MATHS

Lesson 2

Year 1

Topic: Patterns and algebra

Describing growing patterns in counting sequences

Lesson concepts

- Patterns — Growing patterns
- Patterns — Describing patterns
- Patterns — Continuing patterns
- Patterns — Counting
- Patterns — Quantity

Today students will:

- identify patterns within counting sequences.

Resources

Digital

Learning object — Hundred board

Sheet

Sheet 2 — Hundred board

Find and prepare

Variety of materials to count (for example, beads, buttons, shells)

Large sheet of paper or card

Counters or blocks

Iceblock sticks

Key terms

counting sequence, growth pattern, represent

For definitions and explanations of terms, please see the Glossary.

Lesson

Introduce the lesson

Explain to students

"We have looked at counting sequences before and we have looked at patterns. In this lesson, we will look for patterns in counting sequences."

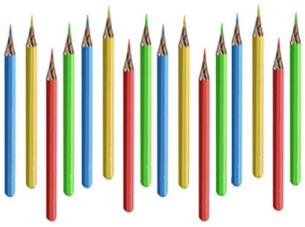
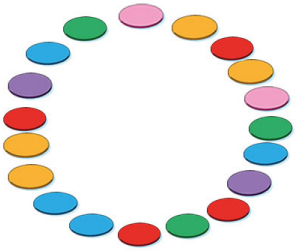
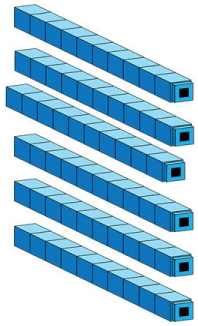
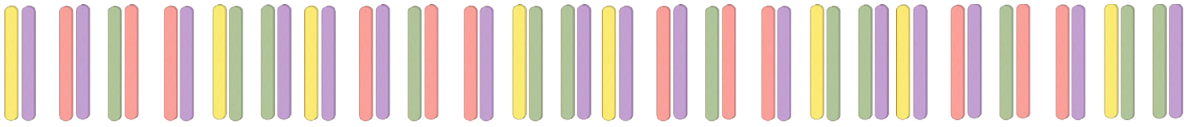
Recall counting sequences

- Give students a variety of materials to count (for example, beads, buttons, shells).
- Ask students to:
  - count from any starting point (for example, from 1 to 22, from 5 to 26, from 56 to 71)
  - count with and without touching the objects
  - count forwards and backwards from different starting points (such as start counting at 9 and count to 40, count backwards from 50).

Note

It is important for students to practise counting forwards and backwards from any number up to 100.

- Arrange a collection of materials in different ways (for example, piles, squares, lines, circles).

- Ask students to count the collections.
- Ask students to count claps, jumps and clicks.

Focus questions

Q. *How would you describe this counting sequence?*

A. For example: A 1s counting sequence.

Q. *How could you show this sequence on the hundred board?*

A. For example: I could highlight every number.

Q. *What helps you remember this number sequence?*

A. For example: I know the numbers are in order.

Q. *How could you count this collection faster? How could you arrange the objects to count faster?*

A. For example: I could count in 2s; arrange them in pairs.

Connect counting sequences to growing patterns

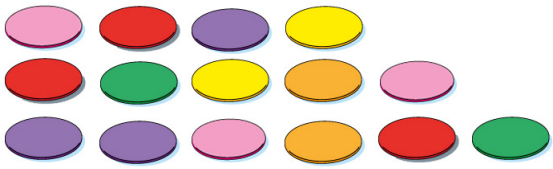
Explain to students

"I will start a growing pattern with counters, and you can continue it for me."

Note

Growing patterns can increase or decrease. You may start with a larger quantity and reduce it.

- Lay out a line of four counters. Line up five counters below the first row and six counters below the second row.



Focus questions

Q. *How would you describe this sequence?*

A. A 1s counting pattern/sequence.

Q. *What happens to the number of counters in each row?*

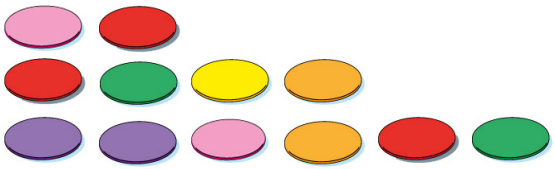
A. It gets bigger by 1 more.

- Ask students to:
  - continue the growing pattern
  - say the growing pattern (that is, count in 1s).

Explain to students

"I will start a different growing pattern with counters, and you can continue it for me."

- Lay out a line of two counters. Line up four counters below the first row. Line up six counters below the second row.



Focus questions

Q. *How would you describe this sequence?*

A. A 2s counting pattern/sequence.

Q. *What happens to the number of counters in each row?*

A. It gets bigger by 2 each time.

- Ask students to:
  - continue the growing pattern
  - say the growing pattern (that is, count 2, 4, 6, 8, etc).

Note

Students may be extended by continuing growing patterns by 3, 4, 5 or more.

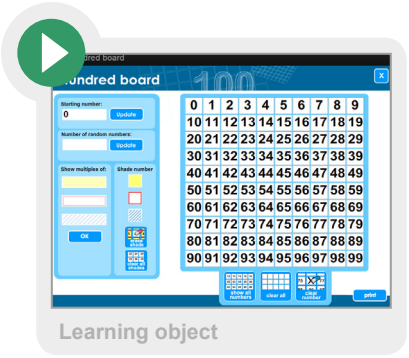
Record the counting sequence

- Give students a collection of up to 12 objects (such as counters) to explore counting sequences.
- Lay out a sheet of paper or card as a surface for students to show a 1s counting sequence. Leave space for students to write under the objects.
- Ask students to:
  - show a 1s counting sequence
  - identify the total.

