

Renaming length (m ↔ cm): a first look

CURRICULUM ALIGNMENT

MEA.MSR.3b

identify the relationship between equivalent units of measurement, and rename measures using equivalent units.

ALG.PRR.3a

identify rules that describe the structure of a pattern and use these rules to make predictions.

INTERACTIVES Unit Converter · challenge, display, explore

WHAT THIS LESSON TEACHES

Renaming length means writing the same length a different way with metres or centimetres. The real length stays exactly the same because 1 m equals 100 cm.

→ 2 m = 200 cm

→ 250 cm = 2 m 50 cm

MODEL THIS ON THE BOARD

RENAME 3 M AS CENTIMETRES

- 1 Begin with the length 3 m.
- 2 One metre equals 100 cm so each whole metre adds one hundred.
- 3 Three metres make 3 groups of one hundred.
- 4 Write the renamed length as 300 cm.

LESSON ARC

Lay the metre stick beside a 30 cm ruler on the IWB and ask how many single centimetre marks hide along the whole metre — guesses first, no reveal. The conversion ladder then anchors 1 m = 100 cm and builds the hundred pattern up to mixed lengths like 2 m 50 cm. Pupils rule a two-column rename table in their copy, then the Class Challenge works clean jumps and one reverse split (250 cm back to metres) at the board.

TEACHING MOVES

1. **Getting Started.** Take three hands-up guesses only, not open call-outs, and don't confirm. If a pupil says 'three' they're counting rulers — steer them back to counting the little centimetre marks along the metre stick.
2. **Watch and Notice.** Point at the jump chip between the two rungs and say 'hundred' aloud as each digit lands. Pause before revealing 3 m and ask 'how many hundreds?' On 2 m 50 cm, run it backwards too: 'how many whole hundreds are inside 250, and what's left over?' so they hear the reverse split before they meet it.
3. **Try It Together.** Pupils take turns at the board and the class reads each pair aloud before checking. Set the clean metre jumps on the ladder; work the final 250 cm item off the ladder by hand — ask 'how many whole hundreds are inside 250?' and hold out for a pupil answer before anyone writes.
4. **Build the Rename Table in Your Copy.** Walk the rows glancing for two columns that line up and centimetre numbers climbing in hundreds — 100, 200, 400, 500. This is copybook practice, not marking. Have pupils read one pair aloud: 'one metre is a hundred centimetres.'

5. **Class Challenge.** Brisk practice — pupils take turns, check each answer, class confirms, move on. On the reverse item, 250 cm, ask 'how many hundreds, and what is left over?' before the pupil types; the answer is 2 m 50 cm. Don't re-explain each one.
6. **What Did We Notice?.** Listen for 'goes up by a hundred', not just 'goes up'. Revoice a strong answer: 'every whole metre is worth exactly one hundred centimetres, so we add a hundred each time.' Head off any pupil who says ten instead of a hundred.

COMMON MISCONCEPTIONS

⚠ A pupil renames 3 m as 30 cm — they add or attach a ten for each metre instead of a hundred, so the centimetre number is ten times too small.

Send them back to the metre stick and 30 cm ruler on the IWB: lay the ruler mentally along the metre and count — it takes a hundred marks, not ten, to reach the end. Rebuild 1 m = 100 cm on the ladder, then step 2 m, 3 m aloud in hundreds.

⚠ On a mixed length like 2 m 50 cm, a pupil writes 2050 cm or 20050 cm — they stick the numbers together instead of adding the metre's hundreds to the loose centimetres.

On the ladder, show the two hundreds from the metres (200) and then join the loose fifty: $200 + 50 = 250$. Say it as one action: 'two whole hundreds, then the leftover fifty sits on top.'

DIFFERENTIATION

EMERGING

- Stay on whole-metre lengths only (1 m, 2 m, 3 m) at the board and in the copy table while others move to mixed lengths — build the hundred pattern before any leftover centimetres.
- Pre-rule the two columns and write the metre-column numbers so the pupil only fills the centimetre side.

DEVELOPING

- After the copy table, ask them to add a fifth row of their own choosing and read the pair aloud — can they extend the pattern to 7 m or 10 m?
- Give a mixed length going the other way in copy: 380 cm — how many whole metres, and what's left over?

PROFICIENT

- During the Class Challenge, hand a fast finisher a teacher-narrated stretch: '6 m 5 cm — careful, only five loose centimetres. Is it 605 or 650?' Ask them to explain the trap to the class.
- Pose: 'Two lengths add to 400 cm. One is 1 m 60 cm — what's the other in metres and centimetres?'

✓ **Cross-curricular:** Tie to PE — pupils measure the length of a PE bench or the hall in metres, then rename it in centimetres.

ANSWER KEY

a) 200 cm

b) 2 m 50 cm

c) 420 cm

Q1: 100 cm

Q2: 200 cm

Q3: 500 cm

Q4: 2 m 50 cm

Q5: 150 cm

Q6: 1 m 80 cm

Spot:

Aoife multiplied by 10 instead of 100. One metre = 100 cm, so $3 \text{ m} = 3 \times 100 = \text{**}300 \text{ cm**}$.

EXTENSION SHEET · STRETCH ANSWERS

S1: 3100 cm

S2: 4500 cm

S3: 14000 ml

S4: 48000 g

S5: 140 mm