

Heavier or lighter: the balance tells the truth

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

On a balance the pan that goes down holds the heavier object. When both pans sit level the two sides weigh the same.

→ Crayon 7 goes down against rubber 3, so the crayon is heavier.

→ Blocks 6 and 6 sit level, so they weigh the same.

MODEL THIS ON THE BOARD

CRAYON 7 AGAINST RUBBER 3

- 1 Put crayon weight **7** on one pan and rubber weight **3** on the other pan.
- 2 The pan with **7** goes down and the pan with **3** rises.
- 3 The crayon is heavier than the rubber.

LESSON ARC

Open with a hands-up vote on the big cotton-wool bag versus the little stone — hold the answer. On the balance interactive, walk three settled pans: stone down against cotton wool, apple down against rubber, then two equal pans sitting level. Pupils load four pairs at the board and the class calls left-down, right-down or level before each settles. Copybook: one heavier-than sentence using today's objects. Class Challenge is brisk practice; maths-talk closes on why size does not decide weight.

TEACHING MOVES

1. **Getting Started.** Show the cotton-wool bag and the stone side by side. Take three hands for the bag and three for the stone, then stop. Say only: 'we will not trust our eyes just yet' — the balance settles it next.
2. **Watch and Notice.** Point to each settled pan and ask only which side is down. On stone-against-cotton-wool, press: 'did size tell the truth?' Name the flat pans level. Stay off counting the weight labels — that is later work.
3. **Try It Together.** Before each pair settles, freeze the class for a unison call: left down, right down, or level. Rotate four pupils at the board through crayon-rubber, matching blocks, scissors-apple, sponge-pebble. Listen for 'down means heavier' in their talk.
4. **Write the heavier sentence.** Pupils write one sentence: the ____ is heavier than the _____. Walk the row glancing at both gaps — two real objects from today is enough. This is whole-class copybook practice, not marking.
5. **Class Challenge.** Keep turns brisk and confirm each answer before moving on. Pause only on sponge-against-pebble so the class predicts first, then revoice: down means heavier — size does not decide. Finish by making one pair sit level.
6. **What Did We Notice?.** Ask why a small thing can be heavier than a big thing. Fish for answers that name the balance, not the eyes. Revoice a strong one: 'so size does not decide weight — the balance does.'

COMMON MISCONCEPTIONS

⚠ Pupils vote that the big fluffy bag is heavier because it looks bigger — ‘heavy’ and ‘big’ mean the same thing to them.

Settle the stone-against-cotton-wool balance again and point only at the down pan. Ask: ‘which pan is down?’ then ‘so which is heavier?’ Keep size talk out until the pan has spoken.

⚠ Pupils point at the object that sits higher and call it heavier, mixing up the pan that rises with the pan that goes down.

Trace the down pan with your finger and say the rule once: ‘down means heavier; the side that rises is lighter.’ Have the class repeat the rule, then re-check the same pair.

⚠ When both pans sit flat, pupils say the balance is broken or ‘nothing happened’ rather than naming equal weight.

Hold on the level example. ‘Both pans sit flat — we call that level. The two sides weigh the same.’ Get the class to say level out loud before leaving the slide.

DIFFERENTIATION

EMERGING

- On the interactive, stick to pairs where the down pan is obvious (apple against rubber) and have the pupil point to the down pan before saying heavier.
- Pre-write the sentence stem the ____ is heavier than the ____ in the copybook so the pupil only fills the two object names.

DEVELOPING

- Before the sponge-pebble pan settles, ask them to justify the prediction in one sentence using the down-means-heavier rule.
- After the copybook sentence, add one more line: the ____ is lighter than the ____ for the same pair.

PROFICIENT

- On the final Class Challenge turn, challenge them to make the book on the left sit level by choosing the matching weight — then explain how they knew.
- Ask: name two classroom objects that would fool our eyes the way cotton wool did, and say which pan would go down.

➤ **Cross-curricular:** Link to science materials: pass a sponge and a pebble and ask which feels denser before the balance confirms.

ANSWER KEY

Scaffold: visual check on the page

Q1: rubber

Q2: yes

Q3: pebble

a) Always : Down on a balance always means that side is heavier.

b) Sometimes : A little stone can be heavier than a big fluffy bag of cotton wool.

c) Always : Level pans mean the two sides have equal weight.

d) Never : The lighter side rises; the heavier side goes down.

EXTENSION SHEET · STRETCH ANSWERS

S1: a ruler

S2: a pencil

S3: an apple

S4: a skipping rope