

Critical Thinking Fundamentals:

How to Reason, Decide, and Avoid Costly Errors



- Practical, disciplined analysis of information, assumptions, and judgments



- Not negativity, skepticism for its own sake, or instant answers



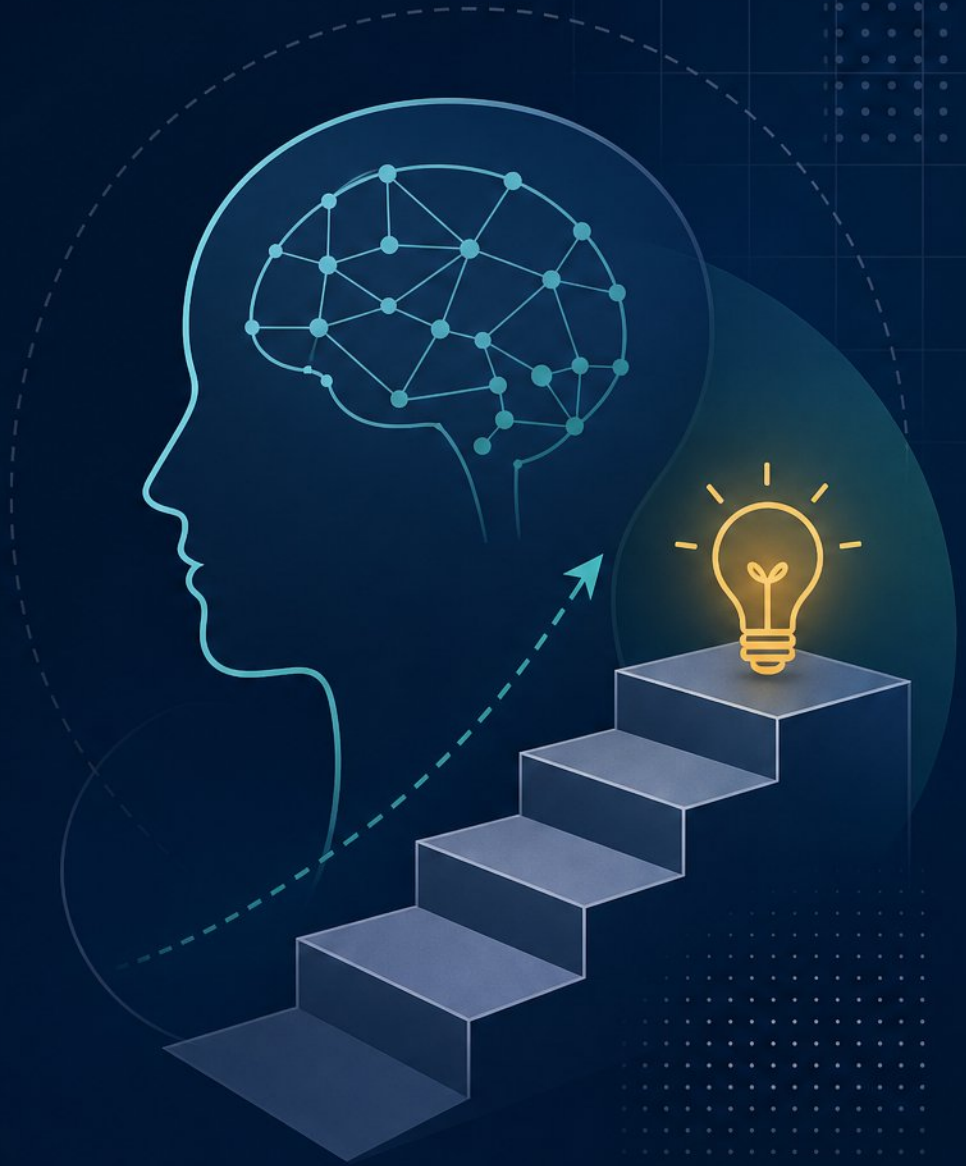
- Faster, better-supported, and more defensible decisions



- Stronger arguments and fewer errors from flawed reasoning



- Build a repeatable reasoning routine for work, projects, and study



Why Weak Reasoning Costs You at Work and School



- Projects derailed by unstated, unexamined assumptions



- Proposals influenced by irrelevant appeals, not evidence



- Decisions that treat guesswork as established fact



- A repeatable reasoning routine prevents costly errors

Two Systems of Thinking:

Fast Intuition vs. Slow Analysis



- System 1: fast, automatic snap judgments for routine tasks



- System 2: slow, deliberate analysis for complex problems



- Snap judgments fail in novel, ambiguous, or high-stakes situations



- Cue: "Is this routine or does it need deeper analysis?"



