

Material Stress Test

TEACHER DEMO

RUN AT 11:00

25 MIN

The point

Five identical tests on six matched strips turn “hard,” “flexible,” and “brittle” into **measured verdicts** instead of adjectives.

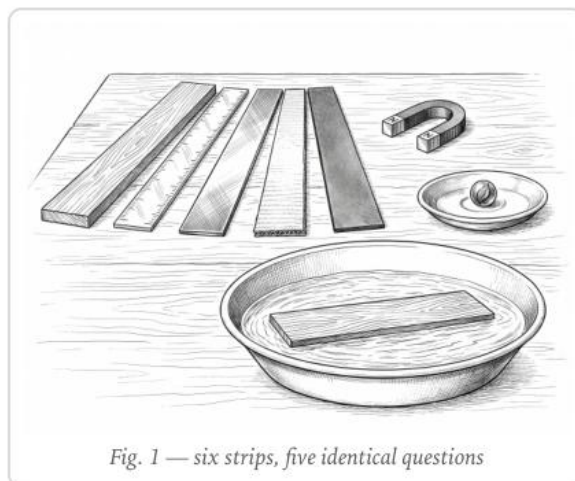
Materials

- Matched equal-size strips: pine • plastic (ruler stock) • thin steel • cardboard • acrylic • rubber
- Magnet • marble • ruler (12-inch drop) • basin of water
- Folded towel • safety glasses
- Whiteboard chart: materials across the top, five tests down the side

Steps

- 1 Show the strips: “**Same size, same shape — only the material changes. Fair test.**”
- 2 **BEND** each — flexes back, stays bent, or snaps? (acrylic snaps **inside the towel**)
- 3 **TAP** each — dull thud or ringing?
- 4 **MAGNET** to each — sticks or not? (only the steel — magnets get their own day, A-5A)
- 5 **DROP** the **marble** from 12 inches, ruler braced vertically — bounces, dents, or cracks?
- 6 **FLOAT** each in the basin — floats or sinks?
- 7 Kids **call every verdict**; teacher marks the chart.
- 8 Read the chart **across a row** (“what is steel like?”) and **down a column** (“which ones snapped?”) — the snappers are **brittle**, the spring-backs **flexible**.

*Say: “We didn’t ask my **OPINION** about these materials — we asked the materials themselves, with the same five questions each. That chart is their answers.”*



TEACHER PREP — THE DAY BEFORE

Cut/verify the six strips to **matched size and thickness** (mismatch rigs the bend test); file sharp corners; stage magnet, marble, ruler, basin, towel, safety glasses.

SAFETY

Safety glasses on the teacher for every bend-to-breaking; acrylic snaps with **sharp edges** and can spit fragments — break it **inside the folded towel**. Bends to breaking are **adult-only**; kids watch from across the table and never handle snapped acrylic edges.

What to watch for

- Rubber and plastic flex back; steel bends and **STAYS** bent
- Acrylic snaps clean — brittle, like the glass hammer to come
- Wood and rubber float; metals sink; the magnet ignores all but steel

EXPECTED RESULT

A finished data grid the kids generated themselves. **Metal bends before it ever breaks** — hold up the bent steel strip: that’s why bridges are steel, not glass.