FREE CHEAT SHEETS · ROOT-CAUSE

Root-Cause Cheat Sheets

Two one-pagers from the Root-Cause Kit: how to run the **5 Whys** without kidding yourself, and the **6M** prompts that make sure a fishbone doesn't miss a whole family of causes. Want the fillable worksheets and worked examples? The full kit is a click away.

AVOIDING THE SINGLE-ROOT-CAUSE TRAP

Five ways the 5 Whys goes wrong — and the fix for each.

- **There's rarely just one root cause.** A defect usually needs two or three things to line up — a worn tool AND a missed check. A single chain misses the others. When it forks, branch it, or run a fishbone first to see the whole field.
- **“Operator error” is a stop sign, not an answer.** It ends the investigation exactly where the useful part begins. Keep going: why could the operator make that error, and why didn't the process catch it?
- **No evidence, no ‘why’.** If you can't point to a teardown, a log, or a measurement for a step, you haven't found a cause — you've guessed one. Go get the evidence before you go deeper.
- **Watch for the jump.** Whys 3-to-4 is where teams leap to a favourite conclusion. Each step should follow directly from the one above it, with nothing skipped.
- **Separate cause of occurrence from cause of escape.** Why did it happen AND why didn't we catch it are two different chains. Run both — you usually need a countermeasure for each.

Framing per ASQ root-cause guidance (Five Whys). Verified July 2026.

THE FISHBONE (ISHIKAWA) — THE 6M

Where the 5 Whys drives deep on one chain, the fishbone spreads wide first: it forces you to look at every family of causes before you fall in love with one. Kaoru Ishikawa's **6M** are the six branches — work each one before you pick a suspect to chase.

BRANCH (6M)	PROMPTS — ask these on each bone
Man	People: training, skill, shift handover, fatigue, following the standard.
Machine	Equipment: calibration, wear, fixtures, tooling, maintenance, settings.
Method	How it's done: work instructions, sequence, parameters, changeover.
Material	Inputs: supplier lot, spec, substitution, storage, contamination.
Measurement	How you check: gauge capability (Gage R&R), thresholds, data capture.
Environment	Surroundings: temperature, humidity, cleanliness, vibration, lighting.

How to run it: with the team, brainstorm causes onto each bone — no debating yet. Then circle the two or three most likely and prove them with data (a 5 Whys, a check sheet, a Pareto). The fishbone finds suspects; it doesn't convict them.

Sources: K. Ishikawa (1940s); ASQ, “Fishbone (Ishikawa) Diagram,” one of the seven basic quality tools. Verified July 2026.

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