

Estimate, then weigh: ordering by weight

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 Balance Scales · display, explore

WHAT THIS LESSON TEACHES

Guess the order of classroom parcels from lightest to heaviest first. Then check two at a time on a balance: the pan that sits lower is heavier, and level pans mean the same weight.

→ Parcels A (5 cubes), B (8 cubes), C (11 cubes): guess lightest to heaviest, then weigh A against B.

→ If A balances B, they are the same weight even if the boxes look different.

MODEL THIS ON THE BOARD

ORDER THREE CLASS PARCELS

- 1 Guess lightest to heaviest for A (5 cubes), B (8 cubes) and C (11 cubes).
- 2 Put A on one pan and B on the other. The pan with **B** sits lower, so B is heavier than A.
- 3 Now put B against C. The pan with **C** sits lower, so C is heavier than B.
- 4 Update the board line: A (5), then B (8), then C (11). Lightest to heaviest is A, B, C.

LESSON ARC

Open with three same-size parcels and take two or three hands-up guesses for lightest to heaviest; write the class list and leave it unweighed. On the balance-scales interactive, tip A against B, then the heavier against C, updating the board line after every tip and pausing on a level pair. Pupils take turns loading cubes in Try It Together while the class revoices the running order. Everyone copies the checked A–B–C line, then Class Challenge sorts six named parcels with each pupil updating their maths copy after every tip.

TEACHING MOVES

1. **Getting Started.** Show the three same-size parcels (or the board photo). Take only two or three hands-up guesses and write one class list lightest-to-heaviest. Do not tip the balance yet — the list stays up as the claim the pans will test.
2. **Watch and Notice.** Run the three tips in order: A (5) vs B (8), then B (8) vs C (11), then the level pair D = E (6). After each tip ask ‘who is heavier?’ before you write; grow the board line in full view. On the level pans, revoice: level means the same weight, even when the boxes match.
3. **Try It Together.** Before the first tip, take a quick class estimate for the pair on the pans. Start 4 against 9, then bring in a third cube-parcel and weigh it against the current heaviest or lightest. Rotate several pupils at the board; the class says the order together after every tip. Watch for anyone re-guessing the whole line from eyes alone.
4. **Write the order in your copy.** Leave the checked A (5), B (8), C (11) line visible. Pupils write lightest-to-heaviest in their maths copy while you walk the row. Whole-class copybook practice — nothing is marked.
5. **Class Challenge.** Write the cast on the board first: Red 4, Blue 9, Green 6, Yellow 6, Orange 12, Stripe 7. One pupil loads the cubes you call; everyone else updates the growing line in their maths copy before the

next pair. Keep it brisk — pause only on Green vs Yellow for ‘same weight’, and finish by asking one pupil to compare the opening guess with what the balance showed.

6. **What Did We Notice?** Ask why eyes alone cannot weigh the parcels. Listen for same-size boxes hiding different weights, the lower pan as heavier, and level pans as equal. Revoice: eyes guess, the balance decides. Head off ‘the biggest box is always heaviest’ — today’s boxes matched on purpose.

COMMON MISCONCEPTIONS

⚠ Pupils trust the opening eye-guess and keep reshuffling the whole line from looks after each tip, instead of keeping what the last tip already proved.
Freeze the board list. Point at the pair just weighed: ‘This tip is fixed — only the new parcel can move.’ Rebuild the line from the last secure pair outward.

⚠ Pupils say level pans mean ‘both empty’ or ‘broken’, not that the two sides weigh the same. Load the matching 6-and-6 pair again. Say together: level means same weight. Then swap one side to 4 so they see the tip return — same boxes, different cubes.

⚠ Pupils think the heavier pan sits higher, mixing up the tip with a see-saw story. Tip a clear unequal pair and have the class point: lower pan is heavier. Revoice once — ‘the heavy side sinks’ — before the next load.

DIFFERENTIATION

EMERGING

- Stay on two parcels only until the tip-and-update habit sticks; teacher keeps the board line and pupils copy each short list.
- Pre-write lightest → heaviest column headers in the maths copy so pupils only place the parcel names.

DEVELOPING

- After each Class Challenge tip, ask one pupil to justify the new line in a full sentence before anyone writes.
- When Green = Yellow appears, ask where both sit relative to Red and Blue without reloading.

PROFICIENT

- Add Ash at 10 cubes and have the class weigh it only against Blue and Orange to slot it on the finished line — still whole-class at the IWB.
- Ask: fewest tips to order all six from scratch — explain the pair choices without running them.

✂ **Cross-curricular:** Science link: same-size sealed pots with different fillings — estimate, then check on the class balance.

ANSWER KEY

- a) right pan
b) 18 cubes side
c) level

Q1: E

Q2: equal / same weight

Q3: H, I, J

- a) **Always** : A lower pan means that side has greater weight.
b) **Always** : Level pans show equal weight even if boxes look different.
c) **Never** : Same-size boxes can hide different weights, so a balance is needed.
d) **Sometimes** : A guess can be right or wrong until the pans check it.

EXTENSION SHEET · STRETCH ANSWERS

S1: an eggcup, a water bottle, a bucket

S2: a mug, a jug, a fish tank

S3: a mug, a bucket, a bath

S4: a pencil, a ruler, a metre stick