



SLEUTHLAB

The Case of the Muddy Handprint

*A self-checking forensic gamebook — no pencil, no peeking.
Follow the arrows. Wrong turns just make you laugh.*

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A self-checking forensic gamebook — no pencil, no peeking. Follow the arrows. Wrong turns just make you laugh.

Forensic sleuth on duty: _____

How this gamebook works

This is a gamebook, not a worksheet. You do **not** write in it and you do **not** read it straight through. Instead you make a forensic call, and the arrow tells you which **Station** to turn to next. Make the careful call and you move forward through the case. Make a hasty one and you land in a **Dead End** — a quick, silly page that shows you the clue you rushed past, then bounces you right back to try again. Nobody grades you. Landing in a Dead End is not losing — it is how real analysts learn. The best sleuths in this lab took every wrong turn twice.

1. Read the **Case Brief** first, then turn to the Station it sends you to.
2. At each Station, read the scene and pick the call a careful analyst would make.
3. Follow the arrow on your choice: → **turn to Station 6** (keep going) or → **turn to Dead End D2** (a clue you rushed past).
4. A Dead End is never the end — it explains, then sends you back. Keep going until you reach **The Reveal**.
5. **No pencil.** The stations are scrambled on purpose, so you cannot cheat by reading the next page. Only the arrows know the way.

Meet your detectives

Detective	Their move	What they do
Sketch	Document the scene first	Your lead. She photographs everything before anyone touches it, then reads the scene — and never tells you the answer.
Tick	Line up the clock	Puts every event in order on a timeline; the sequence is where the answer hides.
Witness	Read the digital trail	Checks time-stamps and digital footprints — a photo's clock does not forget.
Loop	Match the impression	Compares prints and treads; knows a class clue (looks alike) from an individual clue (one-of-a-kind).
Fiber	Follow the trace	Finds tiny fibers and threads — Locard's rule: every contact leaves a trace.
Branch	Ask what else	Lists every other thing that could explain a clue, and tests each before choosing.
Drop	Test, don't guess	Runs a chemistry test that splits an ink into its true colours.
Seal	Guard the chain	Bags, labels, and logs every clue; a clue nobody logged cannot be trusted.
Stroke	Compare the writing	Matches handwriting and ink; one distinctive letter can name a writer.

How this gamebook works

The Case Brief

The Stations

Dead Ends

The SleuthLab Case Files



Sealed Case File

For the grown-up

Your badge

The Case Brief



Sketch sets the scene

The whole class painted a giant mural for Open House. At **12:00**, when lunch began, the mural was **spotless** — Witness's phone photo proves it (the clock reads 12:00). At **12:40**, our teacher gasped: a big **muddy right-hand print** was smeared across the middle, with a **muddy shoe-scuff** on the floor right below it. Three classroom helpers had the run of the art wing over lunch: **Kip, Nell, and Bo**. One of them left that print.



Predict first

Before you dust a single clue, make a **prediction** — just a guess. Who do you think did it: Kip, Nell, or Bo? Hold your guess in your head. A good analyst predicts first, then lets the evidence change her mind. That is how you catch your own bias before a clue does.

→ **turn to Station 4 to begin.**

The Stations

Follow the arrows. The numbers are out of order on purpose — only the arrows know the path.

1

DEDUCE

Line Up the Clock



Tick leads

Tick lays three things side by side: Witness's **12:00** photo (mural clean), the teacher's **12:40** photo (mural muddy), and the **library sign-in sheet**. The sheet is machine-stamped: "**Kip — IN 12:00 · OUT 12:45.**" Tick taps the clock. "The print appeared somewhere between 12:00 and 12:40," he says. "Now line up Kip's stamp against that window. When could Kip have stood at the mural?"

? Kip's library stamp shows Kip in the library from 12:00 to 12:45. The print appeared between 12:00 and 12:40. Crossing the two records, what about Kip?

Kip was **in the library the whole window** — a machine stamp, not a guess — so Kip could not have been at the mural. **Clear Kip** and keep going.

