

Accounting Units 3 & 4

Chapter 18 Evaluating performance: profitability

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Chapter 18 Evaluating performance: profitability — 18A Profitability and the analytical process

Theory

A business does not exist simply to make sales, own assets or hold cash — it exists to earn a **profit** for its owner. But a dollar figure of profit, on its own, says very little about how *well* the business has performed. A net profit of \$60 000 is an excellent result for a small business but a poor one for a large firm with millions of dollars of sales and assets. To judge performance, profit must be measured **relative to the resources that generated it**. This is the idea of **profitability**.

What profitability means. Profitability is the ability of a business to earn profit **relative to a base** — a measure of the size or effort behind that profit. The three bases used to assess profitability are:

- **Relative to sales** — how many cents of profit the business keeps out of every sales dollar. This is measured by the **Net Profit Margin** (net profit ÷ net sales) and the **Gross Profit Margin** (gross profit ÷ net sales). These indicators judge how well the business **controls its costs and expenses** against the revenue it earns.
- **Relative to assets** — how much profit the business earns from every dollar of assets it uses. This is measured by the **Return on Assets** (net profit ÷ average total assets) and is linked to the **Asset Turnover** (net sales ÷ average total assets), which measures how hard the assets are worked to generate sales.
- **Relative to the owner's investment** — how much profit the business earns on every dollar the owner has invested. This is measured by the **Return on Owner's Investment** (net profit ÷ average capital), the single indicator that matters most to the owner personally, because it answers “what is my investment in this business returning to me?”

Profitability is therefore not one number but a **family of indicators**, each expressing profit as a proportion of a different base. In every case, a **higher figure means the business is more profitable** — it is squeezing more profit out of each dollar of sales, assets or capital.

Profitability is not the same as liquidity. It is essential to keep two ideas separate:

- **Profitability** is about **earning profit** relative to a base — a measure of **performance** over a period, drawn mainly from the Income Statement.
- **Liquidity** is about the ability to **pay short-term debts** as they fall due — a measure of short-term financial **stability**, drawn mainly from the Balance Sheet and Cash Flow Statement.

A business can be **highly profitable yet short of cash** (for example, if its profits are tied up in new equipment, in slow-paying accounts receivable, or in the owner's drawings), and a business can be **very liquid yet barely profitable**. Because profit is measured on the **accrual basis** — revenues earned and expenses incurred, not cash received and paid — a profitable business is not automatically a liquid one. The two must be assessed **separately**, using different indicators.

The tools for assessing profitability. Chapter 18 develops a set of **profitability indicators**, each introduced in the sections that follow:

Indicator	Formula	Base	Section
Return on Owner's Investment (ROI)	$\text{Net Profit} \div \text{Average Capital} \times 100$	owner's investment	18B
Return on Assets (ROA)	$\text{Net Profit} \div \text{Average Total Assets} \times 100$	assets	18C
Asset Turnover (ATO)	$\text{Net Sales} \div \text{Average Total Assets}$	assets	18C
Net Profit Margin (NPM)	$\text{Net Profit} \div \text{Net Sales} \times 100$	sales	18D
Gross Profit Margin (GPM)	$\text{Gross Profit} \div \text{Net Sales} \times 100$	sales	18D

Each margin or return is expressed either as a **percentage** (the returns and margins, conventionally to one decimal place) or as a number of **times** (Asset Turnover). This section frames the chapter: it is about *how* these indicators are used to analyse and interpret performance. The mechanics of each indicator are taught in 18B–18D.

The analytical process. Calculating an indicator is only the first step. Turning a figure into a useful judgement about the business follows a clear sequence:

1. **Calculate** the indicator from the reports.
2. **Compare** it — against a benchmark. A single figure means almost nothing on its own; its meaning comes from comparison with the **same business in earlier periods** (a trend), with the business's own **budget**, or with **similar businesses** or an **industry average**.
3. **Interpret** the result — state, in plain terms, what the figure and any change *mean* (is profitability strong or weak, rising or falling?).
4. **Identify the cause** — explain *why* the indicator is at that level or has changed. This usually means reading several indicators together (for example, a falling Net Profit Margin with a steady Gross Profit Margin points to rising **other expenses**, not cost of sales) and drawing on **non-financial information**.
5. **Recommend** — suggest a strategy the business could use to maintain or improve the result.

Benchmarks and the qualitative characteristic of comparability. Because an indicator only becomes meaningful when compared, the choice of benchmark matters. Comparisons are only valid when made between **like and like** — the same business over time, or businesses of a similar type, size and circumstance. Comparing a small suburban retailer's return with a national wholesaler's, or comparing two years in which the business used **different accounting methods**, breaks the qualitative characteristic of **comparability** and can make the analysis misleading.

Financial and non-financial information. The indicators above are all **financial information** — data expressed in dollars and drawn from the accounting reports (net profit, net sales, total assets, capital). Financial information tells the analyst **what** happened to profitability, but often not **why**. To explain the causes and decide what to do, an analyst also needs **non-financial information** — information *not* expressed in dollars, such as:

- the **number of customers**, sales transactions, or units sold;
- the level of **customer satisfaction** or the number of customer complaints;
- the **number and skill of employees**, staff turnover, or workplace morale;
- **market share**, the state of the **economy**, the level of **competition**, and changes in the **product range** or in consumer tastes; and
- **social and environmental** factors affecting the business.

Non-financial information helps **explain** movements in the indicators (a fall in the Net Profit Margin might be explained by a new competitor forcing price cuts) and helps **predict** whether a trend will continue. Sound analysis reads financial and non-financial information **together**.

The limitations of ratio analysis. Profitability indicators are powerful, but they are not the whole story. Their limitations include:

- **A single figure is meaningless in isolation** — every indicator must be compared against a benchmark before it can be judged good or bad.
- **They are based on historical (past) data** — indicators report on a period that has already ended, so they describe past performance and are only a guide to the future, not a guarantee of it.
- **They ignore non-financial factors** — an indicator cannot capture staff morale, customer loyalty, competition or economic conditions, all of which affect performance.
- **Different accounting methods reduce comparability** — two businesses using different inventory cost-assignment (FIFO versus Identified Cost) or different depreciation methods can report different profits from identical trading, so inter-firm comparisons must be treated with caution.
- **They can move for the “wrong” reasons** — a return can rise not because profit grew but because the base shrank (for example, Return on Owner's Investment rising only because the owner withdrew capital), so a “better” ratio does not always mean a better-off business.

- **They rely on the quality of the reports** — an indicator is only as reliable as the **faithful representation** of the figures it is built from, and averaging or using period totals can hide seasonal fluctuations within the period.

For all these reasons, indicators are a **starting point** for analysis, not a conclusion: they tell the analyst *where* to look, after which the causes must be investigated using additional financial and non-financial information.

Worked model. Harnett Traders reports the following for the year ended 30 June 2026: Net Sales \$600 000, Gross Profit \$240 000, Net Profit \$60 000, average total assets \$500 000 and average capital \$300 000. Measuring its \$60 000 profit against each base:

Indicator	Working	Result	Base
Gross Profit Margin	$240\,000 \div 600\,000 \times 100$	40.0%	sales
Net Profit Margin	$60\,000 \div 600\,000 \times 100$	10.0%	sales
Return on Assets	$60\,000 \div 500\,000 \times 100$	12.0%	assets
Return on Owner's Investment	$60\,000 \div 300\,000 \times 100$	20.0%	owner's investment
Asset Turnover	$600\,000 \div 500\,000$	1.2 times	assets

The same \$60 000 profit tells a different story against each base: Harnett keeps **10 cents** of net profit from every sales dollar, earns **12 cents** on every dollar of assets, and returns **20 cents** to the owner on every dollar of capital invested. None of these figures can be judged “good” or “bad” until it is compared — with Harnett’s own earlier years, its budget, or similar traders.

Worked examples (scaffolded)

Example 1 — the meaning of profitability: measuring one profit against three bases

Cavendish Supplies reports Net Profit of \$48 000 for the year ended 30 June 2026. Its net sales were \$400 000, its average total assets \$320 000 and its average capital \$240 000. Calculate the Net Profit Margin, the Return on Assets and the Return on Owner’s Investment, and state which base each measures profit against.

Working	Comment
NPM = $\$48\,000 \div \$400\,000 \times 100 = \mathbf{12.0\%}$	Profit relative to sales — 12 cents of net profit in every sales dollar.
ROA = $\$48\,000 \div \$320\,000 \times 100 = \mathbf{15.0\%}$	Profit relative to assets — 15 cents earned on every dollar of assets used.
ROI = $\$48\,000 \div \$240\,000 \times 100 = \mathbf{20.0\%}$	Profit relative to the owner’s investment — 20 cents returned on every dollar of capital.

The one \$48 000 profit produces three different percentages because each is measured against a different base. The three indicators answer three different questions — how well sales are converted to profit, how hard the assets work, and what the owner earns on their investment — so profitability is assessed by reading them together, not by relying on any one alone.

Example 2 — the analytical process: calculate, compare, interpret, identify a cause, recommend

Delmore Trading reports Net Sales \$500 000, Gross Profit \$200 000 and Net Profit \$75 000 in 2025, and Net Sales \$550 000, Gross Profit \$220 000 and Net Profit \$66 000 in 2026. The industry average Net Profit Margin is 14.0%. Analyse the change in the business’s Net Profit Margin.

Working	Comment
Calculate — 2025 NPM = $\$75\,000 \div \$500\,000 \times 100 = \mathbf{15.0\%}$; 2026 NPM = $\$66\,000 \div \$550\,000 \times 100 = \mathbf{12.0\%}$.	Step 1: compute the indicator for each period.
Compare — the NPM fell 3.0 percentage points	Step 2: a trend <i>and</i> a benchmark — a figure means

Working	Comment
(15.0% → 12.0%) and is now below the 14.0% industry benchmark.	nothing until compared.
Interpret — the business now keeps only 12 cents of net profit in each sales dollar, down from 15, so its profitability has deteriorated .	Step 3: state plainly what the change means.
Identify the cause — the GPM held steady ($200\,000 \div 500\,000 = 40.0\%$; $220\,000 \div 550\,000 = 40.0\%$), so cost of sales is under control; the fall is in other expenses , which grew faster than sales.	Step 4: read indicators together to locate the cause.
Recommend — review and control other expenses (advertising, wages, rent) so they rise no faster than sales.	Step 5: suggest a strategy to address the cause.

Because the Gross Profit Margin was unchanged while the Net Profit Margin fell, the deterioration lies **below** the gross-profit line — an expense-control issue rather than a cost-of-sales one. To confirm *why* other expenses rose, the business would also draw on **non-financial information** (for example, extra staff hired, or a costly advertising campaign).

Worked examples (unscaffolded)

Example 3 — distinguishing profitability from liquidity

Ferngrove Retail reports Net Profit of \$90 000 on Net Sales of \$600 000 for the year, giving a Net Profit Margin of $\$90\,000 \div \$600\,000 \times 100 = 15.0\%$. Yet at balance day its current assets are \$80 000 and its current liabilities are \$100 000, a Working Capital Ratio of $\$80\,000 \div \$100\,000 = 0.80 : 1$. Explain what these two indicators reveal, and why a profitable business can still be in difficulty.

The Net Profit Margin of 15.0% is a **profitability** measure: it shows the business earns a healthy 15 cents of net profit on every sales dollar, so its trading performance over the period was strong. The Working Capital Ratio of 0.80 : 1 is a **liquidity** measure: it shows the business holds only 80 cents of current assets for every dollar of current liabilities, so it may **not** be able to meet its short-term debts as they fall due.

Profitability and liquidity measure different things. Profit is earned on the **accrual basis** — it includes credit sales not yet collected in cash and excludes the cash spent on non-current assets, drawings and loan repayments — so a business can report a strong profit while its bank account runs dry. Ferngrove's profits may be locked up in accounts receivable, in new equipment, or drawn out by the owner, leaving it short of the cash it needs to pay suppliers and wages.

