MATHS

Prep

Topic: Number and place value

Visualising parts of a collection

Lesson concepts

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

Today students will:

► subitise to count collections

► develop visual representations of quantities.

Resources

Find and prepare

Collection of objects

Cloth/tea towel

Dominoes

Dotted dice

Felt pens

Key terms

numeral, subitise

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, number, number names, numerals, collections, quantities, visualise, part, whole, subitise.

Introduce the lesson: Subitise smaller quantities within a larger collection

- Explain to students that there are many different ways to visualise five.

> ### Explain to students
>
> ' When you visualise numbers, you see pictures in your mind. You might see numerals, objects, words, pictures or dots. '

- Ask students to share the different ways they see five.
- Share and compare the different representations.
- Explain to students that they are all five and that they represent the same quantity.

Focus questions

> Q: How do you see five in your mind?
>
> Q: What does your five look like?
>
> Q: How is it the same/different from another student's five?
>
> Q: How else could you think about five?
>
> Q: Which ones show the quantity?
>
> Q: Which ones are symbols and which ones are words?

- Repeat the activity with other small quantities to six.

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Explain to students

' When you see a quantity without counting each part, you are subitising. Subitising is a faster way of counting smaller collections. We can usually subitise quantities to five in a quick glance. '

- Have students practise subitising collections. They can:
  - o say a number (to 5)
  - o look for a collection
  - o go by how the quantities look and their arrangement (try not to count each item)
  - o ask another person to count them to check.

Focus questions

Q: How do you know that you were correct?

Q: What problems did you have?

Q: How could it be easier to spot the quantities? (for example: different arrangements)

Combine smaller quantities

- Briefly display a small collection of objects and then cover it with a cloth/tea towel.

Focus questions

Q: How many objects did you see?

Q: How did you remember that?

Q: What would happen to the group if you added two more?
A: It will get larger.

Q: How many would you have if you had two more?

Q: How could you work that out?
A: You can re-count all the objects starting from 1 or count on from the covered quantity.

- Add two more objects and ask for students' suggestions about how to work out the new total.
- Check by uncovering and counting the whole collection with the two new objects.
- Explain to students that they can:
  - o combine/join small groups to make larger groups
  - o see smaller parts within larger quantities.
- Ask students to explore what happens when they combine small groups.

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- Have students complete the following activities and:
  - identify the two groups
  - predict the new total
  - combine the two groups
  - check the new total
  - describe what they can see, for example: I can see a group of two and a group of five make seven.
- Ask students to:
  - look at the picture below
  - say how many beads they can see in the midde of the string?
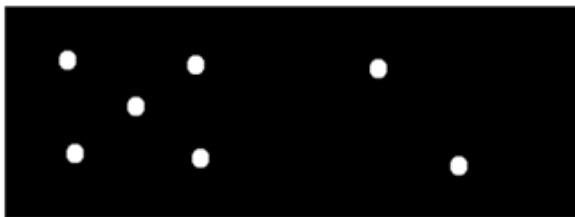

I can see 3
and 5 make 8.

  - combine quantities on two dice
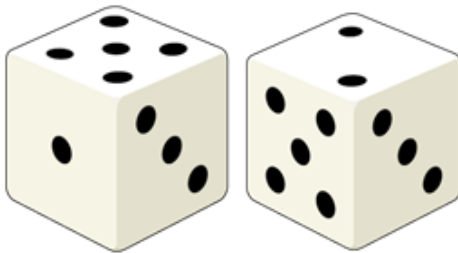
I can see 5
and 2 make 7.

  - work out the total of the two quantities on a domino.

I can see 5
and 2 make 7.

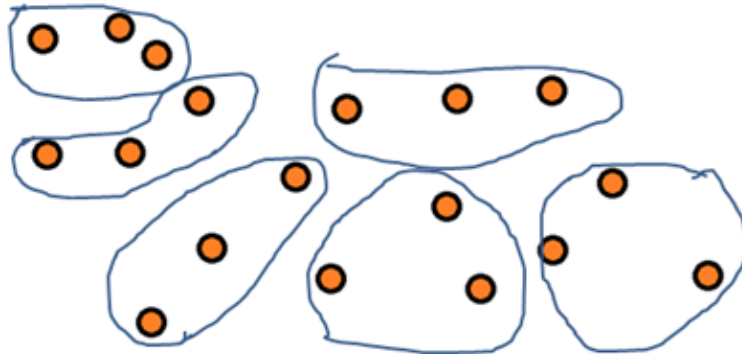## Focus questions

Q: *What are the parts that you can see?*

Q: *What can you tell by looking at the parts?*

Q: *What is the whole?*

Q: *What other ways can you partition the whole?*

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Explore different ways of partitioning a quantity

- Explain how to complete dot challenges.
- Ask students to:
  - make dots on a piece of paper with a felt pen until they are told to stop (each student could have a different quantity)
  - swap the dot drawings
  - circle groups of four
  - if time permits, repeat the challenge with different numbers of dots and circle different small groups.

Focus questions

Q: What can you see on your dot challenge?

Q: How does yours look the same/different from another dot challenge?

Q: What did you notice when you circled larger groups?

Q: How could this dot challenge help you work out how many dots are on this page altogether?

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