→ turn to **Station 6**

Kip hid in the library **on purpose** to look innocent. That is suspicious — **accuse Kip.**

→ turn to **Dead End D2**

One Red Thread



Branch leads

Fiber holds up a tiny **red thread** teased out of the mud. "Every contact leaves a trace," Fiber says. And **Bo** wears a bright **red scarf** — tempting! But Branch steps in with her one question: "What **else** could drop a red thread right here?" She points. The class's **red paint-rag** hangs on a hook **right beside the mural**, shedding threads all day. And Bo painted at this very mural — allowed — back in the **morning**. "Weigh it," Branch says. "How strong is one red thread, next to a red rag, from a spot Bo was supposed to be?"

? Does Fiber's red thread point to Bo?

No — it is weak. A red thread beside a red rag, from a place Bo was allowed to be, names **no** person and **no** time. Set it aside and keep the **strong** clue — the shoe-scuff. Move on.

→ turn to **Station 5**

Red thread, red scarf — guilty! Trace evidence never lies. Case closed on **Bo**.

→ turn to **Dead End D4**

Seal's Evidence Log

Seal leads

Seal opens the evidence logbook. "In this lab, we only trust a clue that was **bagged, labelled, and logged**," she says. "A clue nobody guarded could have been moved, mixed up, or dropped in later." Here is the log:

Evidence	Bagged?	Labelled?	Logged by?	Trust it?
The shoe-scuff cast	YES	YES	Seal	trusted
The "sorry" note	YES	YES	Seal	trusted
A loose smear of mud on a paper towel	NO	NO	nobody	broken chain

Now Seal fills a suspect grid using **only the trusted evidence** — the scuff cast and the note:

Suspect	Had the chance?	Physical match?
Kip	NO — in the library	—
Bo	morning only; weak red thread	none — smooth sandals leave no tread
Nell	YES — art wing at lunch	YES — the scuff's worn nick

"Cross off the broken-chain item and every **NO**," Seal says. "Who is left standing with a real, sealed match?"

? Trusting only the sealed evidence, and crossing off every NO, who is the only suspect left with a real physical match?

Nell — the only suspect with a sealed, **individual** match (the tread nick) and the chance to do it.

→ turn to **Station 7**

Nell left the print. Turn to The Reveal.

Wait — use the **loose mud smear** (the un-logged one) to pin it on **Bo** instead.

→ turn to **Dead End D5**

**Sketch** leads

Sketch will not let anyone touch the mural yet. "Record first — the scene only tells its story once," she says, and photographs everything. Two things stand out. High on the mural's middle: a **muddy right-hand print**, five fingers, pressed flat. On the floor **right below it**: a **muddy shoe-scuff**, the same reddish mud, just as fresh. Sketch sits back. "Now **read** the scene. A hand-print **with** a scuff lined up right under it — what does that tell you?"

? A muddy right-hand print on the mural, and a fresh muddy shoe-scuff on the floor directly below it — what is the strongest thing to conclude?

Someone **knelt** (that is the low scuff) and **pressed a muddy hand** on the mural — a person, on purpose, not an accident. Start building. Keep going.

→ turn to **Station 1**

A bucket of muddy paint-water just **splashed** the wall. Accidents happen — there is no case here.

→ turn to **Dead End D1**

 **Drop** leads

A little **"sorry" note** was tucked under the mural's edge. "Do not guess where the ink came from — **test** it," Drop says. He dabs the note's ink on a strip of paper and dips the bottom in water. The water climbs, and the ink **splits into a stack of colours**. Then he runs the class's shared **art-room marker** and a **store-bought gel pen** the same way, to compare:

Ink tested	It splits into (top → bottom)
The "sorry" note	teal → yellow → faint pink
Art-room marker	teal → yellow → faint pink
Store gel pen	one solid purple (no split)

"Match the stacks," Drop says. "Which pen wrote the note?"

? This one has no wrong turn — it just proves you are on the right table. Which pen matches the note's colour-stack?

The note splits **teal → yellow → pink** — **exactly like the art-room marker**, not the store pen. So the note was written **here, with a class marker**.

→ turn to **Station 3**

Turn to Station 3 for Seal's evidence log.

Match the Impression

Loop leads

Loop makes a plaster cast of the muddy shoe-scuff and studies the tread: **zigzag lines with a small diamond in the heel** — and, deep inside the diamond, a tiny **worn nick**. Loop pins up the shoe-rack photo. **Nell's** trainers have the zigzag-diamond tread; **Bo's** are **smooth flat sandals** with no tread at all; Kip is already cleared. "A zigzag-diamond is a **class** clue," Loop says — "lots of trainers share it. But this scuff has that **nick**, and the nick matches **only Nell's own trainer**. That makes it an **individual** match — this exact shoe, not a lookalike."