∴ Ferngrove is **profitable but illiquid**: a strong Net Profit Margin does not guarantee it can pay its debts, so its profitability and its liquidity must be assessed separately.

Example 4 — a ratio that “improves” for the wrong reason

Grantham Traders reports Net Profit of \$54 000 on average capital of \$300 000 in 2025, and Net Profit of \$55 000 on average capital of \$250 000 in 2026 — the fall in average capital arising because the owner withdrew a large amount during the year. Calculate the Return on Owner's Investment for each year and explain why the change should be interpreted with care.

ROI 2025 = $\$54\,000 \div \$300\,000 \times 100 = 18.0\%$. ROI 2026 = $\$55\,000 \div \$250\,000 \times 100 = 22.0\%$. On the face of it, the ROI has *improved* by 4 percentage points, which looks like a better return for the owner.

But the improvement is almost entirely because the **base shrank**, not because the business earned much more profit: net profit rose only \$1 000 (from \$54 000 to \$55 000), while average capital fell \$50 000 because the owner took capital out. The higher ROI reflects a **smaller investment** earning virtually the same profit — a different situation from the business genuinely becoming more profitable.

∴ this illustrates a key **limitation** of ratio analysis: an indicator can move for the “wrong” reason, so a rising ratio does not always mean a better-off business. The figure must be interpreted alongside its **cause** — here, the withdrawal of capital — and supported by additional information before any judgement is made.

Practice questions — scaffolded

Question 1

Ashworth Trading reports Net Profit of \$36 000 for the year ended 30 June 2026. Its net sales were \$300 000, its average total assets \$240 000 and its average capital \$180 000.

- Calculate the Net Profit Margin, and state the base it measures profit against.
- Calculate the Return on Assets, and state the base it measures profit against.
- Calculate the Return on Owner’s Investment, and state the base it measures profit against.

Question 2

Belrose Supplies reports Net Sales \$400 000 and Net Profit \$60 000 in 2025, and Net Sales \$450 000 and Net Profit \$54 000 in 2026. The industry average Net Profit Margin is 13.0%.

- Calculate the Net Profit Margin for each year.
- State whether the business’s profitability improved or deteriorated, and by how many percentage points.
- Compare the 2026 result with the industry benchmark, and explain in one sentence why the comparison is useful.

Question 3

Carrington Retail reports Net Profit of \$72 000 on Net Sales of \$480 000 for the year. At balance day its current assets are \$90 000 and its current liabilities are \$120 000.

- Calculate the Net Profit Margin, and state whether it is a measure of profitability or of liquidity.
- Calculate the Working Capital Ratio, and state whether it is a measure of profitability or of liquidity.
- Explain, in one or two sentences, why a business with a strong Net Profit Margin can still struggle to pay its short-term debts.

Question 4

Delford Traders reports the following.

Indicator base	2024	2025	2026
Net Sales (\$)	500 000	500 000	600 000
Net Profit (\$)	50 000	55 000	78 000

- Calculate the Net Profit Margin for each of the three years.
- Describe the trend in profitability over the three years.
- State which benchmark (a prior year, a budget, or a similar business) the three-year trend calculated in part a represents, and name one other benchmark the business could also use.

Question 5

Everton Cafe reports Net Profit \$48 000 on Net Sales \$300 000 in 2025, and Net Profit \$45 500 on Net Sales \$350 000 in 2026. The owner has also gathered the following data: the number of customer complaints, net sales in dollars, the percentage of repeat customers, average total assets in dollars, and net profit in dollars.

- Classify each of the five items of data as **financial** or **non-financial** information.
- Calculate the Net Profit Margin for each year.

- c. Explain how one item of **non-financial** information could help the owner explain the fall in the Net Profit Margin.

Question 6

Fenwick Traders reports Net Profit of \$75 000 on average capital of \$300 000 for the year ended 30 June 2026.

- a. Calculate the Return on Owner's Investment.
- b. Explain why this figure, on its own, tells the owner very little about the business's performance.
- c. State one further limitation of ratio analysis, other than the need for a benchmark.

Practice questions — unscaffolded

Question 7

Gleneagles Supplies reports the following for the year ended 30 June 2026: Net Sales \$800 000, Gross Profit \$320 000, Net Profit \$96 000, average total assets \$600 000 and average capital \$480 000. Calculate the Gross Profit Margin, the Net Profit Margin, the Return on Assets and the Return on Owner's Investment, and state which base each measures profit against.

Question 8

Harwood Trading reports Net Sales \$500 000, Gross Profit \$200 000 and Net Profit \$75 000 in 2025, and Net Sales \$500 000, Gross Profit \$175 000 and Net Profit \$50 000 in 2026. Work through the analytical process: calculate the Gross Profit Margin and Net Profit Margin for each year, compare and interpret the change, identify the main cause, and recommend a response.

Question 9

Ironwood Retail reports Net Profit of \$120 000 on Net Sales of \$750 000 for the year, and at balance day holds current assets of \$60 000 against current liabilities of \$100 000. Calculate the Net Profit Margin and the Working Capital Ratio, and discuss what the two indicators together reveal about the business's performance and position.

Question 10

Jarrah Traders reports Net Profit of \$60 000 on average capital of \$400 000 in 2025, and Net Profit of \$60 000 on average capital of \$300 000 in 2026, the fall in capital arising because the owner withdrew funds. Calculate the Return on Owner's Investment for each year, and discuss why the change should not be taken at face value as an improvement in the business.

Question 11

Two competing businesses in the same industry report for the year. Kelmscott Alpha earns Net Profit of \$70 000 on Net Sales of \$500 000; Kelmscott Beta earns Net Profit of \$72 000 on Net Sales of \$600 000. Calculate the Net Profit Margin for each, state which is more profitable per sales dollar, and explain two reasons why comparing the two businesses' indicators directly must be done with caution.

Question 12

Lyndhurst Cafe reports a Net Profit Margin of 18.0% in 2025 (Net Profit \$54 000 on Net Sales \$300 000) and 14.0% in 2026 (Net Profit \$49 000 on Net Sales \$350 000). Explain the role that **non-financial information** plays in interpreting this fall, and give three examples of non-financial information that could be relevant to a cafe.

Question 13

Morden Traders reports the following.

Indicator base	2024	2025	2026
Net Sales (\$)	400 000	450 000	500 000
Gross Profit (\$)	160 000	180 000	200 000

Indicator base	2024	2025	2026
Net Profit (\$)	60 000	58 500	55 000

Calculate the Gross Profit Margin and the Net Profit Margin for each year, describe the trend in each, and identify where the change in profitability arose.

Question 14

Explain why the fact that profitability indicators are calculated from **historical (past) financial reports** is a limitation when a business uses them to plan for the future. In your answer, refer to one other limitation of ratio analysis.

Question 15

Norwood Supplies reports the following.

Indicator base	2025	2026
Net Sales (\$)	600 000	640 000
Net Profit (\$)	90 000	80 000
Average total assets (\$)	500 000	640 000
Average capital (\$)	360 000	400 000

Calculate the Net Profit Margin, Return on Assets and Return on Owner's Investment for each year, describe what has happened to the business's profitability, and state one reason why non-financial information would be needed to complete the analysis.

Question 16

Oakridge Retail's Return on Owner's Investment improved from 16.0% (Net Profit \$80 000 on average capital \$500 000) in 2025 to 20.0% (Net Profit \$100 000 on average capital \$500 000) in 2026. Over the same two years its Working Capital Ratio fell from 1.80 : 1 (current assets \$90 000 ÷ current liabilities \$50 000) to 0.90 : 1 (current assets \$99 000 ÷ current liabilities \$110 000). Discuss why a rise in a profitability indicator does not, on its own, mean the business is better off, distinguishing profitability from liquidity.

Question 17

A business reports a Net Profit Margin of 11.0% (Net Profit \$55 000 on Net Sales \$500 000) for the year. Discuss why this figure, on its own, cannot tell the owner whether the business performed well, and identify the comparisons that would make it meaningful. Refer to the qualitative characteristic of comparability in your answer.

Question 18

Pemberton Traders reports the following, and the industry average Net Profit Margin is 12.0%.

Indicator base	2025	2026
Net Sales (\$)	500 000	550 000
Gross Profit (\$)	200 000	231 000
Net Profit (\$)	60 000	55 000
Average total assets (\$)	480 000	500 000
Average capital (\$)	300 000	275 000

Calculate the Gross Profit Margin, Net Profit Margin, Return on Assets and Return on Owner's Investment for each year. Then work through the full analytical process — compare the results (over time and against the benchmark), interpret them, identify the main cause of the change in profitability, and recommend a response.

Answers

1.
 - a. NPM 12.0% (sales) b. ROA 15.0% (assets) c. ROI 20.0% (owner's investment)
2.
 - a. 2025 15.0%; 2026 12.0% b. Deteriorated, by 3.0 percentage points c. Below the 13.0% benchmark
3.
 - a. NPM 15.0% — profitability b. WCR 0.75 : 1 — liquidity c. See solutions
4.
 - a. 2024 10.0%; 2025 11.0%; 2026 13.0% b. Rising (improving) c. Prior years (trend); e.g. budget or industry average
5.
 - a. Financial: net sales, average total assets, net profit; non-financial: customer complaints, repeat customers b. 2025 16.0%; 2026 13.0% c. See solutions
6.
 - a. ROI 25.0% b. See solutions c. See solutions
7. GPM 40.0% (sales); NPM 12.0% (sales); ROA 16.0% (assets); ROI 20.0% (owner's investment)
8. 2025 GPM 40.0%/NPM 15.0%; 2026 GPM 35.0%/NPM 10.0%; both fell 5 points — cost-of-sales cause
9. NPM 16.0%; WCR 0.60 : 1; profitable but illiquid
10. 2025 ROI 15.0%; 2026 ROI 20.0%; rise driven by capital withdrawn, not more profit
11. Alpha 14.0%; Beta 12.0%; Alpha more profitable per sales dollar
12. 2025 18.0%; 2026 14.0%; see solutions
13. GPM 40.0% every year; NPM 15.0% → 13.0% → 11.0%; steady GPM, falling NPM — other expenses
14. See solutions
15. 2025 NPM 15.0%/ROA 18.0%/ROI 25.0%; 2026 NPM 12.5%/ROA 12.5%/ROI 20.0%; profitability deteriorated
16. 2025 ROI 16.0%, WCR 1.80 : 1; 2026 ROI 20.0%, WCR 0.90 : 1; more profitable but less liquid
17. NPM 11.0%; see solutions
18. 2025 GPM 40.0%/NPM 12.0%/ROA 12.5%/ROI 20.0%; 2026 GPM 42.0%/NPM 10.0%/ROA 11.0%/ROI 20.0%; other-expenses cause

Fully-worked solutions

Question 1

- a. $\text{NPM} = \$36\,000 \div \$300\,000 \times 100 = \mathbf{12.0\%}$ — profit measured against **net sales**; the business keeps 12 cents of net profit in every sales dollar.
- b. $\text{ROA} = \$36\,000 \div \$240\,000 \times 100 = \mathbf{15.0\%}$ — profit measured against **average total assets**; the business earns 15 cents on every dollar of assets it uses.
- c. $\text{ROI} = \$36\,000 \div \$180\,000 \times 100 = \mathbf{20.0\%}$ — profit measured against **average capital**; the owner earns 20 cents on every dollar of their investment.

Question 2

- a. $2025 \text{ NPM} = \$60\,000 \div \$400\,000 \times 100 = \mathbf{15.0\%}$; $2026 \text{ NPM} = \$54\,000 \div \$450\,000 \times 100 = \mathbf{12.0\%}$.
- b. Profitability **deteriorated**: the Net Profit Margin fell **3.0 percentage points** (from 15.0% to 12.0%), so the business kept fewer cents of net profit in every sales dollar in 2026, even though total sales rose.
- c. At 12.0%, the 2026 margin is **below** the 13.0% industry benchmark — the business is now less profitable than the typical business in its industry. Comparing against an industry benchmark is useful because a figure means nothing in isolation; the benchmark shows whether 12.0% is a good result for this kind of business or a poor one.

