

• NETWORKS & DECISION MATHEMATICS • HARD QUESTION BREAKDOWN

Why Networks Questions Actually Go Wrong

Networks looks like the easy area of study — it's visual, intuitive, low on formulas. That's exactly why it's dangerous. The last two years of examination reports show some of the lowest-scoring questions on the entire paper sitting inside this topic. Here's exactly where those marks disappear, and the fixed sequence that gets them back.

6 SKILLS THAT ACTUALLY GET TESTED

- 1. **Euler trails & circuits, Hamiltonian paths & cycles** — traversal rules
- 2. **Trees & minimum spanning trees**
- 3. **Shortest path**
- 4. **Matching** — the Hungarian algorithm
- 5. **Max-flow / min-cut**
- 6. **Critical path analysis** — float, dummy activities, crashing

Where the Marks Actually Disappear

10%

Dummy activity, labelled correctly (2024 Exam 2)
— most were drawn with no arrow or no label.

21%

Project crashing, minimum cost (2025 Exam 2) —
the hardest question on last year's paper.

22%

Which edge to boost for max flow (2024 Exam 2)
— most picked an edge outside the real cut.

39%

Precedence table + float, multiple choice (2025 Exam 1) — the lowest-scoring MCQ in Networks.

✓ HOW TOP SCRIPTS ATTACK IT

Every algorithm gets run as a fixed, memorised sequence — the same order, every time, no matter how the diagram is drawn. The bottleneck, critical path, or odd-degree vertex is identified *first*, before anything gets calculated.

✗ WHERE IT ACTUALLY GOES WRONG

The right general idea, aimed at the wrong part of the diagram — a plausible answer that was never actually checked against the real bottleneck, the real critical path, or the real degree count.

Tutor insight: on the hardest Networks questions in the last two exams, the maths itself usually wasn't the problem. Most students who lost the mark used a real, valid method — just pointed at the wrong edge, activity, or vertex.

The Algorithm Breakdown

The exact fixed sequence for each skill — and the specific trap VCAA has built into it, taken straight from the last two years of reports.

CRITICAL PATH ANALYSIS

Forward scan (earliest starts) → backward scan (latest starts) → float = LST - EST → critical path = zero float.

Trap: more than one path can tie for critical — miss one and the rest of the question falls over. Dummy activities need an arrow *and* a label, or the mark's gone.

HUNGARIAN ALGORITHM

Square the matrix if needed → reduce rows first → then reduce columns → cover the zeros → allocate one per row and column.

Trap: reducing columns before rows. Order is everything — swapping the sequence was the exact wrong answer VCAA built into the 2025 paper.

MAX-FLOW / MIN-CUT

Find every cut that splits source from sink → sum only the edges flowing source → sink across it → the smallest cut equals the max flow.

Trap: boosting the wrong edge. Only an edge inside the real minimum cut changes the max flow — every other edge is a decoy.

EULER & HAMILTONIAN

Count every vertex's degree → 0 odd = Eulerian circuit → 2 odd = Eulerian trail → more than 2 odd = neither exists.

Trap: eyeballing it instead of counting. Say the full term too — "Hamiltonian path," not just "path," or the mark doesn't count.

WHAT THE LAST TWO YEARS OF REPORTS ACTUALLY SHOW

- The hardest Networks questions each year aren't really about knowing the algorithm — they're about applying it to the exact diagram in front of you, not a memorised shape.
- Extra information written next to a correct answer can still cost the mark — examiners mark what's on the page, including the incorrect bits.
- Full, precise terminology matters. "Path" instead of "Hamiltonian path" lost marks even when the reasoning behind it was right.
- Labelling slips — a missing arrow on a dummy activity, an unlabelled edge — got marked as no attempt, even when the underlying working was correct.

How to actually attack a tough Networks question

- ✓ Identify the critical path, the bottleneck, or the degree count *first* — before calculating anything.
- ✓ Run the algorithm in its exact fixed order. Never freelance the sequence.
- ✓ Check for ties — more than one critical path, more than one valid minimum cut.
- ✓ Write the full, correct term — "Hamiltonian path," not just "path."
- ✓ Label every dummy activity and every diagram addition properly, or the mark doesn't count.

Knowing the content gets you to the 30s. Getting to 40+ needs a second pair of eyes.

Every checklist in this guide describes what a raw 40+ script looks like from the outside. What it can't tell you is whether your instinct on question 9 is the trap, whether your Exam 2 working would actually earn the process marks, or whether your bound reference survives contact with a real 1.5-hour paper — because that takes someone marking your actual attempt against this exact criteria.

WHY TUTORING MOVES THE NEEDLE HERE SPECIFICALLY

- General Maths is an execution subject, not a content one — the gap between the 30s and a raw 40+ is precision and speed under time pressure, and that's trained through feedback on your actual working, not more content review.
- Every Learnify Maths tutor scored 40+ in the subject themselves — they've sat this exact exam at the level you're aiming for.
- A single mark-up against real past Exam 1 and Exam 2 questions shows you precisely which distractors you fall for and which process marks you're leaving on the table.
- Most students plateau not from a lack of content knowledge, but from repeating the same reading or CAS habit every sitting without realising it — a second pair of eyes catches this in one sitting.

What a Learnify General Maths mark-up actually covers

- ✓ Which Exam 1 distractor patterns you're consistently falling for, and why.
- ✓ Whether your Exam 2 working would actually earn the process marks it needs to.

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Exam prep gets you knowledge. Tutoring gets you the marks.

The difference between the 30s and a raw 40+ on General Maths isn't more content — it's someone who's scored 40+ themselves telling you exactly which distractor you fall for and which process marks you're leaving on the table, before the exam does. **Book a free ATAR consult call** and we'll mark your last Exam 1 or Exam 2 attempt against this exact criteria.

40+

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93

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