? The scuff's tread is a zigzag-diamond with a worn nick that matches only Nell's trainer. Bo wears smooth sandals (no tread). Whose shoe made the scuff?

Nell's — the nick makes it an **individual** match, this exact shoe. Bo's smooth sandals could not leave a tread they do not have. Keep going.

→ turn to **Station 2**

Any shoe can scuff a floor — **accuse Bo**.

→ turn to **Dead End D3**

 Stroke leads

You cracked it, sleuth. Stroke lays the **"sorry" note** beside two handwriting samples. **"Bo** prints in BLOCK CAPITALS. **Nell** writes lowercase, with a looped **'g'** that curls right under the line. The note — *sorry* — has that exact curling looped **'g'**. The note is **Nell's**." Then Stroke writes up the whole case:

*"The mural was clean at 12:00 and muddy by 12:40. Kip was stamped in the library the entire window, so Kip is cleared. Bo's red thread was weak — a red rag hangs right beside the mural — and Bo's smooth sandals leave no tread, so Bo is cleared. That leaves Nell: a shoe-scuff whose worn nick matches only Nell's trainer, a muddy **left-hand** print on the mural, and a 'sorry' note in Nell's looped-'g' writing. **Nell pressed the muddy hand.**"*

Stroke sets down her pen. "A real analyst always re-reads her own report for a slipped word. There is **one thing wrong** in what I just wrote. Find it before you sign the file."

 Spot the slip

Read Stroke's write-up again, slowly. One word does **not** match the case. Which is the planted mistake?

? Once you have spotted the planted mistake, your case is closed. Turn to the Case Files to check your whole path.

I named **Nell** and I caught the **'left'** → **right** slip. **Case solved!** (Check yourself in the Case Files.) | → check the **Case Files**

Dead Ends

A Dead End is never the end — it shows you the clue you skipped, then sends you back. No shame, no marks.

D1 🦴 **Whoops — the Case of the Splashing Bucket**

You called it a **splash**. But a splash does not leave a **hand-shaped** print with **five fingers**, and it does not line up a **shoe-scuff** neatly right below it. Water splatters everywhere; a hand **presses** in one spot. Something **knelt and pressed**. → **Go back to Station 4** and read the scene again.

D2 🦴 **Whoops — the Case of the Studious Suspect**

You accused **Kip** for staying in the library. But being **somewhere else** is an alibi, not a crime! The **machine-stamped** sign-in shows Kip in the library **12:00–12:45** — the whole window the print appeared. A person who is not in the room cannot press a hand on the wall. Lining up the clock clears Kip. → **Go back to Station 1**.

D3 🦴 **Whoops — the Case of the Smooth Sandal**

You pinned it on **Bo's** shoe. But Bo wears **smooth flat sandals** — they have **no tread at all** — and this scuff shows a clear zigzag-diamond **with a nick**. A smooth sole cannot stamp a tread it does not have. The impression names Nell's trainer, not Bo's sandal. → **Go back to Station 6**.

D4 🦴 **Whoops — the Case of the Guilty Rag**

You accused **Bo** over a red thread. But **weigh** it: a red paint-rag hangs **right beside** the mural, shedding threads all day, and Bo painted here — allowed — in the morning. One red thread, next to a red rag, from a place Bo was supposed to be, names no one. Do not let a bright colour beat a hard clue. → **Go back to Station 2**.

D5**Whoops — the Case of the Untrusted Evidence**

You reached for the **loose mud smear** to accuse someone. But it was **never bagged, labelled, or logged** — a **broken chain of custody**. Evidence nobody guarded could have been moved, mixed up, or dropped there later; a good analyst (and a court) cannot trust it. Use only the **sealed** clues — the scuff cast and the note. → **Go back to Station 3.**

The SleuthLab Case Files



The detective's notebook — only for after you finish

The lab notebook — check your path here, in order. If your route matched this, you cracked it clean. If you took a Dead End or two along the way, that is exactly how it is supposed to work.