FAST INTUITION
(SYSTEM 1)



SLOW ANALYSIS
(SYSTEM 2)



Facts, Opinions, and Inferences: Three Things You Should Never Confuse



- Fact: verifiable observation or data point
- Opinion: personal belief or preference
- Inference: conclusion drawn from evidence
- Treating an inference as fact drives flawed reports
- Example: Sales dropped 12% vs. price caused the drop
- Quick check: Is this observable, believed, or implied?



Hidden Assumptions: The Silent Premises That Can Break Your Plan



- Assumptions: unstated premises a plan or argument depends on



- Three-step check:
What am I taking for granted? What if it is false? What evidence do I have?



- Example: yoga studio assumes enough members will pay \$100 monthly



- Example: move to new floor assumes the network is ready



- Assumption-checking strengthens the plan, not attacks it



Finding Assumptions **Before They Find You**



- Ask “What must be true?” for this plan to work



- Treat assumptions as visible, testable items, not hidden facts



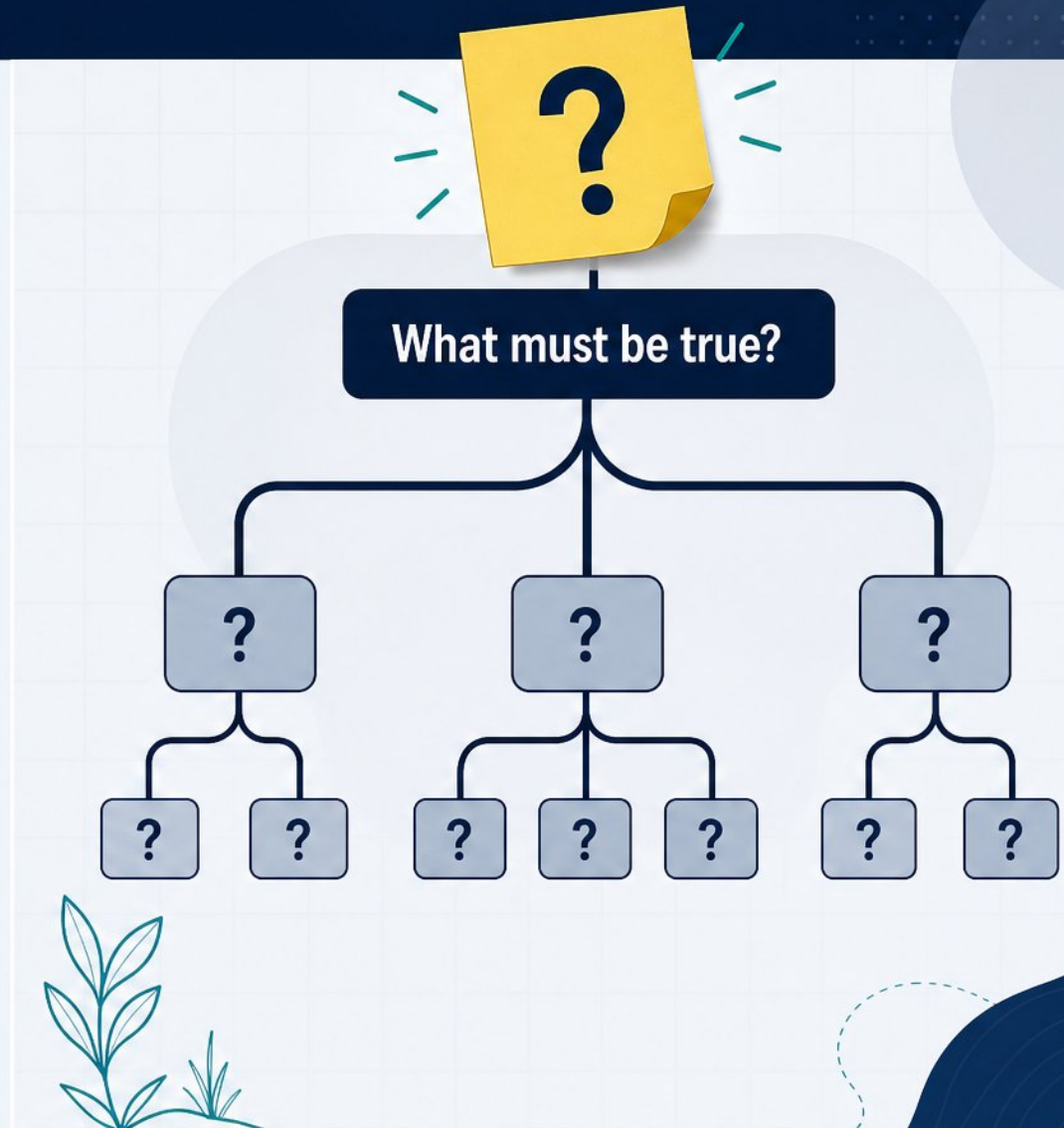
- Map assumptions by importance and certainty to set priorities