- Give students a collection of eight or more of the same object.

- Ask students to:
  - show a 1s counting sequence
  - identify the total

  - describe how the 1s counting sequence or pattern is growing (that is, adding 1 more each time)
  - show the 1s counting sequence they have made by highlighting it on the **Learning object — Hundred board** or on **Sheet 2 —** Hundred board.



Learning object

Focus questions

Q. *What pattern can you see on the hundred board?*

A. It is a 1s counting pattern, as every number is highlighted.

Q. *Why is every number highlighted?*

A. I have shown every number; I don't skip any numbers; I count each number.

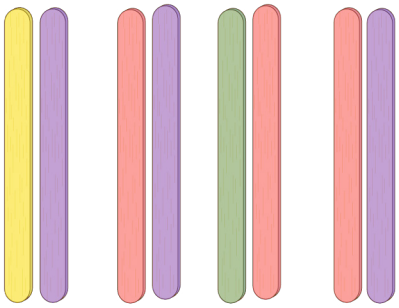
Say to students

"You have made a 1s counting pattern with materials and you have highlighted your 1s counting sequence on the hundred board. Now we are going to write the 1s counting sequence you have made."

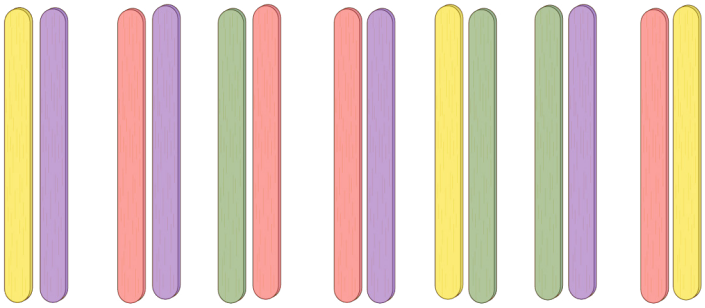
- Ask students to:
  - write the number 1 under the first object and continue to number each object in the sequence

  - say the counting sequence out loud
  - identify the total.
- Give students a collection of up to eight objects (for example, iceblock sticks) to explore a 2s counting sequence.
- Lay out a sheet of paper or card as a surface for students to show a 2s counting sequence on, leaving space for students to write under the objects.

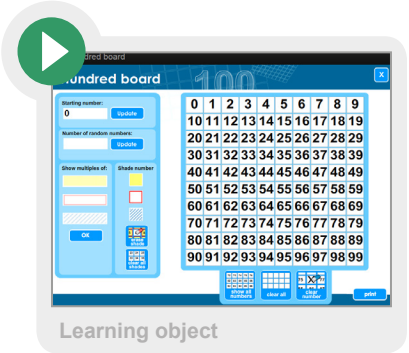
- Ask students to show a 2s counting sequence.



- Give students up to eight more objects.
- Ask students to:
  - continue the 2s counting sequence
  - identify the total



  - describe how the 2s counting sequence or pattern is growing (for example, adding 2 more each time)
  - show the 2s counting sequence they have made by highlighting it on the **Hundred board**.



Focus questions

Q. *What pattern on the hundred board can you see?*

A. Every second number is highlighted.

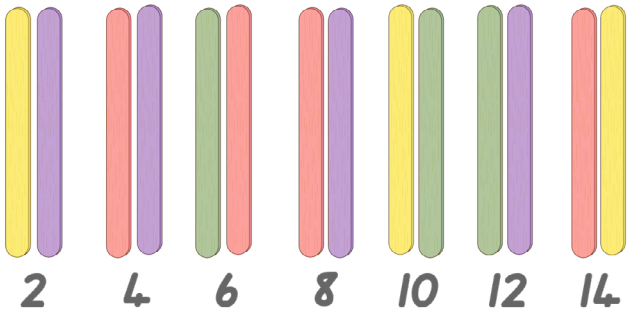
Q. *What numbers are not highlighted? Why?*

A. When we count in 2s, we skip every second number.

Say to students

“You have made a 2s counting sequence with sticks and you have highlighted the 2s counting sequence on the hundred board. Now you will write the 2s counting sequence that you have made.”

- Ask students to:
  - write the number 2 under the first two objects and continue to number each group of two objects in their sequence



  - say the counting sequence aloud
  - identify the total.

Use counting to quantify a collection

- Provide students with a collection of objects (such as 27 counters, 32 buttons).
- Ask students to:
  - arrange the collection to make the objects easier to count
  - describe the arrangement (for example, in 1s or 2s)
  - count the items
  - identify how many there are in the whole collection.

Focus questions

Q. *What are some ways the collection could be grouped and counted?*
A. 1s and 2s

Q. *How did you count the collection?*
A. For example: in 1s

Q. *Which way might be faster? Why?*
A. For example: In 2s, because I could count two items at once.

Q. *How could you describe this pattern?*
A. For example: a 2s counting pattern

Q. *How would the counting pattern change each time?*
A. For example: There would be two more objects each time.

Q. *What will the next part of this pattern look like?*
A. For example: Two more will be added.