Question 3

- $\text{NPM} = \$72\,000 \div \$480\,000 \times 100 = \mathbf{15.0\%}$ — a measure of **profitability** (profit relative to sales).
- $\text{WCR} = \$90\,000 \div \$120\,000 = \mathbf{0.75 : 1}$ — a measure of **liquidity** (current assets available to meet current liabilities).
- Profit is measured on the **accrual basis**, so a strong Net Profit Margin does not mean the business holds cash: its profits may be tied up in accounts receivable not yet collected, in new non-current assets, or withdrawn by the owner as drawings. With only 75 cents of current assets for every dollar of current liabilities, Carrington may lack the liquid resources to pay its short-term debts as they fall due, despite being profitable.

Question 4

- $2024 \text{ NPM} = \$50\,000 \div \$500\,000 \times 100 = \mathbf{10.0\%}$; $2025 \text{ NPM} = \$55\,000 \div \$500\,000 \times 100 = \mathbf{11.0\%}$; $2026 \text{ NPM} = \$78\,000 \div \$600\,000 \times 100 = \mathbf{13.0\%}$.
- The Net Profit Margin has **risen steadily**, from 10.0% to 11.0% to 13.0% — a total improvement of 3 percentage points over the three years. Profitability is improving: the business keeps a growing share of each sales dollar as net profit.
- The trend above compares the business with **itself in prior years** (a trend over time). One other benchmark it could use is its own **budget** (planned Net Profit Margin) or the **industry average** / a **similar business's** result.

Question 5

- Financial** information (expressed in dollars): net sales, average total assets, and net profit. **Non-financial** information (not expressed in dollars): the number of customer complaints, and the percentage of repeat customers.
- $2025 \text{ NPM} = \$48\,000 \div \$300\,000 \times 100 = \mathbf{16.0\%}$; $2026 \text{ NPM} = \$45\,500 \div \$350\,000 \times 100 = \mathbf{13.0\%}$.
- The financial figures show the margin fell by 3 percentage points but not **why**. Non-financial information supplies the cause: for example, a **rise in customer complaints** might reveal falling service quality that forced the cafe to discount prices or lose repeat trade, while a **fall in the percentage of repeat customers** could point to lost loyalty as new competitors opened nearby. Either explains the squeezed margin in a way the dollar figures alone cannot, so the owner can act on the real cause.

Question 6

- $\text{ROI} = \$75\,000 \div \$300\,000 \times 100 = \mathbf{25.0\%}$.
- A single figure of 25.0% is **meaningless in isolation** — it cannot be judged good or bad until it is **compared** against a benchmark. Only by comparing it with Fenwick's own ROI in earlier years, with its budget, or with the return of similar businesses (or of alternative investments the owner could make) can the owner tell whether 25.0% is a strong return or a disappointing one.
- Any one of: indicators are based on **historical (past) data**, so they describe performance that has already occurred and are only a guide to the future; they **ignore non-financial factors** such as competition, staff morale and customer loyalty; they can be distorted by **different accounting methods**, reducing comparability between businesses; a ratio can move for the **“wrong” reason** (a return rising because its base shrank rather than because profit grew); and they are only as reliable as the **faithful representation** of the reports they are drawn from.

Question 7

$\text{GPM} = \$320\,000 \div \$800\,000 \times 100 = \mathbf{40.0\%}$ — profit relative to **sales**. $\text{NPM} = \$96\,000 \div \$800\,000 \times 100 = \mathbf{12.0\%}$ — profit relative to **sales**. $\text{ROA} = \$96\,000 \div \$600\,000 \times 100 = \mathbf{16.0\%}$ — profit relative to **assets**. $\text{ROI} = \$96\,000 \div \$480\,000 \times 100 = \mathbf{20.0\%}$ — profit relative to the **owner's investment**.

Gleneagles keeps 40 cents of gross profit and 12 cents of net profit in every sales dollar, earns 16 cents on every dollar of assets, and returns 20 cents to the owner on every dollar of capital. Each figure would be judged against Gleneagles's own trend, its budget, or similar businesses.

Question 8

Calculate. 2025 GPM = $\$200\,000 \div \$500\,000 \times 100 = 40.0\%$; 2025 NPM = $\$75\,000 \div \$500\,000 \times 100 = 15.0\%$.
2026 GPM = $\$175\,000 \div \$500\,000 \times 100 = 35.0\%$; 2026 NPM = $\$50\,000 \div \$500\,000 \times 100 = 10.0\%$.

Compare and interpret. Net sales were identical in both years, so the falls are a genuine loss of profitability. The **GPM fell 5 percentage points** (40.0% → 35.0%) and the **NPM fell 5 percentage points** (15.0% → 10.0%). The business now keeps only 10 cents of net profit in each sales dollar, down from 15 — profitability has clearly **deteriorated**.

Identify the cause. Because the NPM fell by the **same** amount as the GPM (5 points each), the whole of the decline came from **above** the gross-profit line — that is, from **cost of sales** rising as a share of sales (higher cost prices, lower selling prices, or larger discounts). Other expenses as a share of sales were steady (the gap between the two margins held at 25 points), so expense control was not the problem.

Recommend. The business should address **cost of sales** — for example, negotiate better buying prices with suppliers, review its mark-up and selling prices, or reduce the discounts it gives — since that is where the profitability was lost. To pin down the reason cost of sales rose, it should also examine non-financial information such as supplier changes or competitive price pressure.

Question 9

NPM = $\$120\,000 \div \$750\,000 \times 100 = 16.0\%$. WCR = $\$60\,000 \div \$100\,000 = 0.60 : 1$.

The two indicators point in **opposite directions**. The Net Profit Margin of 16.0% shows Ironwood is **highly profitable** — its trading keeps a strong 16 cents of net profit in every sales dollar. The Working Capital Ratio of 0.60 : 1 shows it is **seriously illiquid** — it holds only 60 cents of current assets for every dollar of current liabilities, so it may be unable to pay its short-term debts as they fall due.

This is possible because profitability and liquidity measure different things: profitability (from the Income Statement, on the accrual basis) is about **earning profit**, while liquidity (from the Balance Sheet) is about having the **cash and near-cash resources to pay debts now**. Ironwood's profits may be locked up in slow-paying accounts receivable, in new non-current assets, or drawn out by the owner, leaving too little working capital.

∴ a strong profit performance has **not** made the business safe: Ironwood is profitable but illiquid, and unless it improves its liquidity it risks being unable to meet its obligations despite earning good profit. The two dimensions must be assessed separately.

Question 10

2025 ROI = $\$60\,000 \div \$400\,000 \times 100 = 15.0\%$; 2026 ROI = $\$60\,000 \div \$300\,000 \times 100 = 20.0\%$.

At first glance the Return on Owner's Investment **improved** by 5 percentage points, which looks like a better return for the owner. But net profit was **unchanged** at \$60 000 in both years — the business did not earn a cent more. The ROI rose only because the **base shrank**: average capital fell from \$400 000 to \$300 000 after the owner withdrew funds, so the same \$60 000 profit is now measured against a smaller investment.

This illustrates a limitation of ratio analysis: an indicator can move for the **“wrong” reason**. A higher ROI would normally signal stronger performance, but here it reflects a **smaller amount invested**, not a more profitable business — and a business earning the same profit on less capital is not necessarily better off, especially if the withdrawn capital weakened its cash position. The figure must therefore be interpreted alongside its **cause** (the capital withdrawal) rather than taken at face value.

Question 11

Alpha NPM = $\$70\,000 \div \$500\,000 \times 100 = 14.0\%$; Beta NPM = $\$72\,000 \div \$600\,000 \times 100 = 12.0\%$. **Alpha is more profitable per sales dollar**, keeping 14 cents of net profit in each sales dollar against Beta's 12 — even though Beta earns more net profit in **dollars** (\$72 000 versus \$70 000).

Two reasons to compare the businesses with caution:

- **Different accounting methods.** If the two use different inventory cost-assignment methods (FIFO versus Identified Cost) or different depreciation methods, they can report different profits from identical trading, so the margins are not measured on the same basis — a breach of **comparability**.
- **Different circumstances.** Although in the same industry, the businesses may differ in size, location, product range, age or customer base, any of which can affect the margins for reasons unrelated to how well each is managed. A single indicator cannot capture these differences, so the comparison indicates *where* to look rather than settling which business is “better”.

Question 12

2025 NPM = $\$54\,000 \div \$300\,000 \times 100 = 18.0\%$; 2026 NPM = $\$49\,000 \div \$350\,000 \times 100 = 14.0\%$.

The financial figures show that profitability **fell** — the Net Profit Margin dropped 4 percentage points — but on their own they do not explain **why**. This is where **non-financial information** is essential: it supplies the causes behind the numbers and helps the owner decide how to respond, and it helps judge whether the decline is likely to continue. For a cafe, relevant non-financial information could include:

- the **number of customers served** (or covers per day) and whether foot traffic has fallen;
- the level of **customer satisfaction** or the number of **complaints** about food, price or service;
- the **number and experience of staff**, staff turnover, or morale;
- the level of **local competition** (a new cafe opening nearby) and general **economic conditions** affecting how much customers spend.

Read alongside the margins, such information might reveal, for instance, that a new competitor forced price discounting, or that higher staffing lifted expenses faster than sales — explanations the dollar figures alone cannot give.

Question 13

GPM: 2024 = $\$160\,000 \div \$400\,000 \times 100 = 40.0\%$; 2025 = $\$180\,000 \div \$450\,000 \times 100 = 40.0\%$; 2026 = $\$200\,000 \div \$500\,000 \times 100 = 40.0\%$. NPM: 2024 = $\$60\,000 \div \$400\,000 \times 100 = 15.0\%$; 2025 = $\$58\,500 \div \$450\,000 \times 100 = 13.0\%$; 2026 = $\$55\,000 \div \$500\,000 \times 100 = 11.0\%$.

The **Gross Profit Margin was steady** at 40.0% across all three years, so the business held its cost of sales in step with its selling prices — cost-of-sales control was sound. The **Net Profit Margin fell steadily**, from 15.0% to 13.0% to 11.0% — a decline of 4 percentage points.

Because the GPM did not move while the NPM fell, the deterioration arose **entirely below the gross-profit line — in other expenses**, which grew faster than sales (the gap between the two margins widened from 25 to 29 percentage points). So although the business buys and prices its inventory just as well as before, its control of other expenses (wages, advertising, rent) is worsening, and that is where management should focus.

Question 14

Profitability indicators are calculated from **past financial reports** — the Income Statement and Balance Sheet of a period that has already ended. This is a limitation for planning because the figures describe performance that has **already occurred**; they are only a **guide** to what may happen next, not a guarantee. Conditions can change after balance day — a new competitor, an economic downturn, a change in supplier prices or in consumer tastes — so a strong past indicator does not ensure a strong future result, and a business that relies only on historical ratios to plan may be caught out by conditions the ratios could not foresee.

A further limitation is that indicators **ignore non-financial factors**: they cannot capture customer loyalty, staff morale, competition or economic conditions, all of which shape future performance. For sound planning, therefore, historical indicators must be combined with **non-financial information** and with forward-looking tools such as budgets, rather than used on their own.

Question 15

NPM: 2025 = $\$90\,000 \div \$600\,000 \times 100 = 15.0\%$; 2026 = $\$80\,000 \div \$640\,000 \times 100 = 12.5\%$. ROA: 2025 = $\$90\,000 \div \$500\,000 \times 100 = 18.0\%$; 2026 = $\$80\,000 \div \$640\,000 \times 100 = 12.5\%$. ROI: 2025 = $\$90\,000 \div \$360\,000 \times 100 = 25.0\%$; 2026 = $\$80\,000 \div \$400\,000 \times 100 = 20.0\%$.

