CHARTA LEARNING · INTERVIEW PREPARATION

Structuring Problems and Frameworks

Interview preparation summary · SC track

IN THIS SUMMARY

- Issue trees
- Hypotheses and synthesis

INT.KS.1.a · Issue trees

Build a first-level split of a business question that is mutually exclusive and collectively exhaustive, and test it for overlaps and gaps before you use it.

An issue tree breaks one big question into parts that can be answered separately, so that answering the parts answers the whole. MECE means mutually exclusive (no fact sits in two branches) and collectively exhaustive (nothing important sits outside the branches). Interviewers watch your first split closely because it shows whether you can organise a messy problem before you ask for any data. A good first level uses one organising principle applied to the whole question, such as revenue and cost, or customers, product and geography, and it usually has three to five branches. The commonest flaw is a list of ideas that mixes principles, for example price, marketing and competitors, where a rival's price cut fits two branches and nothing covers cost. Test every split twice: could one fact live in two branches, and what would fit nowhere? Check that quantities add up to the total. Write branches as things you can test, not labels. Use an 'other' branch only as a short, named safety net, never to hide a gap. Say your principle aloud: 'I will split this by revenue and cost'.

WORKED EXAMPLE: TWO WAYS TO SPLIT 'WHY ARE SALES DOWN 8%?'

Hollin Bakeries has 50 stores. Sales fell from 50.0m to 46.0m this year, a fall of 8.0%. A candidate offers the first-level split 'price, marketing, competition, economy'. Test it, offer a better one and say what it tells you using these facts: transactions fell from 12.5m to 11.5m, the average ticket stayed at 4.00 and the store count stayed at 50.

Answer: Sales fell 4.0m and all of it is fewer transactions, about 20,000 fewer per store. Price, mix and store count are not the cause.

> **Interview tip:** Say the principle first: 'sales are transactions times ticket, so I will split on that'. Then give the fact that closes a branch. Closing a branch with one number shows the interviewer you are using the tree to narrow the problem, not to decorate it.

INT.KS.1.b · Issue trees

Choose between the standard ways of splitting a problem (profit tree, internal versus external, process-based) and say which fits the question and why.

A handful of splits recur in cases because they are MECE by construction. The profit tree says profit is revenue minus cost, revenue is price times volume (often by product or customer segment), and cost is fixed plus variable, or by type such as labour, materials and property. It fits any question that asks why profit changed or how to raise it. Internal versus external asks whether a cause is within the client's control (operations, pricing, costs) or outside it (market, competitors, regulation, currency); it is a good second cut but a weak first one, because it tests nothing until you split further. A process-based split follows a journey from start to finish, such as order, make, ship and invoice, or referral, booking, treatment and discharge; it fits delays, quality and cost questions about an operation. The mistake is forcing the profit tree onto a problem that is not about profit, for example a public service, or reciting a split without saying why it fits. Pick the split that makes the first data request obvious, name it aloud, then adapt the branch names to this client.

WORKED EXAMPLE: PROFIT FELL FROM 8.0M TO 5.0M AT A HAULAGE FIRM

Kestrel Freight is a road haulier. Revenue rose from 100.0m to 104.0m, but profit fell from 8.0m to 5.0m. Costs were fuel 30.0m, drivers 38.0m and other 24.0m last year, and fuel 34.0m, drivers 41.0m and other 24.0m this year. Choose a split, find the side of the tree that matters and decide the next cut.

Answer: Profit fell 3.0m because costs rose 7.0m against 4.0m more revenue. Fuel (about 3.0m of it price) and drivers are the cost lines to open.

Interview tip: Say why you chose the tree: 'this is a profit question, so I will start with revenue and cost'. Use internal versus external as the second cut on the live branch, which is where it is strongest.

INT.KS.1.c · Issue trees

Build an issue tree for an unfamiliar problem: restate the objective, choose the principle, decide how deep to go and stop where each branch can be tested.

When a problem fits no template, build the tree from the objective. First restate the question in one sentence with a measurable goal and a deadline, and ask a clarifying question if the goal is unclear. Then choose the organising principle that makes the answer easiest to find: an identity such as attendance equals performances times seats sold, a journey, or the pieces of a decision (what we gain, what we lose, what the alternatives are). Go two or three levels deep, never to the bottom, and stop splitting a branch when each leaf is a fact you can ask for or estimate. A tree that is too shallow gives a list of topics; one that is too deep cannot be covered, since four branches of three of three is already 36 leaves. Prune with a reason and say what you are leaving out. A tree for a public body or a charity should not assume profit is the goal. Show the tree as a short spoken outline, then say which branch you would open first and why.

WORKED EXAMPLE: RAISING ATTENDANCE AT A REGIONAL THEATRE

The Ferrow Theatre Company wants to lift annual attendance from 90,000 to 120,000 seats sold. It stages 300 performances a year in a hall with 450 seats, and sells 300 seats a performance on average. Build the tree, size the options and decide where to stop.

Answer: The tree has two branches (performances, seats sold per performance) and three leaves, with capacity pruned. A mix of 75% occupancy and about 356 performances meets 120,000.

Interview tip: State the identity, size the branches with quick arithmetic and say what you prune. A pruned branch with a reason ('capacity is fixed by the building') shows judgement, where silence looks like a gap.

