

Weighing with cubes: giving weight a number

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 · challenge, display, explore

WHAT THIS LESSON TEACHES

Counting the cubes that make the balance sit level turns an object's weight into a number we can compare.

- A rubber that balances 4 cubes weighs about 4 cubes.
- Scissors at 12 cubes are heavier than a crayon at 6 cubes.

MODEL THIS ON THE BOARD

WEIGHING THE RUBBER WITH CUBES

- 1 Put the rubber on one pan of the balance scales.
- 2 Add cubes one at a time to the other pan until the beam sits level.
- 3 Count the cubes aloud: there are 4.
- 4 Write in your copy: the rubber weighs 4 cubes.

LESSON ARC

Open by hefting a pencil case and asking how cubes could turn “heavy” into a number. On the balance-scales interactive, weigh a rubber (4), crayon (6) and scissors (12) one at a time, writing each cube count under the object, then order them lightest to heaviest from the numbers alone. Pupils try one weighing together at the board, write the rubber’s weight in copybooks, then run the Class Challenge bank. Hand off to the Student Activity Book for independent practice.

TEACHING MOVES

1. **Getting Started.** Heft the pencil case once where everyone can see, then hold five seconds of quiet think-time. Take two or three ideas about how cubes on a balance might give weight a number — don’t demonstrate yet.
2. **Watch and Notice.** On the balance-scales interactive, weigh rubber → crayon → scissors one by one. Add cubes slowly until the beam sits level; say ‘the rubber weighs about 4 cubes’ and write the count under each object. Line up 4, 6, 12 and ask the class to order lightest to heaviest from the numbers alone.
3. **Try It Together.** Keep the rubber on the left pan. A pupil adds cubes one by one while the class counts aloud; stop the moment the pans sit level. Watch for anyone who keeps adding after the beam is already level — target is about 4.
4. **Write the rubber's weight.** Pupils write ‘the rubber weighs ____ cubes’ in their maths copy. Walk the rows glancing for 4 — whole-class copybook practice, not marking.
5. **Class Challenge.** Brisk turns at the board: balance each object, check the count, move on. Do not preview target counts. On the last item, cover the objects and show only 12 and 15 — the cube count alone decides which is heavier.

6. What Did We Notice?. Ask: how do cubes turn 'heavy' into a number? Revoice answers toward 'the number of cubes when the pans sit level is the weight written down.' Head off 'heavier means more cubes on the object' — cubes sit on the other pan.

COMMON MISCONCEPTIONS

⚠ Pupils keep adding cubes after the beam is already level, chasing a 'neater' number or thinking more cubes make a better answer.

Freeze the interactive the moment the pans sit level. Point at the beam: 'level means stop — that count is the weight.' Recount the cubes on the pan together.

⚠ Pupils say the object is heavier because it has more cubes on it — they think the cubes sit with the object, not on the other pan.

Point left pan (object) and right pan (cubes) on the interactive. Revoice: 'cubes go on the empty pan until both sides match; the cube count is the weight.'

⚠ When shown only 12 and 15, pupils still want to see or heft the objects before deciding which is heavier.

Keep the objects covered. Ask: 'if 15 is a bigger cube count than 12, which pan needed more cubes to balance?' Bigger count means heavier — the number is enough.

DIFFERENTIATION

EMERGING

- Stay with the rubber and crayon only; teacher places the first two cubes, pupil adds until level and copies the count into the sentence frame.
- On the IWB, pre-place the object so the pupil only drags cubes and reads the count when the beam sits level.

DEVELOPING

- After ordering 4, 6, 12, ask: how many cubes heavier is the scissors than the rubber? Write the difference beside the ordered list.
- Give a mystery count — 'an object balanced 9 cubes' — and ask where it slots in the lightest-to-heaviest line.

PROFICIENT

- On the final Class Challenge pair (12 vs 15), ask: how many extra cubes would the lighter object need to match the heavier? Pupils justify from the numbers alone.
- Fast finishers move to the Student Activity Book page and tackle the ordering items first while the class finishes the board round.

✚ **Cross-curricular:** Science link — weigh classroom seeds or pebbles in cubes, then order finds from a nature tray lightest to heaviest.

ANSWER KEY

Scaffold: visual check on the page

Q1: 3

Q2: 7

Q3: stapler

a) Always : The cube count on a level balance is the weight number.

b) Always : More weight on one pan needs more cubes on the other to level.

c) Never : 8 cubes is more than 5 cubes, so the 8-cube object is heavier.

d) Never : The lightest object has the smallest cube count.

EXTENSION SHEET · STRETCH ANSWERS

S1: 3 footsteps

S2: 4 lollipop sticks

S3: 1 footstep

S4: 1 paperclip