Every profitability indicator **fell** from 2025 to 2026: the Net Profit Margin from 15.0% to 12.5%, the Return on Assets from 18.0% to 12.5%, and the Return on Owner's Investment from 25.0% to 20.0%. So across all three bases — sales, assets and the owner's investment — the business became **less profitable**. The Return on Assets fell the most (5.5 percentage points): net profit dropped while average total assets rose sharply (from \$500 000 to \$640 000), so the extra assets acquired did not yet generate proportionate profit.

Non-financial information would be needed to **complete the analysis** by explaining *why* profitability fell — for example, whether the new assets are yet to reach full productive use, whether increased competition squeezed prices, or whether economic conditions cut demand. The indicators show *that* performance weakened and *where*, but only additional financial and non-financial information can reveal the **cause** and guide a response.

Question 16

2025 ROI = $\$80\,000 \div \$500\,000 \times 100 = 16.0\%$; 2026 ROI = $\$100\,000 \div \$500\,000 \times 100 = 20.0\%$. 2025 WCR = $\$90\,000 \div \$50\,000 = 1.80 : 1$; 2026 WCR = $\$99\,000 \div \$110\,000 = 0.90 : 1$.

The Return on Owner's Investment genuinely **improved** — from 16.0% to 20.0%, and this time because net profit rose (from \$80 000 to \$100 000) on an unchanged capital base, so the business really is more profitable. But over the same period its liquidity **collapsed**: the Working Capital Ratio fell from a comfortable 1.80 : 1 to just 0.90 : 1, meaning the business now holds less than a dollar of current assets for every dollar of current liabilities and may be unable to pay its short-term debts.

A rise in a profitability indicator therefore does **not**, on its own, mean the business is better off, because **profitability and liquidity are different dimensions of performance**. Profitability measures how well the business earns profit (from the Income Statement, on the accrual basis); liquidity measures whether it can pay its debts as they fall due (from the Balance Sheet). Oakridge has become **more profitable but less liquid** — perhaps it invested its extra profits in non-current assets or expanded credit to customers, lifting profit while draining working capital. A full evaluation must weigh **both**: strong and improving profitability is undermined if the business cannot meet its obligations, so the improved ROI must be read alongside the deteriorating liquidity, not celebrated in isolation.

Question 17

NPM = $\$55\,000 \div \$500\,000 \times 100 = 11.0\%$.

An 11.0% Net Profit Margin **on its own** cannot tell the owner whether the business performed well, because a **single figure is meaningless in isolation** — there is nothing to judge it against. Eleven cents of net profit per sales dollar might be excellent in one industry and poor in another, and it might represent an improvement on last year or a decline. The figure only acquires meaning once it is **compared** with a benchmark:

- the **same business in earlier periods** (a trend — is the margin rising or falling?);
- the business's own **budget** (did it meet the planned margin?); and
- **similar businesses** or an **industry average** (is it keeping pace with its competitors?).

These comparisons rely on the qualitative characteristic of **comparability**: the margin must be measured on a **consistent basis** — the same accounting methods across periods, and like-with-like businesses — so that differences in the figure reflect real differences in performance rather than differences in how the figures were prepared. Without a valid benchmark, the 11.0% is simply a number; with one, it becomes a judgement about how well the business performed.

Question 18

Calculate. 2025: GPM = $\$200\,000 \div \$500\,000 \times 100 = 40.0\%$; NPM = $\$60\,000 \div \$500\,000 \times 100 = 12.0\%$; ROA = $\$60\,000 \div \$480\,000 \times 100 = 12.5\%$; ROI = $\$60\,000 \div \$300\,000 \times 100 = 20.0\%$. 2026: GPM = $\$231\,000 \div \$550\,000 \times 100 = 42.0\%$; NPM = $\$55\,000 \div \$550\,000 \times 100 = 10.0\%$; ROA = $\$55\,000 \div \$500\,000 \times 100 = 11.0\%$; ROI = $\$55\,000 \div \$275\,000 \times 100 = 20.0\%$.

Indicator	2025	2026	Movement
Gross Profit Margin	40.0%	42.0%	up 2.0
Net Profit Margin	12.0%	10.0%	down 2.0
Return on Assets	12.5%	11.0%	down 1.5
Return on Owner's Investment	20.0%	20.0%	unchanged

Compare. Against the prior year, the Gross Profit Margin **rose** 2 points while the Net Profit Margin **fell** 2 points; the Return on Assets fell 1.5 points and the Return on Owner's Investment held at 20.0%. Against the **industry benchmark**, the 2026 Net Profit Margin of 10.0% is now **below** the 12.0% average, where in 2025 it had matched it.

Interpret. The picture is mixed but the overall direction is a **deterioration** in profitability: the broad measure of profit-per-sales-dollar (the NPM) fell and slipped below the industry average, and the return on assets weakened, even though the gross margin improved and the owner's return held steady.

Identify the cause. The GPM **rose** (better buying prices, mark-up, or fewer discounts), so cost of sales is *not* the problem. Yet the NPM **fell**, which means **other expenses** grew much faster than sales: the gap between the two margins widened from 28 points (40.0% – 12.0%) to 32 points (42.0% – 10.0%), so other expenses climbed from 28 cents to 32 cents in every sales dollar. The business improved its gross trading but lost more than that gain to poorly controlled other expenses. (The steady ROI, meanwhile, was partly propped up by a **smaller capital base** — average capital fell from \$300 000 to \$275 000 — rather than by stronger profit, so it too should be read with care.)

Recommend. Management should focus on **controlling other expenses** — reviewing wages, advertising, rent and other overheads so they rise no faster than sales — since that, not cost of sales, is where the Net Profit Margin was lost. It should also investigate, using **non-financial information**, why those expenses grew (for example, extra staff, a marketing campaign, or higher rent), and confirm that the steady ROI is not merely the result of the owner withdrawing capital.

Chapter 18 Evaluating performance: profitability — 18B Return on Owner's Investment and the Debt Ratio

Theory

Profitability measures how well a business generates profit relative to the resources it uses. Two indicators bring this into sharp focus from the **owner's** point of view: the **Return on Owner's Investment**, which measures the profit the owner earns on the capital they have put into the business, and the **Debt Ratio**, which measures how much of the business's assets are funded by outside debt rather than by the owner. The first is a **profitability** indicator; the second is a **stability** (financial-structure) indicator, but it is examined alongside profitability because a business's level of debt directly affects both the **return** the owner earns and the **risk** they carry.

Return on Owner's Investment (ROI). The **Return on Owner's Investment** is a measure of how effectively a business has used the owner's **capital** to earn **profit**. It expresses net profit as a percentage of the average capital the owner had invested during the period:

$$\text{Return on Owner's Investment} = \frac{\text{Net Profit}}{\text{Average Capital}} \times 100$$

where

$$\text{Average Capital} = \frac{\text{Opening Capital} + \text{Closing Capital}}{2}$$

Three points about the formula matter:

- **Net Profit** is the numerator because ROI measures the reward the business has earned *for the owner*. It is the profit after all expenses — including any **interest** on borrowings — because interest is a genuine cost of running the business, and what remains is the return that actually belongs to the owner.
- **Average Capital** is used because the indicator compares a **flow** (net profit, earned across the whole period) with a **balance** (capital, measured at a point in time). Capital changes through the year as profit is added and drawings are taken, so averaging the **opening** and **closing** capital balances gives a figure representing the level of investment the owner had in the business *throughout* the period, making the comparison like-with-like.
- **× 100** converts the result into a **percentage**, conventionally rounded to **one decimal place**. An ROI of **20.0%** means the business earned **\$20 of net profit for every \$100** of the owner's average capital.

Interpreting ROI. ROI answers the question every owner asks: “*What return am I getting on the money I have tied up in this business?*” A **higher** ROI is better — it means the owner's capital is working harder and earning more. The figure only becomes meaningful once it is **compared**:

- against the **same business in previous periods** — is the owner's return improving or declining?
- against **similar businesses** or an **industry benchmark** — is the business earning a competitive return for its type? Comparing only *like* businesses respects the qualitative characteristic of **comparability**.
- against the return available from an **alternative investment** — the owner could instead place their capital in a **term deposit, shares** or another venture. If a bank term deposit returns about 5% for almost no risk and effort, an owner earning, say, 20% is being well rewarded for the extra **risk** and **effort** of running a business; an owner earning only 4% might do better closing the business and depositing the funds. ROI must always be weighed against the **risk** taken to earn it — a higher return is only attractive if the risk is acceptable.

The Debt Ratio. The **Debt Ratio** measures the proportion of a business's assets that are financed by **external liabilities** (debt) rather than by the owner. It is a measure of the business's **gearing** — its reliance on borrowed funds:

$$\text{Debt Ratio} = \frac{\text{Total Liabilities}}{\text{Total Assets}} \times 100$$

Both figures are taken from the **Balance Sheet** as at balance day. Because **Total Assets = Total Liabilities + Owner's Equity**, whatever proportion of the assets is *not* funded by liabilities is funded by the owner. A Debt Ratio

of **40.0%** therefore means **40% of the assets are financed by outside parties** and the remaining **60% by the owner**. The result is a percentage, conventionally rounded to **one decimal place**.

Interpreting the Debt Ratio — gearing. The Debt Ratio describes how **highly geared** a business is:

- A **higher** Debt Ratio means the business relies **more heavily on debt** to fund its assets — it is **more highly geared**. More of its assets are financed by lenders, so it carries larger, fixed **interest** commitments and a greater risk of being unable to meet its debts.
- A **lower** Debt Ratio means the business relies **more on the owner's own funds** — it is **less highly geared** (more conservatively financed). It carries less debt and lower risk, but may be making little use of the potential of borrowing to expand.

Like every indicator, the Debt Ratio is judged by **comparison** — against the business's own trend, similar businesses, and what is normal for the industry. There is no single “correct” level: a stable, asset-backed business can safely carry more debt than a business with volatile earnings.

The relationship between gearing and return. Gearing links the two indicators, because the level of debt affects the owner's **return** and their **risk**:

- **Effect on return.** Borrowing to buy assets adds to net profit if those assets earn **more** than the interest the debt costs. When a business earns a higher **return on its assets** than the **interest rate** it pays on its debt, borrowing lifts ROI: the surplus earned on the borrowed funds flows to the owner, who is earning it on a **smaller** base of their own capital. This is **favourable (positive) gearing**. If, however, the return on assets falls **below** the cost of the debt, gearing works in reverse and **drags ROI down**.
- **Effect on risk. Interest is a fixed commitment** — it must be paid whether the business trades well or badly. The more highly geared a business, the larger these fixed commitments, so in a downturn its profit (and ROI) falls **faster** and can turn into a **loss**, and the risk that it cannot meet its debts — and may become insolvent — rises. Higher gearing also makes lenders more cautious about lending further.

So a higher Debt Ratio offers the owner the prospect of a **higher return** but at the cost of **higher risk**. Choosing a level of gearing is a trade-off: enough debt to lift the return, but not so much that the fixed commitments threaten the business if trading weakens.

Worked model. Kelso Traders reports a net profit of \$44 000 for the year ended 30 June 2026. The owner's capital was \$200 000 at the start of the year and \$240 000 at the end. Its Balance Sheet as at 30 June 2026 shows total assets of \$400 000, financed by total liabilities of \$160 000 and owner's equity of \$240 000.

Average capital = $(\$200\,000 + \$240\,000) \div 2 = \$220\,000$. ROI = $\$44\,000 \div \$220\,000 \times 100 = 20.0\%$. Debt Ratio = $\$160\,000 \div \$400\,000 \times 100 = 40.0\%$.