- Test high-impact, low-certainty assumptions first



- Example: timeline silently assumes key contributors remain available



Common Logic Traps: Fallacies That Derail Workplace and Academic Arguments



A fallacy is a structural flaw in reasoning, not just false information.



Five high-impact fallacies:



Hasty Generalization:

Too little evidence



False Cause:

Correlation
mistaken for
causation



Appeal to Authority:

Assumed correct
from the source



Sunk Cost:

Continuing due
to prior
investment



Ad Hominem:

Attacking the
person, not the
argument



Spotting and Responding to Fallacies in Real Conversations



- Detection routine: check premise, conclusion, missing evidence, absolutes



- Ask clarifying questions to surface flawed reasoning or false assumptions



- Provide counterexamples or introduce new evidence respectfully



- Critique the argument, not the person making it



- Practice with realistic team meeting dialogue and essay drafts



Asking Questions That **Improve** the Answer



- Reusable question set: claim, supporting reasons, counterpoints, missing information
- Question framing changes the answer people give
- Vague questions produce vague answers; specific questions sharpen thinking
- Apply the set to proposals and research abstracts
- Good questions clarify claims before evaluating them

A dark blue rounded rectangle containing a large white question mark icon on the left. To the right of the icon, separated by a vertical dashed line, are four sliders. Each slider has a circular icon to its left and a label to its right. The sliders are labeled 'Claim', 'Supporting Reasons', 'Counterpoints', and 'Missing Information'. Each slider has a teal-colored bar with a teal dot in the middle, indicating a default or selected value.

Icon	Label	Slider Position (approx. %)
Speech bubble	Claim	50
Shield with checkmark	Supporting Reasons	50
Scales of justice	Counterpoints	50
Magnifying glass	Missing Information	50

Correlation Is Not Causation: A Decision-Making Red Flag



- **Correlation:** two variables move together statistically



- **Causation:** one variable directly influences the other



- **Confounders** (third variables) create the illusion of causation

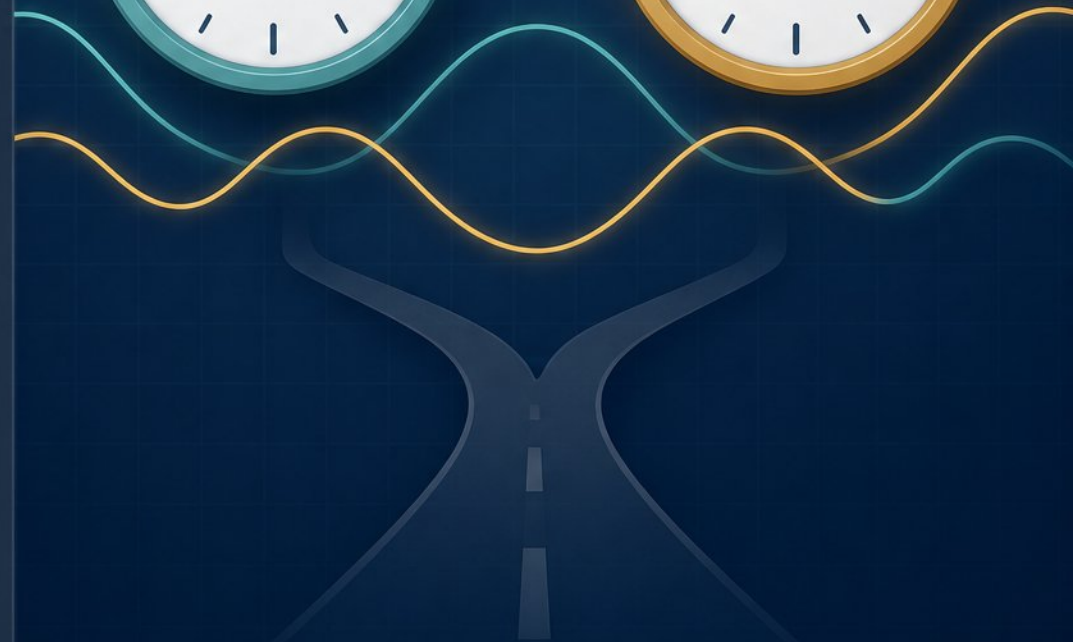


- **Quick check:** does timing make sense? Could a third factor explain both?

