

The Balloon Balance

TEACHER DEMO, KIDS MEASURE

RUN AT 10:20

20 MIN

The point

Air has weight — and a homemade balance can measure it. This is Nebel's core experiment: everything on both sides is identical **except the air**.

Materials

- 12-inch ruler · 3 paper clips (+ a pile for counting)
- Tape · string
- Two identical new balloons · balloon pump
- A draft-free table edge to hang from

Steps

- 1 Show the **pre-built balance hanging level**: clips at 0, 6, and 12 in; center clip carries the hanging string; a deflated balloon hangs on a short loop at each end.
- 2 **PREDICT** on the worksheet back (band 2): fill one balloon — down, level, or up?
- 3 Unhook one balloon, **pump it full**, tie the neck with no extra string, re-hang it on its same loop.
- 4 Watch it settle: **the full side sinks**. Let every child sight along the beam.
- 5 Reason: same ruler, clips, string, balloon — **only the air is new**. The extra weight is the air's weight.
- 6 **MEASURE**: clip paper clips to the light end one at a time until level. Count aloud; write the number in the worksheet count box.

Say: "You cannot see air. You cannot grab air. But the balance just **WEIGHED** it — about ____ paper clips of air. Only real stuff has weight."

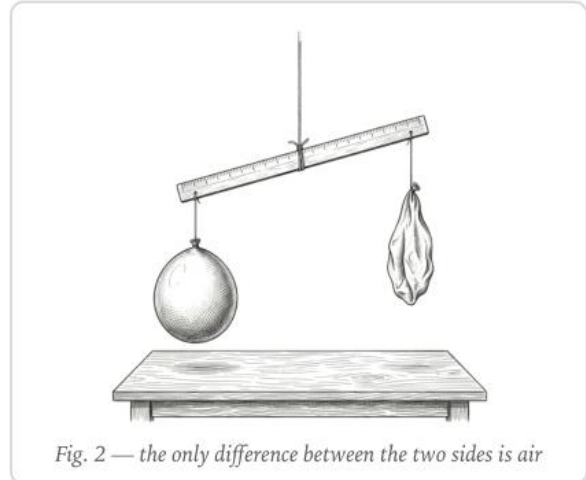


Fig. 2 — the only difference between the two sides is air

TEACHER PREP — THE NIGHT BEFORE

Build and level it in advance — it is fiddly. Tape clips at 0 / 6 / 12 with the hook ends protruding; trim level with bits of tape on the light end. Hang it where it will be used.

What to watch for

- A genuinely level start (this is the whole argument)
- The tip the moment the full balloon re-hangs
- The beam creeping back level as clips are counted on

EXPECTED RESULT

The inflated side sinks; a few paper clips re-level it. **The pump squeezed extra air in** — more air in the same space — and the balance feels that extra. If a child objects "air floats in air!", that squeezed-in extra is the answer.