Return on Owner's Investment

Working	\$
Average capital $(200\,000 + 240\,000) \div 2$	220 000
Net profit	44 000
Return on Owner's Investment = $44\,000 \div 220\,000 \times 100$	20.0%

Debt Ratio

Working	\$
Total liabilities	160 000
Total assets	400 000
Debt Ratio = $160\,000 \div 400\,000 \times 100$	40.0%

Kelso returned **\$20 for every \$100** of the owner's capital — well above the roughly 5% a term deposit would pay, rewarding the owner for the risk of running the business. Its Debt Ratio of **40.0%** shows a moderate reliance on debt:

40% of its assets are funded by lenders and 60% by the owner, leaving room to borrow further if profitable opportunities arise, without the business being dangerously geared.

Worked examples (scaffolded)

Example 1 — calculating and interpreting ROI against an alternative investment

Ashwood Interiors reports a net profit of \$39 000 for the year ended 30 June 2026. The owner's capital was \$140 000 at the start of the year and \$160 000 at the end. A bank term deposit currently returns about 5%. Calculate the ROI and interpret it.

Working	Comment
Average capital = $(\$140\,000 + \$160\,000) \div 2 = \mathbf{\$150\,000}$.	Average the opening and closing capital — a period-long flow (net profit) is being compared with a balance.
ROI = $\$39\,000 \div \$150\,000 \times 100 = \mathbf{26.0\%}$.	Divide net profit by average capital, then $\times 100$; round to one decimal place.
At 26.0% the owner earns far more than the 5% a term deposit would pay.	ROI is judged against the return available elsewhere for the risk taken.

Return on Owner's Investment

Working	\$
Average capital $(140\,000 + 160\,000) \div 2$	150 000
Net profit	39 000
Return on Owner's Investment = $39\,000 \div 150\,000 \times 100$	26.0%

Ashwood earned **\$26 of net profit for every \$100** of the owner's average capital. This is more than five times the roughly 5% available from a risk-free term deposit, so the owner is being well rewarded for the additional risk and effort of running the business — a strong return, provided it compares favourably with similar interior-furnishing businesses.

Example 2 — calculating and interpreting the Debt Ratio

Bexley Freight reports the following in its Balance Sheet as at 30 June 2026: total assets \$250 000, total liabilities \$90 000 and owner's equity \$160 000. Calculate the Debt Ratio and interpret it.

Working	Comment
Debt Ratio = $\$90\,000 \div \$250\,000 \times 100 = \mathbf{36.0\%}$.	Total liabilities as a percentage of total assets — the reliance on outside debt.
So 36% of assets are funded by lenders and 64% by the owner.	Assets = liabilities + owner's equity, so the rest is the owner's share.
A 36% Debt Ratio is a relatively low level of gearing.	The lower the ratio, the less the business relies on debt and the lower its risk.

Debt Ratio

Working	\$
Total liabilities	90 000
Total assets	250 000
Debt Ratio = $90\,000 \div 250\,000 \times 100$	36.0%

Bexley funds just over a third of its assets (**36%**) from external liabilities and nearly two-thirds from the owner's own funds. This is a comparatively **low-geared**, conservative structure that carries little risk from debt — but it may also mean the business is not making full use of borrowing to fund assets that could lift the owner's return.

Worked examples (unscaffolded)

Example 3 — interpreting a change in ROI against a benchmark

Corveth Supplies reports a net profit of \$30 000 for the year ended 30 June 2025 and \$45 000 for the year ended 30 June 2026. The owner's capital was \$180 000 at 1 July 2024, \$220 000 at 30 June 2025, and \$280 000 at 30 June 2026. Comparable suppliers average an ROI of about 14%. Calculate the ROI for each year and interpret the change.

2025: average capital = $(\$180\,000 + \$220\,000) \div 2 = \$200\,000$; ROI = $\$30\,000 \div \$200\,000 \times 100 = \mathbf{15.0\%}$. 2026: average capital = $(\$220\,000 + \$280\,000) \div 2 = \$250\,000$; ROI = $\$45\,000 \div \$250\,000 \times 100 = \mathbf{18.0\%}$.

Corveth's ROI has risen from **15.0% to 18.0%**, an improvement of **3.0 percentage points**. Net profit grew by half (from \$30 000 to \$45 000) while the owner's average capital grew by only a quarter (from \$200 000 to \$250 000), so each dollar of the owner's investment is now earning more. The business has also moved from just above to comfortably above the **14%** sector benchmark, so the owner is now earning a better-than-average return.

∴ the owner is earning a progressively stronger return on their investment, and one that now clearly beats comparable businesses.

Example 4 — modelling the gearing–return–risk link

Rivergum Traders needs \$500 000 of assets, which are expected to generate an operating profit **before interest** of \$80 000 for the year (a 16% return on the assets). It is weighing two ways of financing them, with any borrowings costing **10%** interest:

- **Structure A (low gearing):** liabilities \$100 000 and the owner's capital \$400 000.
- **Structure B (high gearing):** liabilities \$300 000 and the owner's capital \$200 000.

Model the effect of each structure on the Debt Ratio, net profit and ROI, and discuss the return–risk trade-off. (Assume capital is unchanged over the year, so average capital equals the amount shown.)

Under **Structure A**, interest = $10\% \times \$100\,000 = \$10\,000$, so net profit = $\$80\,000 - \$10\,000 = \$70\,000$; Debt Ratio = $\$100\,000 \div \$500\,000 \times 100 = \mathbf{20.0\%}$; ROI = $\$70\,000 \div \$400\,000 \times 100 = \mathbf{17.5\%}$. Under **Structure B**, interest = $10\% \times \$300\,000 = \$30\,000$, so net profit = $\$80\,000 - \$30\,000 = \$50\,000$; Debt Ratio = $\$300\,000 \div \$500\,000 \times 100 = \mathbf{60.0\%}$; ROI = $\$50\,000 \div \$200\,000 \times 100 = \mathbf{25.0\%}$.

The more highly geared **Structure B** earns a **lower net profit** (\$50 000 against \$70 000, because it pays \$20 000 more interest) yet a **higher ROI** (25.0% against 17.5%). The reason is **favourable gearing**: the assets return 16%, which is above the 10% cost of the debt, so the 6% surplus earned on the extra borrowed funds flows to the owner — who is earning it on a much **smaller** base of their own capital (\$200 000 rather than \$400 000).

But the higher return comes with higher **risk**. The \$30 000 of interest under Structure B is a **fixed commitment**, payable however the business trades. If operating profit before interest fell to \$20 000, Structure A would still earn $\$20\,000 - \$10\,000 = \$10\,000$ (ROI 2.5%), whereas Structure B would earn $\$20\,000 - \$30\,000 = \mathbf{-\$10\,000}$, a **loss** (ROI –5.0%). Gearing that magnifies the return in good times magnifies the loss in bad times.

∴ Structure B offers the owner a higher return while the business performs well, but exposes them to a loss if it does not — the return–risk trade-off at the heart of gearing.

Practice questions — scaffolded

Question 1

Marberry Cycles reports a net profit of \$36 000 for the year ended 30 June 2026. The owner's capital was \$170 000 at the start of the year and \$190 000 at the end.

- Calculate the average capital.
- Calculate the Return on Owner's Investment.
- Interpret the result in one sentence.

Question 2



Halloway Timber reports the following in its Balance Sheet as at 30 June 2026: total assets \$300 000 and total liabilities \$120 000.

- Calculate the owner's equity.
- Calculate the Debt Ratio.
- Interpret the result in one sentence.

Question 3

Pinehaven Supplies reports a net profit of \$42 000 for the year ended 30 June 2026. The owner's capital was \$190 000 at the start of the year and \$210 000 at the end. Its Balance Sheet as at 30 June 2026 shows total assets of \$350 000 and total liabilities of \$140 000.

- Calculate the Return on Owner's Investment.
- Calculate the Debt Ratio.
- Interpret each result in one sentence.

Question 4

Cranfield Motors reports a net profit of \$24 000 for the year ended 30 June 2025 and \$33 000 for the year ended 30 June 2026. The owner's capital was \$180 000 at 1 July 2024, \$220 000 at 30 June 2025, and \$220 000 at 30 June 2026. A high-interest savings account currently returns about 5%.

- Calculate the Return on Owner's Investment for each year.
- State whether the return has risen or fallen, and by how many percentage points.
- Explain whether the owner is being adequately rewarded compared with the savings-account alternative.

Question 5

Denton Electrical reports total liabilities of \$90 000 and total assets of \$300 000 as at 30 June 2025, and total liabilities of \$150 000 and total assets of \$300 000 as at 30 June 2026.

- Calculate the Debt Ratio for each year.
- State whether the business has become more or less highly geared, and by how many percentage points.
- Explain one implication of the change for the business's risk.

Question 6

Millbrook Trading is considering funding a \$100 000 expansion of its assets either from the owner's own capital or from a loan carrying **9%** interest. The new assets are expected to earn an extra \$18 000 per year **before** any interest.

- Calculate the extra profit the new assets earn as a percentage of the \$100 000 invested.
- State the annual interest cost of the loan.
- Explain whether funding the expansion with the loan rather than the owner's capital would raise or lower the return to the owner, and identify one risk the loan introduces.

Practice questions — unscaffolded

Question 7

Oakmere Hardware reports a net profit of \$40 000 for the year ended 30 June 2026. The owner's capital was \$240 000 at the start of the year and \$260 000 at the end. Calculate the Return on Owner's Investment.

Question 8

Sandringham Freight reports total assets of \$500 000 and total liabilities of \$140 000 as at 30 June 2026. Calculate the Debt Ratio.

Question 9

Whitlow Supplies reports a net profit of \$48 000 for the year ended 30 June 2026. The owner's capital was \$220 000 at the start of the year and \$260 000 at the end. Its Balance Sheet as at 30 June 2026 shows total assets of \$400 000 and total liabilities of \$140 000. Calculate the Return on Owner's Investment and the Debt Ratio, and interpret each.

Question 10

Tamboor Traders reports a net profit of \$36 000 for the year ended 30 June 2025 and \$30 000 for the year ended 30 June 2026. The owner's capital was \$220 000 at 1 July 2024, \$260 000 at 30 June 2025, and \$240 000 at 30 June 2026. A term deposit returns about 5%. Calculate the ROI for each year, state the change, and discuss whether the owner should be concerned.

Question 11

Kelmscott Joinery reports total liabilities of \$80 000 and total assets of \$400 000 as at 30 June 2025, and total liabilities of \$180 000 and total assets of \$450 000 as at 30 June 2026. Calculate the Debt Ratio for each year, and discuss the effect of the change on the business's gearing, its potential return and its risk.

Question 12

Lindfield Retail and Marden Retail each report a net profit of \$42 000 for the year ended 30 June 2026, and each has total assets of \$600 000. Lindfield's average capital was \$420 000 and its total liabilities \$180 000; Marden's average capital was \$210 000 and its total liabilities \$390 000. Calculate the ROI and Debt Ratio for each business, state which delivers the owner the higher return and which carries the higher gearing, and explain the link between the two.

Question 13

Norwood Trading reports a Return on Owner's Investment of **22.5%** for the year ended 30 June 2026. The owner's capital was \$240 000 at the start of the year and \$320 000 at the end. Calculate the net profit the business must have earned.

Question 14

Oberon Freight reports total assets of \$600 000 and a Debt Ratio of **35.0%** as at 30 June 2026. Calculate its total liabilities and its owner's equity.

Question 15

Pemberton Supplies began the year ended 30 June 2026 with owner's capital of \$180 000. During the year the owner contributed a further \$20 000, the business earned a net profit of \$60 000, and the owner withdrew \$40 000 in drawings. At 30 June 2026 total assets were \$440 000.

- Calculate the closing capital.
- Calculate the average capital and the Return on Owner's Investment.
- Calculate the total liabilities and the Debt Ratio.