MARKETING
CAMPAIGN



SEASONAL
CYCLE





Evaluating Evidence Before You Decide



- **Source:** Who provided it, and are they qualified?



- **Sample size:** Is it large enough to be reliable?



- **Timing:** Is the data current and contextually relevant?



- **Vested interest:** Could the source benefit from your belief?



- Separate well-supported claims from merely plausible-sounding ones.



Group Reasoning: Making Better Decisions Together



- Groupthink, loudest voice, anchoring, and false consensus derail decisions



- Pre-meeting written opinions surface independent thinking



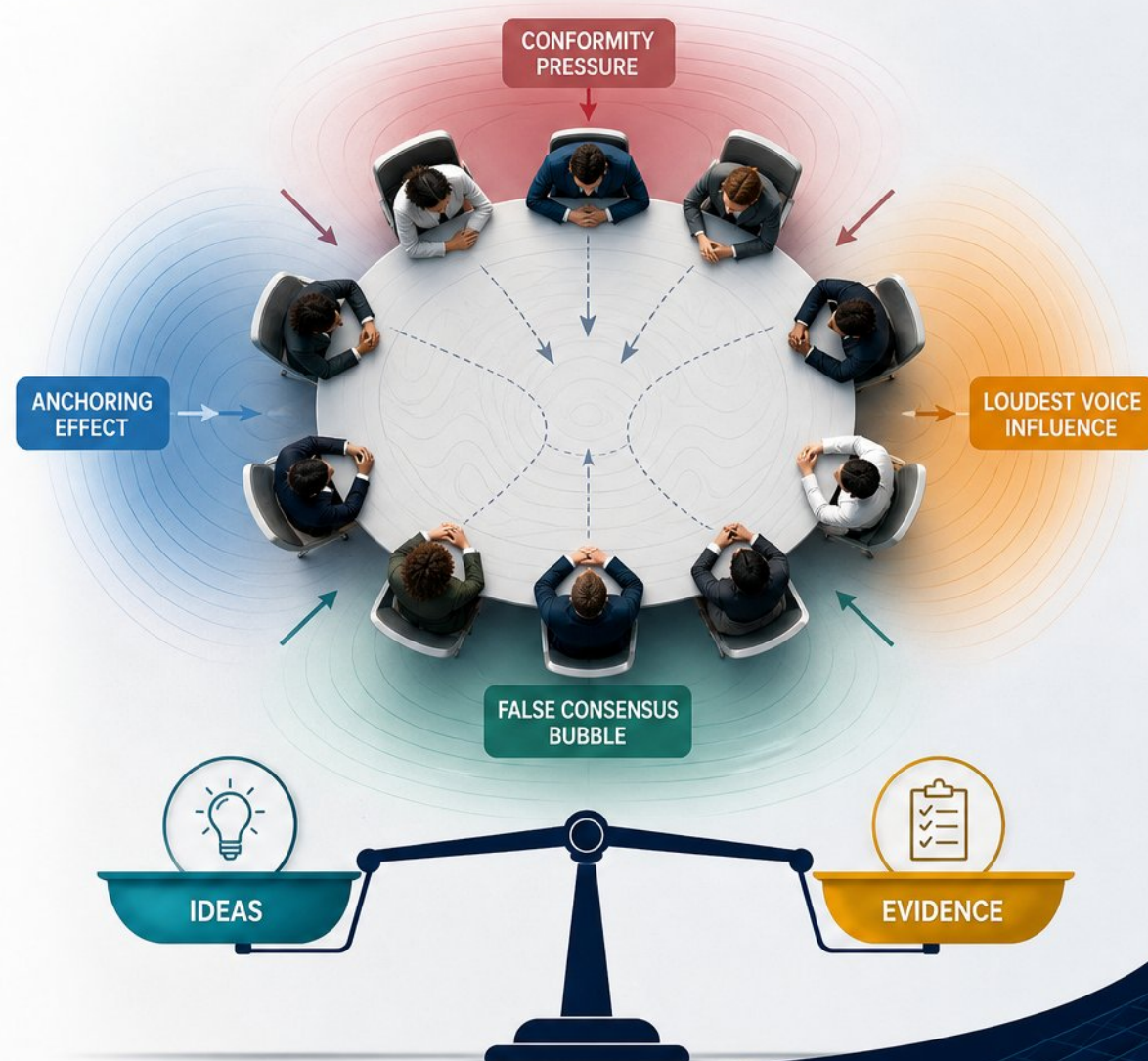
- Devil's advocate rotation challenges shared assumptions



