

File a Solid into Particles

KIDS HANDS-ON

RUN AT 9:55

25 MIN

The point

A “single” solid thing is really a crowd of tiny bits holding on to each other — and even the tiniest bit you can see is still **millions of particles**.

Materials

- Basswood block, one per child
- Wood file, one per child
- White paper under each work spot
- Jumbo 10x hand lens, one per child

Steps

- 1 Hand out blocks: **“one thing, or a crowd?”** Let them argue first.
- 2 **File over the white paper** — start on an edge, not a flat face.
- 3 Watch the sawdust pile grow: wood IS lots of tiny wood bits.
- 4 **Pinch and rub** the sawdust between fingers.
- 5 Now the key move: **one speck under the 10x lens**. Can you see a particle? No — still millions of particles per speck.
- 6 Imagine on down: tinier files could halve each speck again and again... to a particle nobody can see.
- 7 **Save each sawdust pile** on its paper for the worksheet back (wood ↔ sawdust).

Say: “The file didn’t MAKE the sawdust — it just un-stuck bits that were always there. And even one speck of sawdust is still a crowd of millions of particles.”

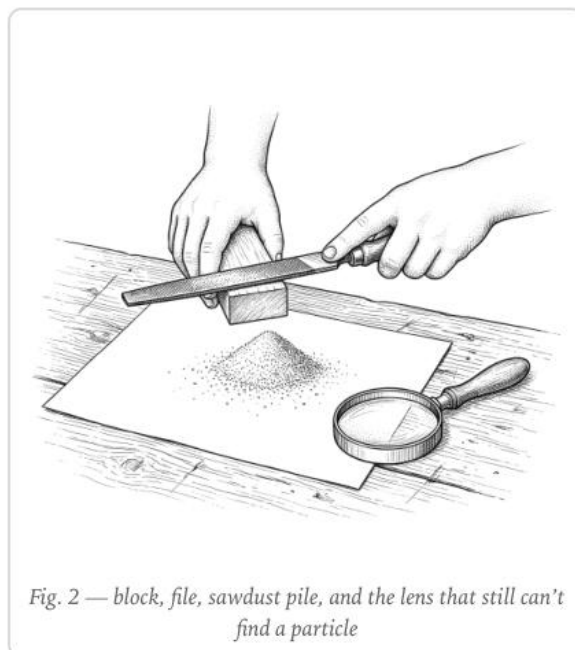


Fig. 2 — block, file, sawdust pile, and the lens that still can’t find a particle

TEACHER PREP

One tray per child: block + file + white paper + lens. Keep the lenses OFF the table until step 5, or they become the activity.

SAFETY

Block hand behind the block — never in front of the file stroke. Files scrape knuckles; demonstrate the grip first.

What to watch for

- The moment “one thing” visibly becomes a heap of bits
- Lens disappointment turning into the actual insight: the particles are STILL hiding

EXPECTED RESULT

A pile of sawdust per child, and the reasoned conclusion: keep cutting and you must reach a smallest bit — a **particle**, far too small to see.