# Iron Filings Field Display

TEACHER DEMO | RUN AT 11:40 — THE CENTERPIECE | 20 MIN

## The point

The invisible **field** made visible. The filings don't create it — they reveal a shape that was there all along. *This is the only lesson in the whole curriculum that uses filings — stage it like the event it is.*

## Materials

- Iron filings in their shaker bottle
- White rimmed tray, white paper taped flat inside
- Bar magnet · horseshoe magnet · second bar magnet
- Tissues · heavy zip-seal bag (encore + storage)

## Steps

1. Kids around the counter, **hands in laps**. Predict: what shape will iron dust make over a hidden magnet?
2. Bar magnet UNDER the tray. **Sprinkle thinly** from low height, then **tap the tray edge** — the pattern snaps in.
3. Walk it with a pointing finger: **every line leaves one pole and curves home to the other** — a family of loops.
4. **Slide the magnet away** beneath — far filings relax and fall; slide back — they stand again. The field fades with distance.
5. Repeat over the **horseshoe**, then two bars **attracting** (lines leap the gap) and **repelling** (lines refuse to cross).
6. Encore kids may touch: filings **sealed in the zip bag**, laid flat, magnet slid beneath.
7. **Cleanup before lunch**, kids seated: funnel filings back via the paper; **pinch** strays off the magnet with tissue.

> *Say: "The filings didn't make the field — it was already here, this exact shape, all morning. You are looking at the invisible."*

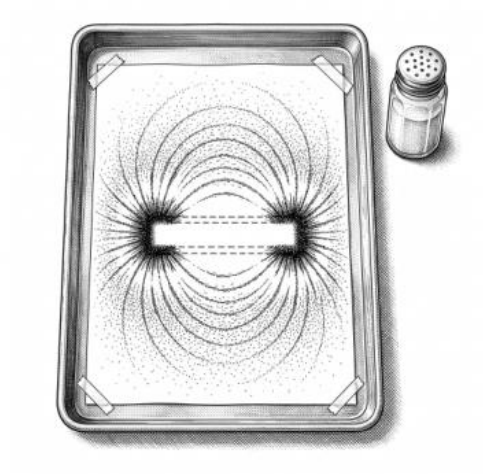


*Fig. 5 — the filings line up ALONG the field's loops, densest at the poles*

**TEACHER PREP — BEFORE LESSON DAY**

**Practice once, alone** (the book insists): learn the thin-sprinkle amount, the tap, the tissue-pinch cleanup. Too many filings = a furry blob.

**SAFETY — FILINGS PROTOCOL**

A fine iron powder. **Stays in sealed bags or the rimmed tray — never loose, never near eyes or faces.** Teacher's hands only; kids' hands in laps; the sealed-bag encore is the touching outlet. Damp-tissue any spill; back in the shaker before lunch.

## What to watch for

- The gasp when the pattern snaps in at the tap
- Kids spotting that the lines **bunch at the two poles**
- The repel pattern's empty seam — lines that refuse to meet

**EXPECTED RESULT**

Two dense bursts over the poles, arching lines between; the pattern **fades smoothly** as the magnet slides away — strongest at the poles, no sharp edge, every line closing pole to pole.