CHARTA LEARNING · INTERVIEW PREPARATION

Data, Charts and Business Insight

Interview preparation summary · SC track

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INT.KD.1.a · Reading exhibits

Read a bar, line, stacked or table exhibit by checking the title, units, axes and scale first, and say what it shows and what it does not.

An exhibit is a claim made visually, so read it before you calculate. Start with the title and the unit (millions or billions, per customer or in total, nominal or adjusted for inflation), the period covered, and any definition or source. Then read the axes: where does the value axis start, is the scale even, and are the time intervals regular? A bar chart whose axis starts above zero exaggerates differences, because bar height no longer matches value. In a line chart the slope depends on the axis range, so a narrow range makes small moves look dramatic, and a second axis lets two lines cross without any meaning. In a stacked column only the bottom segment sits on a common baseline, so read the other segments by subtracting their edges; a 100 percent stack shows share, not size. A table gives exact values but hides the pattern, so scan for the largest numbers, the outliers and the totals. Then say in one sentence what the exhibit shows and one thing it cannot show. The usual mistake is starting the arithmetic before checking the units and the axis.

WORKED EXAMPLE: A BAR CHART THAT EXAGGERATES THE GAP

A board pack for Kestrel Foods, an invented snack maker, shows a bar chart of annual sales of one brand in four regions, in millions of pounds. The value axis starts at 80 and ends at 110. The bars read North 92, South 104, East 98 and West 86. A director says that South sells about four times as much as West. Is that right, and what would you say?

Answer: No. South sells 104m against 86m for West, about 1.2 times as much (27.4% of the 380m total against 22.6%). The bars look four times apart only because the axis starts at 80m.

> **Interview tip:** Name the trap in one sentence, give the true ratio, and move on: 'The axis starts at 80, so the bars overstate the gap; the true difference is about a fifth.' Do not lecture about charts.

INT.KD.1.b · Reading exhibits

Read a waterfall, scatter or pie chart correctly, and separate a share from a level and a percentage from a percentage point.

A waterfall chart bridges a start value to an end value through steps up and down, such as a profit bridge from one year to the next. Check that the steps add up to the end bar, check the sign of each step, and note that the biggest bars are not always the most important ones. A scatter chart plots two measures for each item, so look for the pattern, the clusters and the outliers; a bubble adds a third measure as size. A pie chart or a 100 percent bar shows shares of a whole at one moment: it hides the size of the whole, so a falling share can sit alongside rising sales. Convert shares into levels before drawing a conclusion, by multiplying the share by the total. Watch the base effect: a 20 percent rise after a 30 percent fall leaves you 16 percent below where you started. And keep percentages and percentage points apart, because a margin moving from 8 to 10 percent is up 2 points but up 25 percent. The usual mistake is treating a share as if it were a level.

WORKED EXAMPLE: SHARE OF SALES IS NOT SALES

Halden Beverages, an invented drinks company, shows two pie charts of revenue by channel. In 2021 revenue was 200m, split online 10%, stores 70% and wholesale 20%. In 2024 revenue was 290m, split online 24%, stores 50% and wholesale 26%. The chief executive says the store channel is collapsing because its share fell by 20 points. Test that.

Answer: Stores are not collapsing: sales rose from 140m to 145m (up 3.6%). Their share fell by 20 points because the other channels grew much faster, online from 20m to 69.6m and wholesale from 40m to 75.4m.

> **Interview tip:** Say 'share is not level' and convert at once: multiply each share by the total. Quote the points-versus-percent distinction if the interviewer uses a loose word such as 'fell 20 percent'.

INT.KD.1.c · Reading exhibits

Compute growth, compound growth, shares, weighted averages and per-unit figures from a table or chart, with the units and periods right.

Most exhibits in an interview end with a calculation, and the marks go to choosing the right numbers and stating what you are computing before you compute it. Percentage change is the new value less the old, divided by the old. Compound annual growth rate (CAGR) is the end value over the start value, raised to one over the number of periods, less one; the periods are the gaps between years, so 2019 to 2024 is five, not six. A quick check is the rule of 72: divide 72 by the growth rate to get the doubling time. A weighted average needs weights, so a group margin is total profit over total revenue, never the simple average of segment margins. Per-unit figures divide a total by its own unit count, so match numerator and denominator in period and unit. Keep millions and billions apart, and round to two significant figures. The usual mistakes are counting the periods wrongly, averaging percentages that have different bases, and reading the wrong column.

WORKED EXAMPLE: PRICE PER PARCEL FROM A TABLE

Brightwater Logistics, an invented parcel carrier, shows a table. In 2020 it delivered 40m parcels and earned revenue of 188m. In 2024 it delivered 52m parcels and earned revenue of 234m. Work out the compound growth of revenue and parcels, the revenue per parcel in each year, and what that says about pricing.

Answer: Revenue grew 5.6% a year and parcels 6.8% a year over four years. Revenue per parcel fell from 4.70 to 4.50, about 1.1% a year, so volume growth has come with slightly lower prices.

> **Interview tip:** Say the number of periods aloud ('four gaps, so a fourth root'). It shows the interviewer you have not fallen into the most common trap, and it prevents you making it.

INT.KD.2.a · From data to insight

Turn an exhibit into a so-what by comparing segments, cohorts and trends against a benchmark, and state the finding with a number and an implication.

