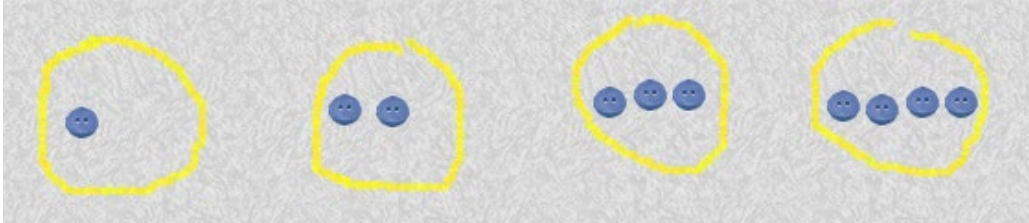
Q: *What does this pattern tell you?*

Q: *How could you create a pattern that makes you see threes?*

A: For example: Every third cup gets turned upside-down.

Provide students with a range of materials to create patterns (such as buttons, blocks, shells, ice-block sticks).

Ask students to display materials to represent the numbers of a counting sequence. For example:



Focus questions

Q: *What do you notice about the counting sequence?*

Q: *How does the collection (number) change as you count?*

Q: *How could you arrange the collections differently?*

Q: *How could you describe the pattern created by the counting sequence?*

A: For example: It gets bigger by one.

Represent quantities in patterns

Provide students with the cards to 0–9, cut from the **Sheet** — [Numbers 0 to 9](#).

Ask students to:

- to place them in sequence
- count aloud from zero as each card is placed down.

Focus questions

Q: *Is there a pattern in the numerals? What is the pattern?*

Q: *How would this look if you counted backwards?*

A: For example: Reverse order

Q: *How would this look the next time you counted forwards from zero?*

A: For example: The same

Q: *When you are at three how do you know what comes next?*

A: For example: When counting forwards, four always comes after three

Discuss how:

- the counting sequence is a pattern
- by knowing the pattern you can predict what will come next, before and after
- counting sequences include counting forwards and backwards
- when you count using this pattern, the numbers are getting bigger or smaller by one (growing pattern).

Explore familiar formal arrangements of quantities and numbers such as those on dice, dominoes, telephones, keyboards and keyboards.



Say to students

Counting sequences are patterns. By knowing the pattern you can predict what will come next, before and after. When you count using the ones counting pattern, the numbers are getting bigger or smaller by one (growing pattern).