Question 16

Ferndale Trading needs \$500 000 of assets, expected to generate an operating profit **before interest** of \$80 000 for the year. Any borrowings cost **10%** interest. It is comparing a **low-gearing** structure (liabilities \$250 000, capital \$250 000) with a **high-gearing** structure (liabilities \$350 000, capital \$150 000). Calculate the Debt Ratio, net profit and ROI under each structure, and discuss the return-risk trade-off, including what would happen if operating profit before interest fell to \$35 000. (Assume capital is unchanged over the year.)

Question 17

Sedgefield Traders reports a net profit of \$18 000 for the year ended 30 June 2026, with owner's capital of \$200 000 at both the start and end of the year. Its Balance Sheet as at 30 June 2026 shows total assets of \$250 000 and total liabilities of \$50 000. A term deposit returns about 5%, while comparable businesses average an ROI of about 14%

and a Debt Ratio of about 45%. Calculate the ROI and the Debt Ratio, and discuss whether the owner should be satisfied with these results.

Question 18

Whitmore Traders reports the following. For the year ended 30 June 2025: net profit \$45 000; owner's capital \$300 000 at both the start and end of the year; and, as at 30 June 2025, total assets \$400 000 and total liabilities \$100 000. For the year ended 30 June 2026: net profit \$52 000; owner's capital \$300 000 at the start and \$220 000 at the end; and, as at 30 June 2026, total assets \$550 000 and total liabilities \$330 000. Calculate the Return on Owner's Investment and the Debt Ratio for each year, describe the change in each, and discuss the gearing–return–risk relationship the figures illustrate.

Answers

1.
 - a. \$180 000 b. 20.0%
2.
 - a. \$180 000 b. 40.0%
3.
 - a. 21.0% b. 40.0%
4.
 - a. 2025 = 12.0%; 2026 = 15.0% b. Risen, by 3.0 percentage points
5.
 - a. 2025 = 30.0%; 2026 = 50.0% b. More highly geared, by 20.0 percentage points
6.
 - a. 18.0% b. \$9 000
7. 16.0% (average capital \$250 000)
8. 28.0%
9. ROI 20.0%; Debt Ratio 35.0%
10. 2025 = 15.0%; 2026 = 12.0%; fallen, by 3.0 percentage points
11. 2025 = 20.0%; 2026 = 40.0%; more highly geared, by 20.0 percentage points
12. Lindfield ROI 10.0%, Debt Ratio 30.0%; Marden ROI 20.0%, Debt Ratio 65.0%; Marden higher return and higher gearing
13. Net profit \$63 000 (average capital \$280 000)
14. Total liabilities \$210 000; owner's equity \$390 000
15.
 - a. \$220 000 b. average capital \$200 000, ROI 30.0% c. liabilities \$220 000, Debt Ratio 50.0%
16. Low gearing: Debt Ratio 50.0%, net profit \$55 000, ROI 22.0%; high gearing: Debt Ratio 70.0%, net profit \$45 000, ROI 30.0%
17. ROI 9.0%; Debt Ratio 20.0%
18. 2025: ROI 15.0%, Debt Ratio 25.0%; 2026: ROI 20.0%, Debt Ratio 60.0%

Fully-worked solutions

Question 1

- a. Average capital = $(\$170\,000 + \$190\,000) \div 2 = \mathbf{\$180\,000}$.
- b. ROI = $\$36\,000 \div \$180\,000 \times 100 = \mathbf{20.0\%}$.
- c. On average, the business earned **\$20 of net profit for every \$100** of the owner's capital — a strong return that would need to be compared with earlier years and similar businesses.

Question 2

- a. Owner's equity = total assets – total liabilities = $\$300\,000 - \$120\,000 = \mathbf{\$180\,000}$.
- b. Debt Ratio = $\$120\,000 \div \$300\,000 \times 100 = \mathbf{40.0\%}$.
- c. **40%** of Halloway's assets are financed by outside liabilities and the remaining 60% by the owner — a moderate level of gearing.

Question 3

- a. Average capital = $(\$190\,000 + \$210\,000) \div 2 = \$200\,000$; ROI = $\$42\,000 \div \$200\,000 \times 100 = \mathbf{21.0\%}$.
- b. Debt Ratio = $\$140\,000 \div \$350\,000 \times 100 = \mathbf{40.0\%}$.
- c. The business earned **\$21 for every \$100** of the owner's average capital — a healthy return — while funding **40%** of its assets from debt and 60% from the owner, a moderate reliance on borrowing.

Question 4

- a. 2025: average capital = $(\$180\,000 + \$220\,000) \div 2 = \$200\,000$; ROI = $\$24\,000 \div \$200\,000 \times 100 = \mathbf{12.0\%}$.
2026: average capital = $(\$220\,000 + \$220\,000) \div 2 = \$220\,000$; ROI = $\$33\,000 \div \$220\,000 \times 100 = \mathbf{15.0\%}$.
- b. The return has **risen, by 3.0 percentage points** (from 12.0% to 15.0%).
- c. Yes — the owner is being adequately rewarded. Even in 2025 the 12.0% return was more than double the **5%** available from a savings account, and by 2026 it had improved to 15.0% — three times the savings alternative. The extra return compensates the owner for the greater **risk** and effort of running a business rather than simply depositing the funds, and the upward trend makes the investment more attractive, not less.

Question 5

- a. 2025: Debt Ratio = $\$90\,000 \div \$300\,000 \times 100 = \mathbf{30.0\%}$. 2026: Debt Ratio = $\$150\,000 \div \$300\,000 \times 100 = \mathbf{50.0\%}$.
- b. The business has become **more highly geared, by 20.0 percentage points** (from 30.0% to 50.0%).
- c. With total assets unchanged, the rise means the business has replaced owner's funding with **debt** — half its assets are now financed by lenders. This increases **risk**: the larger liabilities bring larger, **fixed interest commitments** that must be paid regardless of how the business trades, so a downturn in profit would leave less cover for those commitments and a greater chance the business cannot meet its debts.

Question 6

- a. Extra return = $\$18\,000 \div \$100\,000 \times 100 = \mathbf{18.0\%}$.
- b. Annual interest = $9\% \times \$100\,000 = \mathbf{\$9\,000}$.
- c. Funding the expansion with the loan would **raise** the return to the owner. The new assets earn 18%, which is well above the 9% cost of the loan, so the 9% surplus — $\$18\,000 - \$9\,000 = \mathbf{\$9\,000}$ — is extra profit earned on borrowed funds, adding to the owner's return **without** the owner having to invest any more of their own capital (favourable gearing). The **risk** it introduces is the $\$9\,000$ of **fixed interest**, which must be paid every year whether or not the new assets perform as hoped; if their earnings fell short, that fixed cost would eat into the rest of the business's profit.

Question 7

Average capital = $(\$240\,000 + \$260\,000) \div 2 = \$250\,000$. ROI = $\$40\,000 \div \$250\,000 \times 100 = \mathbf{16.0\%}$. The business earned \$16 of net profit for every \$100 of the owner's average capital.

Question 8

Debt Ratio = $\$140\,000 \div \$500\,000 \times 100 = \mathbf{28.0\%}$. Outside liabilities finance 28% of the firm's assets, and the owner the remaining 72%.

Question 9

Average capital = $(\$220\,000 + \$260\,000) \div 2 = \$240\,000$; ROI = $\$48\,000 \div \$240\,000 \times 100 = \mathbf{20.0\%}$. Debt Ratio = $\$140\,000 \div \$400\,000 \times 100 = \mathbf{35.0\%}$. Whitlow earned a strong **\$20 for every \$100** of the owner's capital, and is moderately, relatively conservatively geared — outside debt funds just over a third (35%) of its assets, leaving nearly two-thirds financed by the owner and room to borrow further if a profitable use arose.

Question 10

2025: average capital = $(\$220\,000 + \$260\,000) \div 2 = \$240\,000$; ROI = $\$36\,000 \div \$240\,000 \times 100 = \mathbf{15.0\%}$. 2026: average capital = $(\$260\,000 + \$240\,000) \div 2 = \$250\,000$; ROI = $\$30\,000 \div \$250\,000 \times 100 = \mathbf{12.0\%}$. The return has **fallen, by 3.0 percentage points**.

The owner has some cause for concern, but the position is not alarming. Net profit fell (from \$36 000 to \$30 000) while the owner's average capital rose slightly, so each dollar invested is now earning less — an unfavourable trend. Even so, the 12.0% return remains well above the **5%** a term deposit would pay, so the business is still a far better use

of the owner's funds than a risk-free deposit. Management should investigate **why** profit slipped — whether costs rose, sales fell, or margins tightened — because a continued decline would eventually erode that advantage.

Question 11

2025: Debt Ratio = $\$80\,000 \div \$400\,000 \times 100 = 20.0\%$. 2026: Debt Ratio = $\$180\,000 \div \$450\,000 \times 100 = 40.0\%$. The Debt Ratio has **doubled**, rising by **20.0 percentage points**, so the business is now **twice as highly geared**: outside debt funds 40% of its assets, up from 20%.

The change is a trade-off. On the **return** side, the extra borrowing has funded an expansion of the asset base (total assets grew from \$400 000 to \$450 000); if those additional assets earn more than the interest on the new debt, the higher gearing will **lift the owner's ROI**, because the surplus is earned on borrowed rather than owner's funds (favourable gearing). On the **risk** side, the larger liabilities bring larger **fixed interest commitments** and a greater chance the business cannot meet its debts if trading weakens. A 40% Debt Ratio is still a moderate level, so the added gearing looks manageable — but the business must be confident the new assets will earn enough to service the extra debt.

Question 12

Lindfield: ROI = $\$42\,000 \div \$420\,000 \times 100 = 10.0\%$; Debt Ratio = $\$180\,000 \div \$600\,000 \times 100 = 30.0\%$. Marden: ROI = $\$42\,000 \div \$210\,000 \times 100 = 20.0\%$; Debt Ratio = $\$390\,000 \div \$600\,000 \times 100 = 65.0\%$.

Marden delivers the owner the **higher return** (20.0% against 10.0%) and also carries the **higher gearing** (Debt Ratio 65.0% against 30.0%). The two are linked. Both businesses earned the same \$42 000 of net profit from the same \$600 000 of assets, but Marden financed those assets with far more debt and far less of the owner's own capital (\$210 000 rather than \$420 000). Spreading the same profit over a **smaller** base of owner's capital gives Marden double the ROI. This is **favourable gearing** at work — but it comes with the **higher risk** of a 65% Debt Ratio: Marden's larger fixed interest commitments make it far more exposed than Lindfield if its trading were to weaken.

Question 13

Rearranging the ROI formula, net profit = $\text{ROI} \times \text{average capital} \div 100$. Average capital = $(\$240\,000 + \$320\,000) \div 2 = \$280\,000$. Net profit = $22.5\% \times \$280\,000 \div 100 = \$63\,000$.

Question 14

Rearranging the Debt Ratio formula, total liabilities = $\text{Debt Ratio} \times \text{total assets} \div 100 = 35.0\% \times \$600\,000 \div 100 = \$210\,000$. Owner's equity = total assets – total liabilities = $\$600\,000 - \$210\,000 = \$390\,000$.

Question 15

- Closing capital = opening capital + capital contributed + net profit – drawings = $\$180\,000 + \$20\,000$
 - $\$60\,000 - \$40\,000 = \$220\,000$.
- Average capital = $(\$180\,000 + \$220\,000) \div 2 = \$200\,000$; ROI = $\$60\,000 \div \$200\,000 \times 100 = 30.0\%$.
- Owner's equity at 30 June 2026 is the closing capital, \$220 000, so total liabilities = total assets – owner's equity = $\$440\,000 - \$220\,000 = \$220\,000$; Debt Ratio = $\$220\,000 \div \$440\,000 \times 100 = 50.0\%$. The business earned a high 30.0% return for the owner, though half its assets are now funded by debt — a fairly highly geared position.

