MATHS

Lessons 12-13

Prep

Topic: Number and place value

Representing number sequences

Lesson concepts

- Number — Quantity
- Number — Counting
- Number — Subitising
- Number — Names and symbols

Today students will:

► compare and sequence quantities

► sequence numbers to twenty.

Resources

Find and prepare

Materials small enough to fit on paper plates

Paper plates

Cards with numerals to at least 25

Cardboard cut to make playing cards (enough for at least five sets)

Equipment for short play activities such as puzzles, drawing, climbing

Materials such as connecting blocks, threading beads, balls

Key terms

numeral

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

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Lesson

> **Note**
>
> It is important to highlight and develop the following vocabulary throughout this lesson: count, start, finish, number names, numerals, more, less, before, after, next, between, order, first, second, last, beginning, end.

Introduce the lesson

- Have students practise counting forwards and backwards from any starting points.

Sequence quantities

- Ask students to:
  - select a number card and a paper plate
  - say the number and how many items they will need to collect to show that number
  - find/make a collection of objects to match that quantity
  - remember that the collection must fit on the paper plate
  - place the number card beside the plate on the floor
  - repeat the activity a number of times to create different collections

> **Focus questions**
>
> *Q: How many are on this plate? How do you know?*
>
> *Q: How could you count the objects without counting each one?*
>
> *Q: Are there collections that are smaller than this one? How do you know?*
>
> *Q: Which collection do you think would be the largest? How do you know that without counting?*
>
> *Q: Does the size of the objects mean that there are more or less of them? Why do you think that?*
>
> *Q: How could you arrange these plates?*

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- Discuss ways of organising the plates, for example:

Note

Students may suggest:
- sorting the plates into large and small groups
- lining them all up from smallest to largest
- lining them all up from largest to smallest
- placing them in counting order around a circle (then they could count forwards and backwards)
- arranging the objects on the plates to make them easier to count.

Focus questions

Q: How are the plates arranged here?

Q: What does that tell you about the numbers?

Q: Which arrangement worked best for you? Why?

Q: What problems did you have making the arrangements?

Q: What could make it easier for you to arrange the collections?

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Represent number sequences

- Explain to students how numbers and images are often used to represent collections because they are easier to move around and manipulate.

- Plan and make cards representing quantities to 25.

- Students may:

  o draw representations on cards

  o collage representations on cards or sheets of paper
  o paint dots to represent the collection.

> **Note**
>
> Make at least five sets of these different representations and retain them for the following sequencing games and activities.

> **Focus questions**
>
> Q: *How do you know that these two cards both represent 23?*
>
> Q: *Which representation is easiest for you to recognise? Why is that?*

- Have students:
  o scatter a set of number cards
  o sequence the cards from smallest to largest.

- Scatter the cards again and repeat.

- Vary the instructions after a few rounds of the game have been played. Different instructions could include:

  o sequence numbers starting from a given number for example: 12

  o sequence numbers from largest to smallest

  o display a sequence and hold up the card at the start/finish/next/before a number/after a number.

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- Discuss with students when counting sequences could be used.

- Explain and demonstrate how counting may be used to:
  - work out what comes next (for example: in an arrangement such as numbered objects, books or chairs)
  - count how many altogether (for example: pairs of scissors in a container)
  - work out new totals when you get more (for example: 17 pairs of scissors in the container and count on as you place more into the container)
  - decide how many would be left (for example: when you have 17 pairs of scissors and take some out, you count back as you take them out).

- Have students identify counting opportunities in everyday activities.

There were six brushes and they counted backwards as they took brushes out.

She put together five pieces then counted on as she joined the rest.

They counted 14 as they made the building. When they added another block they counted on from there.

Sally counted forwards as she climbed the ladder and counted backwards as she went down. What else could she count?

Focus questions

Q: What opportunities for counting did you observe?

Q: How could you describe the counting?

Q: Where did the counting start/finish?

Q: What number would come next in the counting? How do you know?

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- Discuss ways of representing number sequences.

Say to students

' When you represent number sequences you have to show how the quantity or totals change (get larger/get smaller) and the numbers you started and ended with. '

Note

Students could use:
- interlocking block towers
- bracelets with different numbers of beads
- stacks (for example: paper cups)
- ball bounces
- beats on a drum.

What is missing in this sequence?

How would you sequence these? How else could you sequence them?

Focus questions

Q: What did you notice about the totals as you counted forwards/backwards?

Q: How could you describe the pattern you saw in this representation?

Q: Can you see any problems with this sequence? What? How could you fix that?

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