1. **Case Brief** → **Station 4**. Mural clean at 12:00 (Witness's photo), muddy by 12:40. A muddy **right**-hand print + a shoe-scuff below. Suspects: Kip, Nell, Bo.
2. **Station 4 — Sketch (document the scene)**: a hand-print **with** a scuff right below ⇒ someone **knelt and pressed** a muddy hand, on purpose. → Station 1.
3. **Station 1 — Tick (line up the clock)**: Kip stamped in the library **12:00–12:45** ⇒ **Kip cleared**. → Station 6.
4. **Station 6 — Loop (match the impression)**: the scuff's worn **nick** matches only Nell's trainer (an **individual** match); Bo's smooth sandals leave no tread. → Station 2.
5. **Station 2 — Branch (weigh it)**: Fiber's red thread is weak — a red rag hangs beside the mural, and Bo was allowed there in the morning; it names no one. Keep the strong scuff. → Station 5.
6. **Station 5 — Drop (test, don't guess)**: the note's ink splits **teal/yellow/pink**, matching the **art-room marker** — the note was written here. → Station 3.
7. **Station 3 — Seal (guard the chain)**: drop the un-logged mud smear (broken chain); on the sealed evidence, only **Nell** is YES chance / YES match. → The Reveal.
8. **Station 7 — Stroke (the reveal)**: the note's looped-'g' names **Nell** — but the write-up plants one slip to catch.

Why each Dead End was a Dead End:

- **D1**: A splash can't make a five-finger print with a scuff lined up below it — a person knelt and pressed.

- **D2:** Kip was machine-stamped in the library the whole window — an alibi, not a crime.
- **D3:** Bo's smooth sandals leave no tread; the scuff's nick matches Nell's trainer.
- **D4:** A red thread beside a red rag, where Bo was allowed to be, is a weak clue — not a culprit.
- **D5:** The loose mud smear was never bagged, labelled, or logged — a broken chain can't be trusted.



The planted slip

In The Reveal, Stroke wrote '**a muddy left-hand print**' — the print on the mural was a **RIGHT** hand (Sketch recorded a right-hand print at Station 4). That is the planted slip. Culprit: **Nell**.



Sealed Case File

GROWN-UP PAPERWORK — BORING! SLEUTHS, SKIP THIS PAGE.

(Psst — grown-ups, this page is for you. The 'skip it' label is a friendly trick so the young sleuth owns the case.)

If they get stuck at a Station: do not give the answer. Ask the cast member's question back — 'When could Kip have been at the mural?' (Tick) or 'What **else** could explain a red thread here?' (Branch). The forensic **move**, not the answer, is the point.

When they land in a Dead End: celebrate it. 'Nice — you found the clue you rushed past.' Dead ends carry zero shame here; they are the fastest way to learn an evidence move.

Stage a small win: if they are close, read the scene aloud in a dramatic lab-detective voice and pause right before the choice. Let them make the call. Then act amazed when they nail it.

After the case: ask 'How did you catch the planted mistake in The Reveal?' Naming their own thinking out loud is where the learning locks in.

For the grown-up

This gamebook practices real forensic reasoning — reading a scene, lining up a timeline, matching impressions, weighing trace evidence, testing ink, and guarding the chain of custody — inside a low-stakes classroom mystery. There are no scores and no red marks; a wrong turn routes to a friendly Dead End that explains and bounces back, so every choice ends in understanding rather than a grade.

Wrong turns are the design, not a failure. The self-checking dead-end loop means your sleuth can never truly be 'wrong' — only routed to the clue they rushed past. That removes the fear that stops many kids from making a call, which is exactly when reasoning grows.

One case, many forensic moves. Each Station is led by a different cast member whose behaviour **is** one evidence move (Loop = impression comparison, Seal = chain of custody). Naming the move ('that was a class-vs-individual match') helps it transfer to science class and real life.

Chain of custody teaches trust. Seal's log makes a hard idea concrete: a clue nobody bagged, labelled, and logged **cannot be trusted**, no matter how tempting. Learning what evidence to set aside is as important as finding it.

The reveal teaches self-checking. The planted-error finale asks the sleuth to audit a correct-sounding report and catch the one slip. Checking your own conclusion against what you actually observed is the single most transferable habit in the book.

Your badge



Certified Forensic Sleuth

This certifies that Detective

cracked *The Case of the Muddy Handprint* — documented the scene, lined up the timeline, matched the impression, weighed a weak clue, guarded the chain of custody, and caught the planted mistake.

— *Sketch, Lead Analyst, SleuthLab*

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