WORKSHEET + WORKED EXAMPLE

Rebuild From First Principles

A clear need, checked constraints, and a new option with a test that could disprove it.

40 minutes | First principles · Facts, assumptions, and new options

Use it in three moves

1. Choose a specific need. Separate the outcome from the familiar way of delivering it.

2. Check facts and constraints with relevant people and evidence. Calling something an assumption does not make it false.

3. Recombine the necessary functions into options, then test the uncertainty that matters most.

State the need without prescribing the solution

Who needs what outcome? Remove the current process or product from the sentence.

Separate observations from assumptions

List what you can substantiate and the source. Keep interpretations in a separate list.

Check what is genuinely fixed

Distinguish physical or safety limits, required rules, chosen policies, and habits. Identify who can verify or change each.

Rebuild From First Principles

YOUR WORKING NOTES / CONTINUED

Break the outcome into necessary functions

What must be possible for the need to be met? Avoid simply renaming the existing steps.

Build at least two ways to meet those functions

Use the checked constraints. Include the people who would do the work and who would carry a new cost.

Test the weakest assumption

Choose a small trial, evidence, owner, limit, and review date. State what would make you reject or revise the option.

A question for me

Whose knowledge am I overlooking because it does not look like a formal fact?

See one way through

FICTIONAL WORKED EXAMPLE / NOT THE ANSWER TO YOUR SITUATION

State the need without prescribing the solution

New starters need enough accurate context and support to complete their first real task safely. They do not necessarily need a two-hour slide presentation.

Separate observations from assumptions

Observed: the last three starters asked for help finding the same access guide. Assumed: they would remember it if the presentation were more engaging.

Check what is genuinely fixed

Required: access approval before handling customer data. Chosen policy: all onboarding happens on Monday. Habit: the manager reads every slide. Check the policy with the onboarding owner.

Break the outcome into necessary functions

Understand the first task; obtain appropriate access; find a usable example; know who can help; check the result before independent work.

Build at least two ways to meet those functions

Option A: short task guide plus supported first attempt. Option B: peer demonstration followed by teach-back and a practice task. Ask recent starters and buddies to revise both.

Test the weakest assumption

Try the task guide with one consenting starter and a buddy. Check whether they can find help and explain the key boundary. Stop before real customer work if access or understanding is incomplete. Review together that day.

The thinking behind it

The people who live with the process know costs a clean diagram can hide. Their experience belongs among the evidence. Rebuilding the work should not mean erasing what they have learned.

First-principles reasoning starts from basic propositions rather than relying only on analogy or habit. This original workplace exercise separates needs, evidence, constraints, and assumptions. NASA's engineering guidance offers a practical companion: define the problem and distinguish what is needed from how it will be delivered.

NASA · Writing clear requirements and assumptions

Read You Have a Culture Problem by Nic Payne