TEACHER RESOURCE BOOK · MATHS · 3RD CLASS

Lesson 44 MEASURES

Length — centimetres and millimetres

CURRICULUM ALIGNMENT

MEA.MSR.3a compare, estimate and measure length, weight, capacity, area and volume using appropriate instruments and record and communicate appropriately.

MEA.MSR.3b identify the relationship between equivalent units of measurement, and rename measures using equivalent units.

INTERACTIVES Measurement Rulers · display, explore

LESSON ARC

Zoom the IWB onto a real ruler's marks between 3 and 4 and take guesses before anyone counts — the reveal is ten little gaps every time. Walk one worked example reading a pencil at 4 cm 5 mm, then convert it live with 4 × 10 + 5 = 45 written on the board. Pupils take turns at the measurement-rulers interactive, then record three objects two ways in copybook. The Student Activity Book follows with more conversions.

TEACHING MOVES

1. **Getting Started.** Hold up a real ruler and zoom the IWB photo onto the gap between 3 cm and 4 cm. Take three hands-up guesses for the number of little gaps before anyone counts — let the 'exactly ten, every time' land as a surprise.
2. **Watch and Notice.** On the rulers display, point first to the last whole centimetre (the 4), then count the little marks aloud one at a time to 5. Write 4 × 10 + 5 = 45 on the board so pupils see where 45 comes from, not just the answer — and stress that five marks is half a centimetre.
3. **Try It Together.** Drive the measurement-rulers interactive in explore mode. Send a pupil up to drag the cursor to the object's end, then ask the class 'how many whole centimetres?' and 'how many extra little marks past that?' Move the cursor for each new pupil so several different lengths get read aloud.
4. **Write the lengths in your copy.** Walk the room watching for 4 cm 5 mm written as 405 mm — that's the digits-jammed-together error. Send those pupils straight back to the rule on the board: 4 × 10 + 5, not 4-then-5.
5. **Class Challenge.** Keep the pass-on rhythm brisk — crayon, rubber, key, lolly stick circulate and pupils measure each with their own ruler, confirming readings aloud at the end. Catch alignment slips on the spot: lining up against the ruler's edge instead of the zero mark is the one to hunt for.
6. **What Did We Notice?.** Listen for real situations where a few millimetres matter — fitting a battery, a key, a screw. Revoice one: 'so two things can look the same number of centimetres long but be a few millimetres different, and sometimes those millimetres are the whole story.'

COMMON MISCONCEPTIONS

⚠ Pupils write 4 cm 5 mm as 405 mm — they jam the centimetre digit and the millimetre digit together instead of converting.

Send them back to the board rule. Build it on the ruler: 4 cm is four lots of ten little marks, count them — forty — then five more makes 45. Have the pupil count the marks themselves so they feel why it's 45 and not 405.

⚠ Pupils line the object up against the ruler's edge instead of the zero mark, so every reading is a few millimetres out.

Stop and demonstrate both placements side by side on one object. Slide it back so the left end sits exactly on the zero line, then re-read — the class sees the number change. Make 'left end on the zero' the line they say before any measure.

⚠ When counting the millimetres, pupils start the little-mark count from zero rather than from the last whole centimetre they passed.

On the interactive, freeze the cursor past the 4 and ask 'where do we start counting the little marks?' Point to the 4, not the 0. Count on aloud together from that whole centimetre to the end.

DIFFERENTIATION

EMERGING

- Restrict their core measuring to whole and half centimetres first — read the crayon and lolly stick to 'cm and a bit' before adding the millimetre count.
- Pre-write '1 cm = 10 mm' and the '___ × 10 + ___' frame at the top of their copybook line so they only fill the numbers, not invent the structure.

DEVELOPING

- After three copybook objects, give them a length stated in millimetres only (e.g. 63 mm) and ask them to write it back as cm and mm.
- Pose 7 cm 2 mm + 5 mm and ask whether the centimetres ever change — push them to notice the carry at ten.

PROFICIENT

- Hand them the coin and staple stretch plus the longest-minus-shortest difference in millimetres, then ask them to narrate to you why a staple is easier to give in mm than in cm.

↗ **Cross-curricular:** Tie to the science strand — pupils measure the length of a leaf or seed to the nearest millimetre and record it for a class growth chart.

ANSWER KEY

W1: 36 mm

W2: 800 cm

Q1: 14000 ml

Q2: 7.8 cm

Q3: 27000 mm

Q4: 28.4 cm

EXTENSION SHEET · STRETCH ANSWERS

S1: 14.6 cm

S2: 8800000 cm

S3: 6000000 cm

S4: 14.8 cm

S5: 26000 m