Reading a chart aloud is description. An insight says what the data mean for the client's decision, with a number. Move through three steps: what the exhibit shows, so what that means for the question you were asked, and now what the client should do or find out. Get there by comparing. Compare segments (the same measure across customer groups, products or regions, weighted by their size), cohorts (groups that joined in the same period, followed over time, which separate the quality of new customers from the age of the base) and trends (the direction, the pace, seasonality and one-offs, usually year on year rather than quarter on quarter). Always compare to something: a prior period, a peer, a target or the whole. Choose the one or two points that bear on the question, not every observation. A strong insight reads like 'newer customers leave 8 points faster, so growth is coming from weaker customers'. The usual mistakes are reading every bar aloud and stating the obvious without a number.

WORKED EXAMPLE: COHORTS HIDE A QUALITY PROBLEM

Pellet, an invented subscription app, shows a table of customers who joined in each year and the share still subscribed twelve months later. The 2021 cohort had 40k joiners and 62% retained, the 2022 cohort 55k and 55%, and the 2023 cohort 80k and 47%. The founder says growth is healthy because the number of retained customers keeps rising. What is your insight?

Answer: The retained base grew from 24.8k to 30.3k to 37.6k, but retention fell from 62% to 47% as joiners doubled. Growth is increasingly bought with weaker customers, so I would test whether the latest acquisition channels are the cause.

> **Interview tip:** Lead with the insight, then the evidence: 'Growth is real but the quality is falling: twelve-month retention is down 15 points in two years.' Finish with the data you would ask for next.

INT.KD.2.b · From data to insight

Separate correlation from cause, and test an exhibit for confounders, small samples, outliers and selection before drawing a conclusion.

Two measures that move together may be linked in four ways: one causes the other, the cause runs the other way, a third factor drives both, or the pattern is chance. Stores with more staff may sell more because staff help, or because busy stores hire more, or because both follow footfall. To move towards a cause ask about timing (did the cause come first?), a mechanism (how would it work?), a comparison group (what happened to similar units that did not receive it?) and whether the pattern holds inside each segment, because a total can be reversed by mix (Simpson's paradox). Then test the data

themselves. How many observations are there? A rate on five cases is almost noise. Is one outlier moving the average, so that the median is a better guide? Who was chosen: volunteers, the best sites or survivors will flatter any result. Say 'consistent with, not proof of', and propose a test, such as a pilot with a control group. The usual mistakes are accepting a correlation as cause or throwing it away.

WORKED EXAMPLE: A LOYALTY EMAIL THAT LOOKS TWICE AS GOOD AS IT IS

Ardent Retail, an invented chain, emailed a voucher to 1,000 customers and did not email another 1,000. Of those emailed, 260 bought (26%). Of those not emailed, 118 bought (11.8%). The marketing director says the email doubled sales. You learn that 700 of the emailed customers were loyal customers and 300 were new, while among those not emailed 300 were loyal and 700 were new. Among loyal customers 245 emailed and 90 not emailed bought; among new customers 15 emailed and 28 not emailed bought. What is the real effect?

Answer: The real uplift is about 3.8 points, not 14.2: the email went mostly to loyal customers, who buy more anyway. I would rerun it on a random split of each customer type before claiming it doubled sales.

> **Interview tip:** Say 'consistent with, not proof of' and then offer the cleanest test. Interviewers reward the candidate who neither accepts the claim nor dismisses it.

INT.KD.2.c · From data to insight

Ask for the next piece of data that would change the decision, and finish an exhibit with a one-line insight and a recommendation.

An exhibit rarely answers the whole question, so a good candidate finishes by saying what is still unknown and asking for it. A useful data request is specific and tied to a decision: it names the cut (by region, by customer type, over eight quarters), the measure, and the reason. Typical requests split a total into its parts, add a benchmark such as peers or targets, lengthen the time series, check a definition, or add the cost or unit economics that the revenue chart leaves out. Then close in order: the answer first in one line (a finding with a number, its driver, and its implication), the recommendation with its size and the main risk, and the next step. If the exhibit cannot answer the question, say so politely and say what would. Under time pressure take twenty or thirty seconds to scan, give the headline, back it with two numbers, add one caveat, and ask for one piece of data. The usual mistake is asking for more data without saying why.

WORKED EXAMPLE: FOUR HOTELS, ONE INSIGHT AND ONE DATA REQUEST

Norvik Hotels, an invented UK group, shows a table for four city hotels. Leeds has 200 rooms, 78% occupancy, an average daily rate of 92 and a cost of 58 per occupied room. Bristol has 150 rooms, 71%, 105 and 70. Glasgow has 180 rooms, 64%, 88 and 61. Cardiff has 120 rooms, 82%, 79 and 52. Costs are only those that vary with occupied rooms. Give a one-line insight and the next data you would ask for.

Answer: Glasgow is the weak hotel: contribution of about 6,300 a room against 9,700 in Leeds, from low occupancy (64%) and a thin margin (27). I would ask for its fixed costs and its monthly rate and occupancy against local competitors.

> **Interview tip:** End with a request that names the cut and the reason ('by month, to see whether the problem is seasonal'). A request that explains itself shows you know what the answer would change.

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