MATHS

Lesson 19

Prep

Topic: Number and place value

Exploring flexible partitioning (2)

Lesson concepts

- **Number**— Quantity
- **Addition and subtraction** — Process/operation
- **Addition and subtraction** — Relationships
- **Addition and subtraction** — Part-part-whole

Today students will:

- partition and combine parts of a collection.

Resources

Find and prepare

Sheet — Part-part-whole creatures

10 buttons, counters or blocks

An opaque tub (for example, a clean margarine container or a plastic cup)

Playdough

Iceblock sticks, buttons and straws

10–20 small rocks, buttons or coins

A metallic container that makes a noise when things are dropped in it

Coloured pencils

Key terms

partition

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

Lesson

Introduce the lesson

Note

It is important to highlight and develop the following vocabulary throughout this lesson.

part, whole, join, makes, and, more, total, altogether, combine, total, add, more, less, partition, visualise, describe, record, twenty-bead string, collection, split

Visualising parts of a whole

'How many under the tub?'

- Tell students you are going to play a game where they have to say how many buttons or counters are hiding under the tub (cup or margarine container).
- How to play:
  - Show students a group of buttons or counters, and count how many are in the group (for example: eight).
  - Tell students to close their eyes.
  - Make the group into two smaller groups (for example: five and three) and hide one group under the tub.
  - Have students look at the buttons/counters outside of the tub and say how many are hiding under the tub.

Focus questions

Q: *Is the total number of buttons still the same? How do you know?*
A: Yes: We didn't take any away or add any.

Q: *How could you describe the whole amount?*
A: For example: It is a group of eight.

Q: *What parts did you see?*
A: For example: five and three

Q: *How did you work out the missing part?*
A: For example: I could see one part that was five, so I counted three more to make eight.

- Explain to students that when they were playing the game 'How many under the tub?', they made pictures inside their head of how many buttons were in the two groups.
- Tell students that this is called 'visualising'.

Combine three parts to make a whole

- Explain to students that they will use playdough, iceblock sticks, buttons and straws to make three imaginary creatures.
- Show students the **Sheet** — Part-part-whole creatures and have them look at the combination of objects on the first sign.

Focus questions

Q: *How many iceblock sticks are on this sign?*
A: One

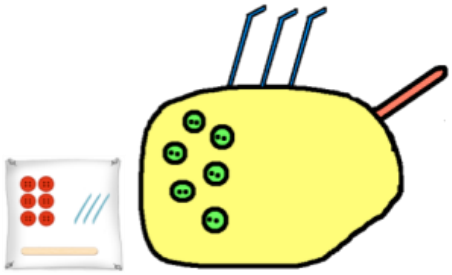
Q: *How many buttons?*
A: Six

Q: *How many straws?*
A: Three

Q: *How many objects are altogether?*
A: 10

We can say that one iceblock stick, six buttons and three straws make a total of 10 objects altogether.

- Tell students to collect that number of iceblock sticks (one), buttons (six) and straws (three) and add them to playdough to make an imaginary creature.
- Have students cut out the first sign and place it beside their first imaginary creature.
  For example:



- Ask students to look at the second sign on the **Sheet — Part-part-whole creatures**.

Focus questions

Q: *How many buttons are on this sign?*
A: Two

Q: *How many straws?*
A: Five

Q: *How many iceblock sticks?*
A: Three

Q: *What is the total number of objects?*
A: 10

Focus questions

Q: *What can you say about the combination of objects and how many there are altogether?*
A: Three iceblock sticks, two buttons and five straws make 10 objects altogether.

- Tell students to collect that number of iceblock sticks (three), buttons (two) and straws (five) and add them to playdough to make another imaginary creature.
- Have students cut out the second sign and place it beside their second imaginary creature.
- Tell students that now they will make another imaginary creature. They need to use the same total of objects (10), but in a different combination.
- Ask students to plan the combination of objects that they will use on the last sign on the **Sheet — Part-part-whole creatures** (for example, students may draw two buttons, four iceblock sticks and four straws, or a different combination, to make a total of 10).
- Tell students to then make the imaginary creature, using that combination of objects.
- Have students cut out the sign they made and place it beside the matching imaginary creature.

Visualise and record addition combinations

Rock drop

- Explain to students that visualising is about picturing something (in this case, quantities) in your head.

Say to students

“When you were trying to work out how many were under the tub, you were visualising.”

- Explain to students that they are going to visualise parts of a collection of rocks by listening to them drop into a metallic container.
- Tell students to:
  - Close their eyes and listen to the rocks drop.
  - Write or draw the quantity they heard with a coloured pencil.
  - Predict how many more they will need to hear to make 10.
  - Change the colour of their pencil.
  - Listen to the rest of the rocks drop.
  - Record how many more were added.
  - Describe what they have written (for example: I can see that three and five make eight.).
- Repeat the game with different combinations to 10.