OPS Tools
ORIGIN PROBLEM SOLVIING

5 Why Root Cause + Is/Is Not Validator

Compose the opening statement: Prioritized Problem (Step 3) + Point of Cause (Step 4) where the defect first originated (the specific process step).

Problem Statement

How to Run

1) Ask Why from the opening statement to derive Why 1 and then continue asking Why until a controllable root cause is found.
2) Optional sanity check at each Why: record 'Is' facts that support and 'Is Not' facts that limit/contradict. Fix any weak link.
3) Therefore Test: walk the chain backward from root using "Because [lower Why], therefore [upper effect]" up to the Problem. Fix any weak link.
4) Confirm the root with an If then prediction and a quick trial or fail fast experiment.

Example — Acme Manufacturing

Why #	Why Statement	Is (Facts Supporting)	Is Not (Facts Disproving)	Therefore Walk-back
Problem	8% of PN-127 parts show oversize hole diameter at CNC Line 3 — Op 20 Drill Ø10mm during night shift.	Defects limited to Line 3; spike 22:00–06:00; PN-127 only; failures measured at Op 20 gauge.	Lines 1–2 ok; day shift ok; other PNs ok.	[Why 1], therefore oversize holes at CNC L3 — Op 20 at night.
Why 1	Oversize holes because drill runout increased during Op 20 on Line 3.	Dial indicator: runout +0.12 mm on L3 spindle; Op 20 capability drop.	Program unchanged; toolholder verified ok on other lines.	[Why 2], therefore runout increased on L3.
Why 2	Runout increased because the spindle bearing became worn.	Vibration spectrum indicates bearing defect; spindle housing hotter than normal.	No crash events; no cutting parameter change.	[Why 3], therefore bearing became worn.
Why 3	Bearing worn because preventive maintenance replacement was missed.	PM record shows last replacement 18 months ago; standard is 12 months.	Other machines on schedule; no overload events recorded.	[Why 4], therefore PM was missed.
Why 4	PM missed because CMMS interval for this asset was set too long.	CMMS shows 24-month interval on this asset id.	No evidence of operators skipping scheduled PM.	[Why 5], therefore CMMS interval was wrong.

Why 5 (root)	Asset master not updated in CMMS after last year's line reconfiguration (new asset id).	Machine moved/renumbered; asset change form not submitted.	No IT outage that month; no vendor firmware change.	**Therefore chain**: asset master not updated → interval wrong → PM missed → bearing worn → runout increased → oversize holes at Op 20.

Note- 5 Why is simply the name, the actual number of Why's it takes is as many Why's to get to the Root Cause

Example If then Confirmation

If (candidate root cause)	Update asset master, correct CMMS interval, perform PM, replace spindle bearing.
Then (expected result)	Oversize rate drops from 8% to < 0.5% within 1 shift; Op 20 Cpk > 1.33.
Measure & Window	Track FPY and hole diameter control chart for 5 shifts.

Blank 5 Why + Is/Is Not Table

Why #	Why Statement	Is (Facts Supporting)	Is Not (Facts Disproving)	Therefore Walk-back
Problem Statement				
Why 1				
Why 2				
Why 3				
Why 4				
Why 5				
Why 6				
If (candidate root cause)				
Then (expected result)				
Measure & Window				

Work live on a physical or virtual whiteboard. Record on this sheet only if needed. Capture final highlights on the A3.