*No formula sheet is supplied for 0450, so everything below is recalled. The calculations are short, and the marks are almost never for the number alone: state the formula, substitute, give the answer with its **unit or percent sign**, then say in one sentence what it tells the business. That last sentence is usually worth more than the arithmetic. 0450* 不提供公式表; 计算题的分数在 " 公式 – 代入 – 单位 – 解读 " 四步上。

Three habits that earn the marks

Write the formula down before the numbers. Wrong arithmetic with the right formula still earns the method mark; a bare answer earns nothing if it is wrong.

先写公式再代入数字。

Finish with a unit, a currency symbol or a percent sign. "12.5" is not an answer; "12.5\%" is.

答案必须带单位、货币符号或百分号。

Then interpret. "The current ratio is 2 : 1, so the business has twice the current assets it needs to cover its short-term debts" is the sentence the analysis mark is waiting for.

最后用一句话解释这个数字对企业的意义。

Market and marketing

Market share 市场份额 — the firm's sales ÷ total sales in the market ×100. Both figures must be over the same period and in the same units – both in dollars, or both in units sold.

Market growth 市场增长率 — (this year's market size − last year's) ÷ last year's ×100. Divide by the OLD figure.

Sales revenue 销售收入 — selling price × quantity sold. Revenue is money coming in, not profit and not cash in the bank.

A firm sells $45\,000 of goods in a market worth $300\,000. Find its market share.

Market share = 15%.

$\textit{Market share} = 45\,000 \div 300\,000 \times 100$

$= 15\%$

Costs, revenue and break-even

Total costs 总成本 — fixed costs + variable costs. Fixed costs stay the same however much is produced; variable costs are per unit, so total variable cost = variable cost per unit × output.

Profit 利润 — total revenue − total costs.

Average cost (unit cost) 单位成本 — total cost ÷ output. It falls as output rises while the fixed costs are spread over more units.

Contribution per unit 单位贡献 — selling price per unit − variable cost per unit. It is what each unit contributes towards the fixed costs, NOT profit.

Break-even output 盈亏平衡产量 — fixed costs ÷ contribution per unit. The bottom line is contribution, never the selling price – that is the single most common error in the subject.

Margin of safety 安全边际 — actual (or budgeted) output − break-even output. How far sales can fall before the business starts to lose money.

Fixed costs are $12\,000 a month. The product sells for $8 and costs $5 a unit to make. The firm plans to sell 5500 units. Find break-even, the margin of safety and the profit.

Break-even is 4000 units ($32\,000 of revenue), the margin of safety is 1500 units, and the profit is $4500.

$$\textit{Contribution per unit} = 8 - 5 = \$3$$

$$\textit{Break-even} = 12\,000 \div 3 = 4000 \ \textit{units}$$

$$\textit{Break-even revenue} = 4000 \times 8 = \$32\,000$$

$$\textit{Margin of safety} = 5500 - 4000 = 1500 \ \textit{units}$$

$$\textit{Profit} = 5500 \times 3 - 12\,000 = \$4500$$

Production and people

Labour productivity 劳动生产率 — output over a period ÷ number of employees. Output per WORKER, so the unit is "units per worker per week", not a percentage.

Capacity utilisation 产能利用率 — actual output ÷ maximum possible output ×100. Low utilisation means fixed costs are spread thinly over few units, so unit costs rise.

Labour turnover 员工流动率 — number of employees leaving in a year ÷ average number employed ×100. The top line counts LEAVERS.

Twelve workers produce 4800 units a month in a factory that could make 6000. Find productivity and capacity utilisation.

Productivity is 400 units per worker per month; capacity utilisation is 80%, leaving room to take on extra orders without new machinery.

$$\textit{Productivity} = 4800 \div 12 = 400 \ \textit{units per worker per month}$$

$$\textit{Capacity utilisation} = 4800 \div 6000 \times 100 = 80\%$$

Accounts and ratios

Gross profit 毛利 — revenue − cost of sales.

Profit 净利 — gross profit − expenses (overheads). In 0450 this is the profit figure ratios use unless the question says otherwise.

Gross profit margin 毛利率 — gross profit ÷ revenue ×100. A fall here points at the cost of buying or making the product.

Profit margin 净利率 — profit ÷ revenue ×100. If this falls while the gross margin holds steady, the problem is the expenses.

Return on capital employed (ROCE) 资本回报率 — profit ÷ capital employed ×100. It answers "how hard is the money invested working?", and it is compared with what a bank would pay.

Working capital 营运资本 — current assets − current liabilities, in dollars. Too little and the business cannot pay its bills; too much and cash is sitting idle.

Current ratio 流动比率 — current assets ÷ current liabilities, written as "$x : 1$". Around 1.5 to $2 : 1$ is usually comfortable.

Acid test ratio 速动比率 — (current assets − inventory) ÷ current liabilities. Inventory is taken out because it is the current asset that is hardest to turn into cash quickly.

Revenue \$250\,000, cost of sales \$150\,000, expenses \$60\,000, capital employed \$320\,000. Find the gross profit margin, the profit margin and ROCE.

Gross profit margin 40%, profit margin 16%, ROCE 12.5%.

$Gross\ profit = 250\,000 - 150\,000 = \$100\,000,\ so\ margin = 100\,000 \div 250\,000 \times 100 = 40\%$

$Profit = 100\,000 - 60\,000 = \$40\,000,\ so\ margin = 40\,000 \div 250\,000 \times 100 = 16\%$

$ROCE = 40\,000 \div 320\,000 \times 100 = 12.5\%$

Everyday arithmetic the paper assumes

Percentage change 百分比变化 — (new value − old value) ÷ old value ×100. Divide by the ORIGINAL every time, and keep the minus sign for a fall.

Percentage of an amount 求某数的百分比 — amount × percentage ÷100. A 20% rise multiplies by 1.2; a 20% fall multiplies by 0.8.

Exchange rates 汇率换算 — multiply when converting from the currency the rate is quoted "per", and divide when converting back. Sketch the direction before you touch the calculator.

Average (mean) 平均数 — total ÷ number of values.

A rise from 200 to 250 is a 25% rise, but the fall from 250 back to 200 is a 20% fall. The percentages of a rise and the matching fall are never equal, because the denominator changes.

上涨与下跌的百分比不相等, 因为分母不同。

Where these marks are lost

Dividing fixed costs by the selling price instead of by contribution. It gives a break-even that is far too low and quietly wrecks the margin of safety as well.

盈亏平衡产量的分母是单位贡献, 不是售价。

Leaving off the percent sign, the currency symbol or the word "units". The number alone is not the answer.

漏写百分号、货币符号或 " 单位 "。

Comparing a ratio with nothing. Every ratio needs a comparison – last year, a rival, or the industry – before it means anything.

比率必须有比较对象。

Calling revenue profit. Revenue is the money coming in; profit is what is left after every cost.

收入不等于利润。

Rounding part-way through. Carry the full figure and round only the final answer, to two decimal places for money and one for a percentage.

中间步骤不要四舍五入。