Question 16

Low-gearing structure: interest = $10\% \times \$250\,000 = \$25\,000$, so net profit = $\$80\,000 - \$25\,000 = \$55\,000$; Debt Ratio = $\$250\,000 \div \$500\,000 \times 100 = 50.0\%$; ROI = $\$55\,000 \div \$250\,000 \times 100 = 22.0\%$. **High-gearing structure:** interest = $10\% \times \$350\,000 = \$35\,000$, so net profit = $\$80\,000 - \$35\,000 = \$45\,000$; Debt Ratio = $\$350\,000 \div \$500\,000 \times 100 = 70.0\%$; ROI = $\$45\,000 \div \$150\,000 \times 100 = 30.0\%$.

The high-gearing structure earns a **lower net profit** (\$45 000 against \$55 000, because it pays \$10 000 more interest) but a **higher ROI** (30.0% against 22.0%). The assets return 16% ($\$80\,000 \div \$500\,000$), above the 10% cost of the debt, so the surplus on the extra borrowing flows to the owner, who earns it on a smaller capital base — **favourable gearing**.

The catch is **risk**. If operating profit before interest fell to \$35 000, the low-gearing structure would still earn \$35 000 – \$25 000 = \$10 000 (ROI **4.0%**), whereas the high-gearing structure's \$35 000 of interest would swallow the entire \$35 000, leaving a net profit of \$0 (ROI **0.0%**). Push the fall any further and the highly geared business would make a **loss**. ∴ the higher gearing lifts the owner's return while trading is strong, but leaves the business dangerously exposed if profit falls — the return–risk trade-off the owner must weigh.

Question 17

Average capital = $(\$200\,000 + \$200\,000) \div 2 = \$200\,000$; ROI = $\$18\,000 \div \$200\,000 \times 100 = \mathbf{9.0\%}$. Debt Ratio = $\$50\,000 \div \$250\,000 \times 100 = \mathbf{20.0\%}$.

The owner should be only **partly satisfied**. On the positive side, the 9.0% return **beats the 5%** a term deposit would pay, so the business is a better use of the owner's funds than a risk-free deposit. But it falls **well short of the 14%** that comparable businesses earn, so relative to its peers the business is **under-performing** — each dollar of the owner's capital is earning less than it could elsewhere in the same industry. The very low **20% Debt Ratio** (against a 45% sector average) helps explain this: the business is **conservatively financed** and carries little risk, but it is arguably **under-geared** — it is making little use of debt. If it borrowed to fund assets that earn more than the interest they cost, it could lift its ROI toward, or above, the sector benchmark, accepting a moderate increase in risk. So the results are acceptable but not strong, and there is scope to improve the return by using more gearing.

Question 18

2025: average capital = $(\$300\,000 + \$300\,000) \div 2 = \$300\,000$; ROI = $\$45\,000 \div \$300\,000 \times 100 = \mathbf{15.0\%}$; Debt Ratio = $\$100\,000 \div \$400\,000 \times 100 = \mathbf{25.0\%}$. 2026: average capital = $(\$300\,000 + \$220\,000) \div 2 = \$260\,000$; ROI = $\$52\,000 \div \$260\,000 \times 100 = \mathbf{20.0\%}$; Debt Ratio = $\$330\,000 \div \$550\,000 \times 100 = \mathbf{60.0\%}$.

Over the year the ROI **rose by 5.0 percentage points** (15.0% → 20.0%) and the Debt Ratio **rose by 35.0 percentage points** (25.0% → 60.0%) — the two moved together, and that is the point. The business took on a further \$230 000 of debt, using it (with a reduction in the owner's own capital) to expand its assets from \$400 000 to \$550 000. Because those assets earned more than the interest on the new borrowings, the extra profit flowed to the owner on a **smaller** capital base, lifting ROI from 15.0% to 20.0% — **favourable gearing** in action.

But the sharply higher **60% Debt Ratio** means the business is now **heavily reliant on debt**: outside parties fund three-fifths of its assets, and the larger **fixed interest commitments** must be met however the business trades. ∴ the figures illustrate the gearing–return–risk relationship squarely — the extra gearing has **improved the owner's return**, but at the cost of a **materially higher risk** if trading were to weaken, and the owner must judge whether that stronger return is worth the reduced safety margin.

Chapter 18 Evaluating performance: profitability — 18C Return on Assets and Asset Turnover

Theory

A business exists to earn a profit, but the profit figure on its own says nothing about how much the business had to **invest** to earn it. A net profit of \$80 000 is impressive for a firm with \$400 000 of assets and unremarkable for one with \$4 000 000. To judge profitability fairly we must relate profit to the **resources used to generate it**. **Return on Assets** does exactly this, and **Asset Turnover** explains *how* those assets were put to work.

Return on Assets (ROA) measures how efficiently a business has used its **total assets** to earn **net profit**. It is the net profit earned for every dollar invested in assets, expressed as a percentage:

$$\text{Return on Assets} = \frac{\text{Net Profit}}{\text{Average Total Assets}} \times 100$$

Because net profit is a **flow** earned across the whole period while total assets are a **balance** measured at a point in time, the denominator uses the **average** of the assets held during the period:

$$\text{Average Total Assets} = \frac{\text{Opening Total Assets} + \text{Closing Total Assets}}{2}$$

Averaging the opening and closing balances gives a figure that represents the level of assets employed *throughout* the period, so a period-long flow (profit) is compared with a period-long measure of the asset base — a like-with-like comparison. **Total assets** means every asset the business controls, current and non-current combined. ROA is conventionally expressed as a percentage to **one decimal place**.

A ROA of, say, **20.0%** means the business earned **20 cents of net profit for every dollar of assets** it held. The **higher** the percentage, the more profit the business has squeezed from each dollar of assets, and the more efficiently it is using its resources.

Asset Turnover (ATO) measures how efficiently a business uses its assets to generate **sales**. It is the net sales made for every dollar invested in assets, expressed as a number of **times per period**:

$$\text{Asset Turnover} = \frac{\text{Net Sales}}{\text{Average Total Assets}}$$

Net sales is sales revenue less any sales returns. An Asset Turnover of **2.0 times** means each dollar of assets generated **\$2.00 of net sales** during the period — the asset base was “turned over” into sales twice. Like ROA, the average of opening and closing total assets is used, and the result is expressed to **one decimal place**. A **higher** Asset Turnover means the assets are working harder, producing more sales from the same investment.

The link between them: ROA = Net Profit Margin × Asset Turnover. Return on Assets can be broken into two parts, because earning a return on assets happens in two stages — first the assets generate **sales**, then those sales generate **profit**. The bridge between sales and profit is the **Net Profit Margin (NPM)**, the net profit earned on each dollar of sales:

$$\text{Net Profit Margin} = \frac{\text{Net Profit}}{\text{Net Sales}} \times 100$$

Multiplying the margin by the turnover reproduces the Return on Assets exactly:

$$\text{Return on Assets} = \text{Net Profit Margin} \times \text{Asset Turnover}$$

This holds because the net sales in the two ratios cancel:

$$\frac{\text{Net Profit}}{\text{Net Sales}} \times \frac{\text{Net Sales}}{\text{Average Total Assets}} = \frac{\text{Net Profit}}{\text{Average Total Assets}}$$

(with the $\times 100$ carried through, so a Net Profit Margin in *per cent* times an Asset Turnover in *times* gives a Return on Assets in *per cent*). The relationship is powerful because it shows that a business earns its return on assets in **two independent ways**:

- **Net Profit Margin** — how much profit is kept out of each sales dollar (a *profitability of sales* measure, driven by selling prices, cost of sales and expense control).
- **Asset Turnover** — how many sales dollars each asset dollar generates (an *efficiency of assets* measure, driven by how productively the business uses its assets).

A high ROA can come from a **high margin** (earning a lot on each sale) or a **high turnover** (making many sales from the assets), or a mix of both. A jeweller earns a large margin on each sale but turns its assets over slowly; a supermarket earns a tiny margin on each sale but turns its assets over rapidly. Both can end up with a similar Return on Assets by different routes.

Interpreting a change in ROA. Because $ROA = NPM \times ATO$, whenever Return on Assets rises or falls the decomposition tells us **which lever moved**:

- If the **Net Profit Margin** changed but Asset Turnover held steady, the movement is a **margin (profitability-of-sales) issue** — selling prices, cost of sales or expenses have shifted.
- If the **Asset Turnover** changed but the margin held steady, the movement is a **turnover (efficiency-of-assets) issue** — sales have grown faster or slower than the asset base. A common cause is investing in more assets (larger premises, more equipment or inventory) without a matching rise in sales, which lifts average total assets and pulls Asset Turnover — and therefore ROA — down.
- If **both** moved, both levers contributed, and the analyst reports the effect of each.

Diagnosing the driver matters because the **remedy differs**. There is no point cutting prices to chase sales if the problem was really a collapse in margin.

Improving Return on Assets. To lift ROA a business works on one or both levers:

- **Margin levers (raise the Net Profit Margin):** increase selling prices where demand allows; improve the gross profit margin by negotiating lower cost prices from suppliers or reducing inventory loss; and control operating expenses such as wages, advertising and rent so that more of each sales dollar survives as profit.
- **Turnover levers (raise the Asset Turnover):** generate **more net sales from the same assets** — for example through marketing, a better product range or faster inventory turnover; or **reduce the asset base** by disposing of idle or under-used non-current assets, clearing excess inventory and collecting from accounts receivable more quickly, so the same sales are produced by fewer assets.

The two levers can pull against each other, and a business must weigh the trade-off. Cutting selling prices may lift turnover but erodes margin; buying more assets to chase extra sales lifts the asset base and can depress turnover if the sales do not follow. The goal is the combination of margin and turnover that produces the strongest Return on Assets overall.

A ratio needs a benchmark. A single ROA or ATO figure means little in isolation. It becomes useful only when **compared** — against the same business in **previous periods** (is the return improving?), against a **budget**, or against **similar businesses and industry averages**. Comparing only *like* businesses respects the qualitative characteristic of **comparability**: a capital-intensive manufacturer and a lean online retailer will always report very different Asset Turnovers, and neither figure is “wrong”.

Worked model. Waratah Living, a homewares business, reports for the year ended 30 June 2026: net sales \$800 000, net profit \$80 000, total assets of \$380 000 at the start of the year and \$420 000 at the end.

Average total assets = $(\$380\,000 + \$420\,000) \div 2 = \$400\,000$. Return on Assets = $\$80\,000 \div \$400\,000 \times 100 = 20.0\%$. Asset Turnover = $\$800\,000 \div \$400\,000 = 2.0$ times. Net Profit Margin = $\$80\,000 \div \$800\,000 \times 100 = 10.0\%$, and $10.0\% \times 2.0 = 20.0\%$, confirming $ROA = NPM \times ATO$.

