

Logic 3 — Workshop: prior, likelihood, posterior

Logic · Lesson 3 · Workshop sheet

One lesson, worked alone, about 45 minutes. Tick each step. You need this sheet, your Lesson 3 handout, and the four codes below.

Step	min
☐ 1 · Key terms. Terms quiz (code 3), one round: definition → term. Under 10 of 13? Read the handout's key terms once, then a second round.	5
☐ 2 · Recall Lesson 2. Exercise 1 on the workshop page (code 1), from memory, before scrolling on.	3
☐ 3 · Stage 1 — the case first. Read the Sally Clark case, do Exercise 2, then write your side in your notebook: training route or exclusion route, two or three sentences, side and one reason. Stage 3 needs this.	6
☐ 4 · Stage 2, Part A — the rule. Exercises 3–4. Count in whole people; divide by the positives.	11
☐ 5 · Part B — the prosecutor's fallacy. Exercises 5–6. Say each swapped pair aloud before you choose.	7
☐ 6 · Part C — biases and errors. Exercises 7–9. Exercise 9's key says <i>cannot say yet</i> ; that is the point.	6
☐ 7 · Stage 3 — your rule, with the tools. Exercise 10 from memory; rewrite your Stage 1 paragraph in three sentences; run the self-check.	5
☐ 8 · Compare. Only now open the model paragraphs (code 2) and mark your paragraph 1–4 against the checklist.	3

New in this lesson

- ▶ One line: $\text{posterior} \propto \text{prior} \times \text{likelihood}$. Prior = before the evidence; likelihood = the evidence if the hypothesis is true; posterior = the hypothesis given the evidence.
- ▶ Count in whole people, not percentages. 1 in 1,000 sick, 1 in 100 healthy wrongly flagged: 11 positives, 1 true — about 9%, not 99%.
- ▶ The prosecutor's fallacy: the chance of the evidence *if innocent* heard as the chance of innocence *given the evidence*.
- ▶ The trap: the base rate does more work than the test's accuracy.

If you get stuck

- ▶ Exercise 4: first *how many have it*, then *how many healthy are wrongly flagged* — healthy, not everyone. Add the two; the true ones over the total.
- ▶ Exercise 5: write the two sentences out — “if innocent, then evidence” and “if evidence, then innocent” — and point at the one the expert said.
- ▶ Exercise 8: is the mistake in the *words* (a swap), in the *count* (a denominator), or in what was *left out* (the base rate)?
- ▶ Stage 3: a rule that never mentions Meadow's figure is not yet about the courtroom.
- ▶ Anything else: ask me.



1 · Workshop page



2 · Model paragraphs



3 · Key terms quiz



4 · This sheet

All at salvemec.ch/toktok/core/ · On the back: which exercise went wrong at the first try. Next lesson starts there.