Lesson 48 NUMBER

Converting length units

CURRICULUM ALIGNMENT

MEA.MSR.4a determine and calculate units of measurement in fractional and/or decimal form to solve practical problems.

NUM.PVT.4 investigate how decimals and percentages (and fractions) can be compared, ordered and expressed in related terms.

INTERACTIVES Unit Converter · challenge, display, explore

LESSON ARC

Open with 4.7 m → cm as a recall flash to surface the ×100 rule pupils already know. Drive four worked examples on the unit-converter interactive, with the class predicting the rule before each Check. Pupils take turns at the board for three named lengths, then sketch the km → m → cm → mm chain in their copybook starting at 1.5 km. Class Challenge bank closes with a km-to-mm stretch unpacking three ×10s in a row.

TEACHING MOVES

1. **Getting Started.** Put 4.7 m → cm on the board and give five seconds of silent thinking before any hands go up. Take three hands, not call-outs. Listen specifically for the pupil who says 'multiply by one hundred' — re-voice that phrase out loud, because it's the lens for the whole lesson.
2. **Watch and Notice.** Before tapping each rung on the unit-converter interactive, hold the screen and ask the class for the rule — take a couple of answers before you reveal. On 250 mm → 25 cm, pause and flag the reversal: this one is ÷10 because we're going UP to a bigger unit. Anchor before moving on: smaller unit, bigger count.
3. **Try It Together.** Pupils take turns at the board. Each turn: the board pupil sets the conversion, ask the watching class for the rule and take a couple of answers, THEN the board pupil taps Check. Listen for 'the decimal point moves' — stop and correct: the digits move past it, the point stays put.
4. **Sketch the chain in your copy.** Walk the room glancing at arrow labels. If a chain is missing the ×10 between m, cm and mm, point at the next arrow and ask 'how many of these in one of those?' Don't mark — this is practice, not assessment. The four values to land: 1.5 km → 1,500 m → 150,000 cm → 1,500,000 mm.
5. **Class Challenge.** Brisk turn-taking at the board — about 1.5 minutes per one-step and two-step move. For the km → mm stretch, pause first and ask 'how many ×10s do we need?' before anyone solves. Three is the whole point. Direct fast finishers to the extension bank on their device while you circulate.
6. **What Did We Notice?.** Revoice the pupil who says 'each unit is ten times the next smaller one' — that's the discovery. If a pupil offers ×1000 × ×100 = ×100,000 from km to mm, agree and break it open: three ×10s in a row IS one ×1000. Same chain, two ways of counting it.

COMMON MISCONCEPTIONS

⚠ Pupils say 'the decimal point moves two places to the right' when converting 4.7 m to 470 cm.

Stop and correct on the spot: the digits move, the point stays put. On the unit-converter, point at the 4 and the 7 as they step columns left while the decimal point holds position. Have the class say 'digits step left' before the next example.

⚠ Pupils try to jump km to mm in one move and either guess ×1000 or freeze entirely.

Send them to the copybook chain. Point at each arrow in turn — km to m, m to cm, cm to mm — and ask 'how many of these in one of those?' Three ×10s in a row, written along the arrows, is steadier than trying to remember a million.

⚠ Pupils reverse direction: converting 250 mm to cm, they multiply by 10 instead of dividing, ending up with 2,500 cm.

Anchor on the count-rule, not the operation: smaller unit needs a bigger count, bigger unit needs a smaller count. 250 mm and 25 cm are the same length — the cm count must be smaller because each cm holds ten mm inside it.

DIFFERENTIATION

EMERGING

- Stay on single-step moves (m ↔ cm, cm ↔ mm) in the copybook chain; skip the km rung for now and add it once the ×10 / ×100 pattern is steady.
- Pre-label the arrows on the chain (×1000, ×100, ×10) so pupils only fill in the four values, not invent the structure.

DEVELOPING

- After the chain lands, swap the starter from 1.5 km to 0.072 km and ask which arrow labels still hold (all of them — only the digits shift).
- Pose a missing-unit puzzle: '4,500 ___ = 4.5 m'. Pupils name the unit, then justify with the count-rule.

PROFICIENT

- Direct fast finishers to the extension bank on their device — the trickier km↔cm and m↔mm jumps live there.
- Pose: 'a Westport laneway is 0.4 km long. How many 75 cm school chairs would fit end to end along it?' Pupils must convert before they can compare.

↗ **Cross-curricular:** Tie to Geography — pupils convert the distance from the school to a named local landmark from km on the map to m on foot.

ANSWER KEY

a) 2 m 35 cm = **235 cm** = **2,350 mm**.

b) 1 km 250 m = **1,250 m**.

c) 8 cm 5 mm = **85 mm**.

d) 3.4 m = **340 cm** = **3,400 mm**.

Q1: 0.981 kg

Q2: 7.17 m

Q3: 0.05969 km

Q4: 3.29 km

EXTENSION SHEET · STRETCH ANSWERS

S1: 0.07628 km

S2: 4.95 m

S3: 0.892 l