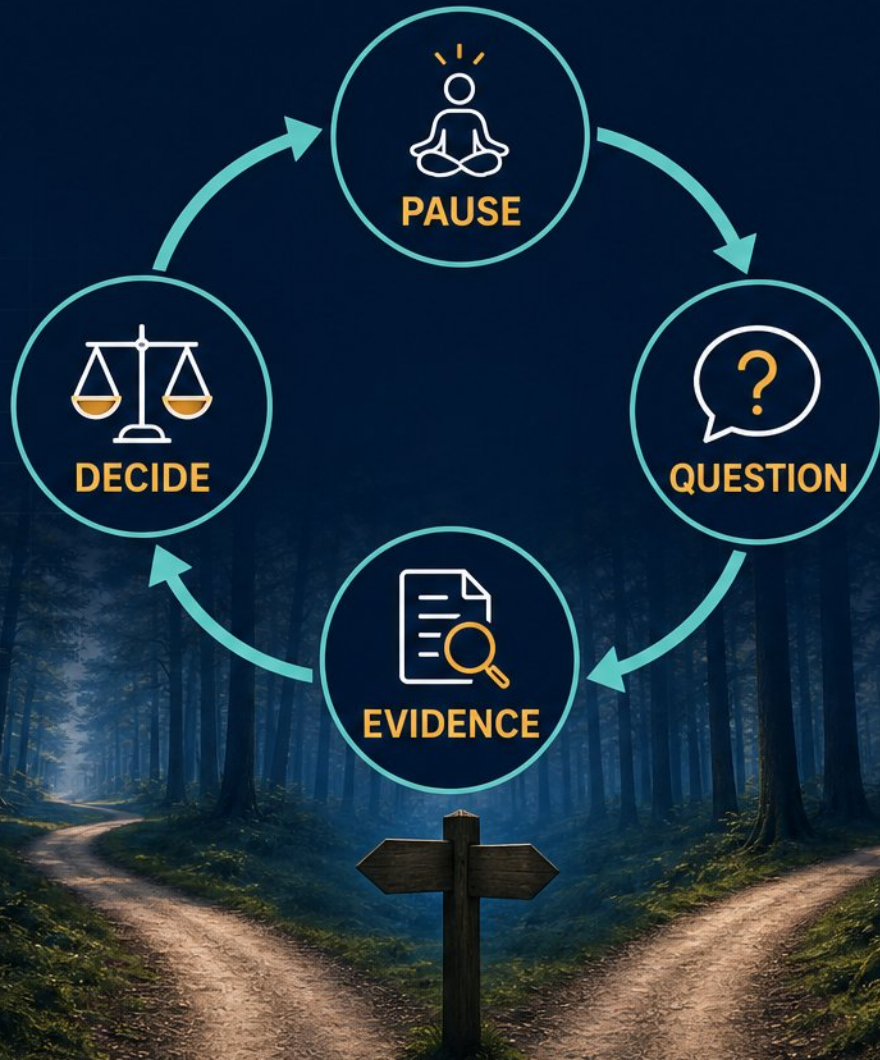
- Pre-mortems reveal hidden risks before execution



- Group traps mirror individual biases; apply the same reasoning tools



Building a Personal Reasoning Routine



- **Pause:** decide if this needs slow analysis



- **Question:** claim, hidden premise, missing evidence



- **Evidence:** source, data, timing, vested interest



- **Decide:** choose the best-supported judgment



- **Use templates** for emails, approvals, study notes



- **Habit goal:** apply the routine for 14 days

Action Plan, Self-Assessment, and Resources



- Core skills: fact vs. inference, assumptions, fallacies, evidence, better questions



- Reflect: which reasoning trap appears most in your work?



- Self-check: pause, question, evidence, then decide



- Read: Cottrell, Browne & Keeley, or Dwyer for structured practice



- Next step: apply one routine daily for the next 14 days



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