

Lesson 43 MEASURES

Length – estimate and measure with a ruler (cm and mm)

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.

LESSON ARC

Hold a pencil beside a demonstration ruler and take three hands-up estimates before revealing anything. In Watch and Notice, measure four real objects live at the front — crayon, pencil, rubber, scissors — each time estimating, then sliding the end onto the 0 mark and counting the millimetre marks past the whole centimetre. Pupils then measure desk objects with their own rulers, writing estimate-then-measurement. The copybook moment stars any estimate within 1 cm; the Class Challenge runs five real measurements ending on the awkward handspan.

TEACHING MOVES

- Getting Started.** Hold a pencil beside the demonstration ruler and take three hands-up estimates — not open call-outs. Hold the real length back; the point is the guess. Then point at a glue dot or pencil rubber and ask whether you'd measure those tiny things the same way as the whole desk, without naming millimetres yet.
- Watch and Notice.** Measure each object live so the class sees the zero-alignment happen. Make the parallax point explicitly — eye square over the far end, not off to the side — and count the small marks aloud: 'eight... and one, two, three, four, five millimetres.' Model the awkward shapes coming later: zero at the thumb tip for a flat hand, zero at the closed blade-tip for scissors.
- Try It Together.** Name one object at a time (pencil, rubber, ruler edge, copybook edge) and circulate to catch alignment slips on the spot. Insist the estimate is written down before measuring, so the star-check later has something to compare against. Re-voice a good answer in both units: 'so that's eight centimetres and five millimetres.'
- Record Estimate and Measure in Your Copy.** Glance for a clear estimate-then-measurement layout — this is practice, not marking. Push pupils to write the unit (cm and mm) every time, not a bare number, then star any estimate within 1 cm of the real measurement.
- Class Challenge.** Keep the pass-on rhythm brisk — pencil first, building to the handspan last. Remind pupils to keep the hand flat with zero at the thumb tip, just as you modelled. Confirm each agreed reading aloud before moving on; the 7 cm hunt is for finishers only.
- What Did We Notice?.** Listen for pupils saying tiny things need small units to stay exact, and big things would need a long string of small numbers. Re-voice a strong answer — 'so we pick the unit that gives us a sensible, tidy number' — and head off the idea that one unit is just 'better' than another.

COMMON MISCONCEPTIONS

⚠ Pupils start the measure from the metal end of the ruler or from the 1, so an 8 cm pencil reads 7 cm. Stop and slide the object so its end sits exactly on the 0 line at the front. 'The numbers count from zero, not from the edge.' Have the pupil re-read the far end after you re-seat the zero.

⚠ Pupils read a length as '8 cm 5' or '85' — they count the little marks but drop the millimetre name, treating the mm count like loose digits. On the demonstration ruler, point at the five little marks past 8 and count them aloud as millimetres: 'one, two, three, four, five millimetres — eight centimetres and five millimetres.' Have them re-voice the full reading with both units named.

⚠ On the handspan, pupils splay or cup the hand, so the same pupil gets a different answer twice. Re-model from the front: hand flat on the desk, zero at the thumb tip, read straight down at the far fingertip. Ask them to measure once flat, then once cupped, and notice why flat is the fair reading.

DIFFERENTIATION

EMERGING

- Stay with objects that land on a whole centimetre first (a 6 cm crayon) before any in-between mm readings, so pupils nail the zero-alignment before the millimetre count.
- Pre-rule the estimate / measurement / unit columns for them, or hand the printable record sheet, so they place numbers rather than build the layout.

DEVELOPING

- After the five challenge items, ask pupils to order their objects shortest to longest using only their recorded readings — no re-measuring.
- Give a target reading like 'find something that reads 4 cm 5 mm' and have them justify why the far end sits halfway between the 4 and 5 marks.

PROFICIENT

- While others finish the five, set the open hunt: find two objects whose lengths add to exactly 12 cm, measuring and recording both to prove it.
- Ask them to explain to you, as if to a younger pupil, why reading off to the side gives a wrong length — naming the eye-square-over-the-end fix.

➤ **Cross-curricular:** Tie to the science strand — pupils measure a growing classroom plant or seedling to the nearest mm and record its length in cm and mm over the week.

ANSWER KEY

W1: 49 mm

Q2: 7.6 cm

W2: 4 cm

Q3: 10.4 cm

Q1: 11 cm

Q4: 7 cm

EXTENSION SHEET · STRETCH ANSWERS

S1: 14.6 cm

S4: 14.8 cm

S2: 24.4 cm

S5: 7 cm

S3: 15 cm