Cambridge Primary Mathematics 0096 · Stage 2

CM2-B3

A Place for Zero

Np Place value, ordering and rounding · A 30-minute lesson with a 15-minute short version.

Learning intention

For learners

We are learning to explain that a digit's value depends on its place in a 2-digit number, with zero holding a place.

Success criteria

- I can show zero as a place holder with objects.
- I can draw or diagram the same maths.
- I can record my answer and explain how the story supports it.
- I can use TWM.04 while I work.

Learning objectives

2Np.01 Explain that a digit's value depends on its place in a 2-digit number, with zero holding a place.

TWM.04 Convincing: give evidence to back up or challenge an idea or answer.

30-minute lesson

Governed source lesson: Where the Zero Stands · Representation · Building two-digit numbers with bundles of ten and a zero in the ones place

1 Find the maths in the story

4 min

2Np.01

Read-along: Listen with highlighting and pause at the passage used by “Where the Zero Stands”.

Teacher: Put two banded tens in the tens column and nothing loose in the ones. Lay the 2 and the zero card underneath and read it aloud. Now build thirty, then sixty, then ninety, changing only the bundles and the tens card. The zero card never moves.

Learners: Notice the story evidence and say the maths question in their own words.

2 Model it with objects

5 min

2Np.01

Read-along: Replay the source passage while building the quantities, shapes or measures it supplies.

Teacher: Go back to twenty. Say how many tens and how many ones. Now slide the zero card off the mat without touching a single stick, and read what the cards say. Count the sticks that are still lying there. Say both numbers, the one on the desk and the one the cards claim.

Learners: Build a concrete model and check that each part matches the read-along.

3 Try the concrete task

6 min

2Np.01

Read-along: Keep the relevant story page visible as the class tests the model.

Teacher: Build the book's 32: three bundles in the tens column and two loose sticks in the ones. Take the zero card out and put a 2 in its place. Read the mat. Say what changed on the desk and what changed in the number, and whether they changed by the same amount.

Learners: Change or compare the objects, then explain what stayed the same and what changed.

4 Draw the maths

5 min

2Np.01

Read-along: Return to the same story evidence before learners make a pictorial record.

Teacher: Model a clear drawing, diagram or mark for the concrete work without adding a quantity the story does not supply.

Learners: Draw the model and label the important parts with maths language.

5 Record and solve

6 min

2Np.01

Read-along: Use the read-along once more as the evidence check for the abstract record.

Teacher: Clear every stick off the mat. Put a zero card in the tens column and a zero card in the ones column and read it. Say how many sticks that is. Now put one bundle back and swap the tens card for a 1. Say what the 1 did that the zero could not.

Learners: Record the result with suitable numbers, words or symbols and link it back to the picture.

6 Reflect and convince

4 min

TWM.04

Read-along: Show the source passage and invite a final evidence-based check.

Teacher: Name the Thinking and Working Mathematically focus: Convincing: give evidence to back up or challenge an idea or answer.

Learners: Use the concrete model, drawing and record together to justify the answer.

Read-along routes

Shared maths question

How does A Place for Zero help us explore zero as a place holder?

Evidence required

Show the story evidence, a concrete model, a pictorial record and a matching abstract record.

Solo

Read independently, pause at the named source passage and complete the shared maths model.

Supported

Read with the audio and use the teacher's pause points, objects and response frame.

Listening

Listen with the text highlighted, build the same model and give the explanation orally.

Assessment check

The learner meets 2Np.01 by showing and explaining the objective through the story model. Evidence for TWM.04 is visible when the learner demonstrates this Thinking and Working Mathematically focus: Convincing: give evidence to back up or challenge an idea or answer.

15-minute short version

1 Story question

4 min

2Np.01

Read-along: Listen to the passage used by “Where the Zero Stands”.

Teacher: Put two banded tens in the tens column and nothing loose in the ones. Lay the 2 and the zero card underneath and read it aloud. Now build thirty, then sixty, then ninety, changing only the bundles and the tens card. The zero card never moves.

Learners: Name the maths question and the story evidence.

2 Build, draw and record

7 min

2Np.01

Read-along: Replay the evidence while learners move from objects to a drawing and a record.

Teacher: Go back to twenty. Say how many tens and how many ones. Now slide the zero card off the mat without touching a single stick, and read what the cards say. Count the sticks that are still lying there. Say both numbers, the one on the desk and the one the cards claim.

Learners: Make one concrete model, draw it and add numbers, words or symbols.

3 Check and explain

4 min

TWM.04

Read-along: Return to the source page for the final check.

Teacher: Ask learners to demonstrate: Convincing: give evidence to back up or challenge an idea or answer.

Learners: Explain why the model answers the story question.

Learner activity

Concrete, pictorial, abstract: Zero as a place holder

Use the read-along evidence for every part. Do not add a number or measure that the story does not give.

1. Build the story maths with objects.

2. Draw the same model and label its important parts.

3. Record the result with suitable numbers, words or symbols.

4. Explain how your evidence uses TWM.04.