INT.KS.2.a · Hypotheses and synthesis

Work hypothesis-first: state a specific answer early, say what would have to be true, design the test most likely to disprove it and revise when the data disagrees.

A hypothesis-driven approach starts with a provisional answer and uses the data to confirm or kill it, instead of collecting everything and hoping a pattern appears. A good hypothesis is specific, testable and falsifiable: 'profit fell mainly because input costs rose faster than prices' is useful, while 'there are many factors' is not. Next, state what would have to be true and size it. If a price cut is the cause, the cut must be big enough to explain the fall in profit, so work out that size and compare it with the data. Choose the test that could most easily prove you wrong, not the one that flatters you. When the data disagrees, say so at once, give the share of the problem the hypothesis did explain, and state a new hypothesis for the rest. The usual mistakes are clinging to a hypothesis, treating the first one as the answer, and asking for data that would look the same whether you were right or wrong. Interviewers read a change of mind as strength, not weakness.

WORKED EXAMPLE: TESTING 'PRICE DISCOUNTING CAUSED THE PROFIT FALL'

Brannock Components sells a flat volume at revenue of 200.0m. Profit fell by 6.0m. Your first hypothesis is that discounting caused it. The data shows the average price fell 0.5%, and raw materials, 125.0m last year, rose 4.0%. Test the hypothesis and revise it.

Answer: Discounting explains 1.0m of the 6.0m (about one sixth). Materials inflation explains 5.0m, so the revised hypothesis is cost, not price.

Interview tip: Say it plainly: 'My first hypothesis was price. The numbers say it explains one sixth, so I am dropping it as the main cause and moving to cost.' Changing your mind with the arithmetic in hand is what interviewers are looking for.

INT.KS.2.b · Hypotheses and synthesis

Prioritise branches by likely impact and ease of testing, apply the 80/20 idea to decide where to start, and say what you are leaving out.

You cannot test every branch in a thirty-minute case or a ten-week engagement, so you rank. The two usual criteria are the likely size of the effect on the answer, and how quickly and cheaply you can test it. A simple score is potential impact times the probability that the branch is the cause, then adjusted for effort. The 80/20 idea says a few drivers typically produce most of the effect, so find those first. It is a heuristic, not a law: the split can be 70/30 or 95/5, and you must check it against the numbers. Start with a cheap test that could eliminate a large branch, then spend time on the big uncertain ones. Say your

ranking aloud and name what you are parking and why, for example because it is small, or because the data would take weeks. Mistakes include testing what is easy but small, starting with a favourite branch, and using the 80/20 rule without checking that the leading branches really add up to most of the problem.

WORKED EXAMPLE: RANKING FIVE BRANCHES OF A MARGIN GAP

Tarn Foods is 10.0m short of its margin target. Five causes are proposed with a potential size, a probability that each is real, and days to test: A 6.0m, 50%, 5 days; B 4.0m, 80%, 2 days; C 2.0m, 90%, 1 day; D 8.0m, 10%, 4 days; E 1.0m, 90%, 1 day. Rank them and decide the order of testing.

Answer: Test B and C first, then A. Together A, B and C cover about 82% of the expected 9.7m. Park D and E, and say why.

> **Interview tip:** Say the ranking, the cut-off and what you are dropping: 'I will test B and C first, because they are big and fast, then A. I am parking D because it is unlikely.' Stating what you leave out is part of prioritising.

INT.KS.2.c · Hypotheses and synthesis

Use frameworks such as the 3Cs, 4Ps, value chain, supply and demand and five forces as tools: say when each fits or misleads, adapt it to the client and update the structure when data arrives.

A framework is a checklist someone else made for a common problem. The 3Cs (company, customers, competitors) fit a market or strategy question; the 4Ps (product, price, place, promotion) fit marketing decisions; the value chain fits cost and operations questions; supply and demand fits shortages and pricing; market attractiveness and five forces (rivalry, entry, substitutes, buyer power, supplier power) fit an industry's profit potential. Each misleads when the question is elsewhere: the 4Ps say little about a late delivery problem, and a full five forces recital at equal depth spends four minutes on forces that do not matter. Adapt it by choosing the one or two headings that decide this case, renaming them in the client's words and adding the one that the framework lacks, for example regulation or a subsidy. Then update. When data arrives that changes what matters, such as a licence delay or a distributor lock-in, change the structure aloud and re-rank the branches. A custom structure that fits the client beats a memorised one that fits no one.

WORKED EXAMPLE: ADAPTING MARKET ATTRACTIVENESS TO A RURAL BROADBAND DECISION

Corvane Telecom is deciding whether to build rural broadband to 40,000 homes. The build costs 50.0m, and a public subsidy covers 40% of it. A standard market attractiveness frame gives size, growth, rivalry and entry barriers. Adapt it, then update it with these facts: take-up is expected to be 35%, revenue is 300 per home a year and contribution margin is 60%.

Answer: With 35% take-up, payback is about 11.9 years. An 8-year payback needs about 52% take-up, so the structure should now centre on take-up.

> **Interview tip:** Say what you dropped and why: 'The standard frame has a rivalry heading, but there is little rivalry here, so I will replace it with subsidy and take-up.' Then update aloud when the numbers show which branch decides the case.

Summary of the Charta interview-preparation topic. Companies and figures in the examples are invented. Draft content, not yet expert reviewed.