

Estimate, then measure: length in centimetres

CURRICULUM ALIGNMENT

MEA.MSR.2

compare, approximate and measure length, weight, capacity and area using appropriate instruments and record using appropriate units of measurement.

INTERACTIVES Measurement Rulers · challenge, display, explore

WHAT THIS LESSON TEACHES

An estimate is a careful first guess of a length in centimetres, made before any ruler touches the object. Then you line up zero and read the real length to check how close you were.

→ Looking at a glue stick and saying about 10 cm before measuring.

→ Estimate 10 cm, measure 9 cm. One centimetre off is a fine estimate.

MODEL THIS ON THE BOARD

ESTIMATE THEN MEASURE A CLASSROOM CRAYON

- ① Look at the crayon and count imaginary fingernail-widths along it. Settle on an estimate of about 8 cm.
- ② Only now place the ruler so the 0 cm mark lines up with one end of the crayon.
- ③ Read the centimetre mark at the other end: the crayon measures 7 cm.
- ④ Compare: estimate 8 cm, real length 7 cm. One centimetre off is a fine estimate.

LESSON ARC

Open with a silent rubber estimate — 2, 5 or 20 cm — no rulers yet; the spread of guesses is the point. Model the fingernail tip on the ruler's 1 cm mark, estimate the glue stick at about 10 cm, then reveal 9 cm. Class estimates the on-screen marker and a real chalk stick, lining zero carefully each time. Class Challenge runs crayon, straw, pencil case and book edge: estimate first, check, move on briskly. Pupils record the book-edge pair in their copy before a short maths-talk close.

TEACHING MOVES

1. **Getting Started.** Give five seconds of quiet think-time on the rubber before any hands. Take only three answers — one too small, one about right, one far too big — and leave the spread hanging. Do not hand out rulers yet.
2. **Watch and Notice.** Hold your own fingernail tip against the ruler's 1 cm mark and say 'about one centimetre wide; count these along an object in your head'. Estimate the glue stick at about 10 cm out loud, then reveal 9 cm; one off is a fine estimate. Do the same for scissors (about 14 cm → 13 cm). Let the snapshots carry the readings — no full measure script.
3. **Try It Together.** Before anyone moves the ruler, ask for a silent fingernail-width estimate of the on-screen marker. Take two estimates, then one pupil lines the 0 at the start and reads the end — watch the zero placement. Second cycle: hold up real chalk; class estimates in silence; a pupil measures with a classroom ruler. Rotate about four pupils across both objects.
4. **Class Challenge.** Keep the board work brisk. True lengths for you only: crayon 5 cm, straw 10 cm, pencil case 16 cm, book edge 22 cm. Before every Check, gather one or two silent estimates. On the book edge, listen for pupils counting fingernail-widths in jumps of five. Name a miss of one or two centimetres warmly as a strong estimate.

5. **Write your estimate in your copy.** Whole-class copybook practice, not marking. Pupils write the book-edge pair just agreed (estimate ____ cm, real length 22 cm). One pair is enough. Walk the room glancing that both lines are complete.
6. **What Did We Notice?.** Ask what helps a close centimetre estimate. Listen for the fingernail benchmark, comparing with a known 10 cm length, and 'nearer 10 or nearer 20'. Re-voice: 'so counting about-one-centimetre steps in your head gets you close before the ruler lands'.

COMMON MISCONCEPTIONS

⚠ Pupils line the ruler so the object starts at 1, then read the end number and are always 1 cm too long. Freeze the board measure. Point to the 0 and say 'length starts at nothing'. Re-line the object at 0 and re-read the same end so the class hears the one-centimetre shift.

⚠ Pupils refuse to estimate — 'I don't know until I measure' — treating a guess as cheating. Remind them an estimate is a careful first guess, not a test score. Model counting three fingernail-widths along a short edge out loud, say 'about 3 cm', then measure. One or two centimetres off still earns a warm nod.

⚠ On longer objects like the book edge, pupils lose the count and jump to a round 10 or 20 with no fingernail steps. Ask them to count in fives of fingernail-widths on the IWB edge: five, ten, fifteen, twenty. 'Jumps of five keep the count honest when the object is longer than a hand.'

DIFFERENTIATION

EMERGING

- Stay on the crayon and straw only (5 cm and 10 cm). You count the first three fingernail-widths aloud; the pupil finishes the count and says the estimate.
- Pre-mark the ruler's 0 with a finger while the pupil only reads the end number.

DEVELOPING

- After the book-edge copy moment, hold up a new classroom object (e.g. a glue stick) and ask for estimate then measure without board support.
- Ask: was your book-edge estimate nearer 20 or nearer 25 — and by how many fingernail-widths?

PROFICIENT

- Challenge: find a classroom object you think sits between the pencil case and the book edge (16–22 cm). Estimate, measure, and write how many centimetres off you were.
- Ask them to explain, in one copybook sentence, why counting in fives of fingernail-widths beats a single wild guess on long edges.

➤ **Cross-curricular:** Tie to science — estimate then measure a bean seedling's height in cm the next time the class records growth.

ANSWER KEY

- a) 4 cm
b) 7 cm
c) 12 cm

Q1: Estimate about 5 cm; the measured length depends on the rubber

Q2: Answers vary: an estimate first, then the measured length

Q3: Answers vary: an estimate first, then the measured length

Q4: Answers vary: the difference is the gap between the estimate and the measured length

Q5: Answers vary (most copies are about 17 cm on the short side)

- a) **Always** : The lesson rule is a careful first guess with no ruler yet.
b) **Always** : A fingernail tip is about 1 cm wide so the count is a good guide.
c) **Never** : Estimating always comes before the ruler is used.
d) **Sometimes** : Sometimes the guess matches exactly and sometimes it is a centimetre or two out.

EXTENSION SHEET · STRETCH ANSWERS

S1: 3 cm

S2: 3 cm

S3: 3 cm

S4: 5 cm