Return on Assets

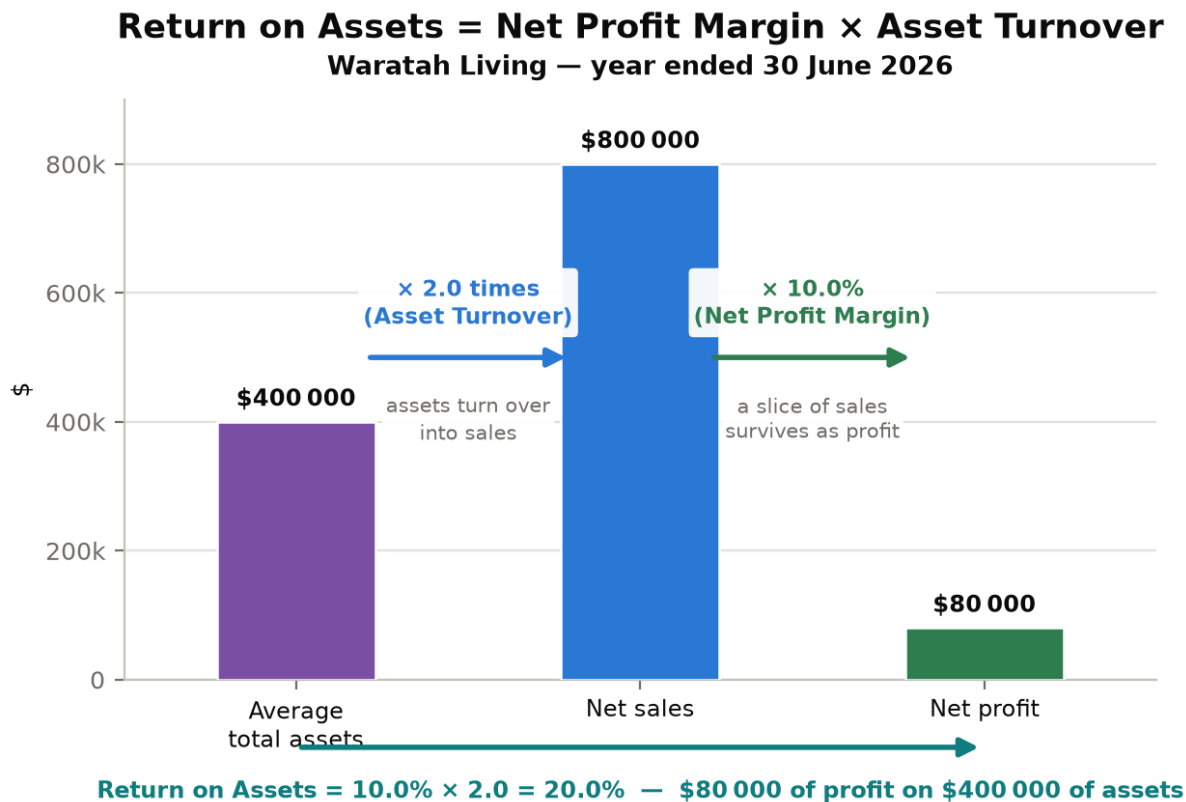
Working	\$
Average total assets $(\$380\,000 + \$420\,000) \div 2$	400 000
Net profit	80 000
Return on Assets = $80\,000 \div 400\,000 \times 100$	20.0%

Asset Turnover

Working	\$
Net sales	800 000
Average total assets	400 000
Asset Turnover = $800\,000 \div 400\,000$	2.0 times

Waratah earned **20 cents of net profit per dollar of assets**, generating \$2.00 of sales from each asset dollar and keeping 10 cents of profit out of each sales dollar. Whether 20.0% is satisfactory depends on how it compares with earlier years and with similar homewares retailers.

The decomposition is easier to believe when the three figures are drawn to one scale:



Waratah Living — the two-stage route from average total assets to net sales to net profit

Read left to right, the asset base is first **turned over** into sales ($\$400\,000 \times 2.0 = \$800\,000$), and a **slice of those sales** then survives as profit ($\$800\,000 \times 10.0\% = \$80\,000$). The two arrows are the two independent levers: a business can lift its Return on Assets by keeping more of each sales dollar or by squeezing more sales out of each asset dollar, and a jeweller and a supermarket reach a similar figure by opposite routes.

Worked examples (scaffolded)

Example 1 — calculating Return on Assets and Asset Turnover

Kingsford Cycles reports for the year ended 30 June 2026: net sales \$750 000, net profit \$60 000, total assets \$290 000 at the start of the year and \$310 000 at the end. Comparable cycle retailers earn a Return on Assets of about 18%. Calculate the average total assets, the Return on Assets and the Asset Turnover, and interpret the result.

Working	Comment
Average total assets = $(\$290\,000 + \$310\,000) \div 2 =$ \$300 000.	Average the opening and closing balances — a period-long profit is compared with a period-long asset base.
Return on Assets = $\$60\,000 \div \$300\,000 \times 100 =$ 20.0%.	Net profit over average total assets, $\times 100$; express to one decimal place.
Asset Turnover = $\$750\,000 \div \$300\,000 =$ 2.5 times.	Net sales over the same average total assets; expressed in <i>times</i> .
At 20.0% the business is about 2 percentage points above the 18% sector benchmark.	A higher ROA means more profit earned per dollar of assets than comparable firms.

Return on Assets

Working	\$
Average total assets	300 000
Net profit	60 000
Return on Assets = $60\,000 \div 300\,000 \times$ 100	20.0%

Asset Turnover

Working	\$
Net sales	750 000
Average total assets	300 000
Asset Turnover = $750\,000 \div 300\,000$	2.5 times

Kingsford earned **20.0 cents of profit per dollar of assets**, better than the 18% sector average, and turned each asset dollar into \$2.50 of sales. It is using its assets efficiently, both to generate sales and to convert those sales into profit.

Example 2 — verifying $ROA = \text{Net Profit Margin} \times \text{Asset Turnover}$

Bramley Electrical reports for the year ended 30 June 2026: net sales \$900 000, net profit \$45 000, total assets \$350 000 at the start of the year and \$370 000 at the end. Calculate the Net Profit Margin, the Asset Turnover and the Return on Assets, and verify that $ROA = NPM \times ATO$.

Working	Comment
Average total assets = $(\$350\,000 + \$370\,000) \div 2 =$ \$360 000.	The denominator shared by ROA and ATO.
Net Profit Margin = $\$45\,000 \div \$900\,000 \times 100 =$ 5.0%.	Profit kept out of each sales dollar.
Asset Turnover = $\$900\,000 \div \$360\,000 =$ 2.5 times.	Sales generated per dollar of assets.
Return on Assets = $\$45\,000 \div \$360\,000 \times 100 =$ 12.5%.	Profit earned per dollar of assets, calculated directly.
Check: $NPM \times ATO = 5.0\% \times 2.5 =$ 12.5% = ROA. ✓	The net sales cancel, so margin $\times$ turnover returns the ROA exactly.

The identity holds: Bramley earns its 12.5% return by keeping 5 cents of profit per sales dollar (margin) and generating \$2.50 of sales per asset dollar (turnover). The decomposition shows the business relies more on **turnover** than **margin** to earn its return.

Worked examples (unscaffolded)

Example 3 — interpreting a change over two years

Cardinia Hardware reports the following. Calculate the Return on Assets for each year, decompose each into Net Profit Margin and Asset Turnover, and interpret the change.

Item	2025	2026
Net sales \$	800 000	840 000
Net profit \$	64 000	50 400
Opening total assets \$	390 000	410 000
Closing total assets \$	410 000	430 000

2025: average total assets = $(\$390\,000 + \$410\,000) \div 2 = \$400\,000$. ROA = $\$64\,000 \div \$400\,000 \times 100 = 16.0\%$; NPM = $\$64\,000 \div \$800\,000 \times 100 = 8.0\%$; ATO = $\$800\,000 \div \$400\,000 = 2.0$ times ($8.0\% \times 2.0 = 16.0\%$ ✓).

2026: average total assets = $(\$410\,000 + \$430\,000) \div 2 = \$420\,000$. ROA = $\$50\,400 \div \$420\,000 \times 100 = 12.0\%$; NPM = $\$50\,400 \div \$840\,000 \times 100 = 6.0\%$; ATO = $\$840\,000 \div \$420\,000 = 2.0$ times ($6.0\% \times 2.0 = 12.0\%$ ✓).

Return on Assets fell from 16.0% to 12.0%, a fall of **4.0 percentage points**. The decomposition locates the cause precisely: **Asset Turnover was unchanged at 2.0 times**, so the assets kept generating sales just as efficiently, but the **Net Profit Margin fell from 8.0% to 6.0%**. The business is keeping less profit out of each sales dollar — a **margin problem**, caused by rising cost of sales or expenses, not by any loss of efficiency in using its assets.

∴ the fall in ROA is entirely a margin issue; management should investigate cost of sales and expense control, not the productivity of its assets.

Example 4 — deciding whether a margin or a turnover problem drives a fall in ROA

Rosslyn Furniture's Return on Assets fell over the past year and the owner wants to know why. Its records show: net sales \$1 000 000 (2025) and \$960 000 (2026); net profit \$100 000 (2025) and \$96 000 (2026); total assets \$480 000 → \$520 000 across 2025 and \$520 000 → \$680 000 across 2026. Identify whether the fall is a margin or a turnover problem, and recommend a response.

2025: average total assets = $(\$480\,000 + \$520\,000) \div 2 = \$500\,000$. ROA = $\$100\,000 \div \$500\,000 \times 100 = 20.0\%$; NPM = $\$100\,000 \div \$1\,000\,000 \times 100 = 10.0\%$; ATO = $\$1\,000\,000 \div \$500\,000 = 2.0$ times.

2026: average total assets = $(\$520\,000 + \$680\,000) \div 2 = \$600\,000$. ROA = $\$96\,000 \div \$600\,000 \times 100 = 16.0\%$; NPM = $\$96\,000 \div \$960\,000 \times 100 = 10.0\%$; ATO = $\$960\,000 \div \$600\,000 = 1.6$ times.

ROA fell from 20.0% to 16.0%. The **Net Profit Margin held steady at 10.0%** — the business is still keeping the same profit out of each sales dollar — but the **Asset Turnover fell from 2.0 to 1.6 times**. This is a **turnover problem**: average total assets jumped from \$500 000 to \$600 000 (the business invested heavily in assets) while net sales actually fell slightly, so each asset dollar now generates far fewer sales.

∴ the remedy is a **turnover** lever, not a margin one. Rosslyn must make its enlarged asset base generate more sales — for example by using the new premises or equipment to lift trading volume — or, if the extra assets are under-used, dispose of them to bring the asset base back into line with sales. Cutting prices or expenses would not fix a problem that lies in asset efficiency.

Practice questions — scaffolded

Question 1

Marnong Stationery reports for the year ended 30 June 2026: net sales \$500 000, net profit \$35 000, total assets \$240 000 at the start of the year and \$260 000 at the end.

- Calculate the average total assets.
- Calculate the Return on Assets.
- Calculate the Asset Turnover.

Question 2

Hartwell Sports reports for the year ended 30 June 2026: net sales \$720 000, net profit \$54 000, total assets \$290 000 at the start of the year and \$310 000 at the end.

- Calculate the Net Profit Margin and the Asset Turnover.
- Calculate the Return on Assets.
- Verify that $ROA = \text{Net Profit Margin} \times \text{Asset Turnover}$.

Question 3

Ferndale Menswear reports:

Item	2025	2026
Net sales \$	600 000	600 000
Net profit \$	60 000	48 000
Average total assets \$	300 000	300 000

- Calculate the Return on Assets for each year.
- State whether Return on Assets improved or fell, and by how many percentage points.
- Calculate the Net Profit Margin and Asset Turnover for each year, and state which one drove the change in ROA.

Question 4

Oakden Timber reports: net sales \$800 000 (2025) and \$810 000 (2026); net profit \$72 000 (2025) and \$72 900 (2026); total assets \$390 000 → \$410 000 across 2025 and \$410 000 → \$670 000 across 2026.

- Calculate the Return on Assets for each year.
- Calculate the Net Profit Margin and the Asset Turnover for each year.
- State whether the fall in ROA is a margin problem or a turnover problem, and explain in one sentence.

Question 5

Belmore Auto reports for the year ended 30 June 2026: net sales \$1 200 000, net profit \$96 000, total assets \$580 000 at the start of the year and \$620 000 at the end. Similar businesses earn a Return on Assets of about 18%.

- Calculate the average total assets.
- Calculate the Return on Assets and the Asset Turnover.
- State whether the business is above or below the 18% benchmark, and by how much.

Question 6

Trentham Homewares reports for the year ended 30 June 2026: net sales \$900 000, net profit \$54 000, total assets \$430 000 at the start of the year and \$470 000 at the end.

- Calculate the Return on Assets.
- Calculate the Net Profit Margin and the Asset Turnover.
- Discuss one margin lever and one turnover lever the business could use to improve its Return on Assets.

Practice questions — unscaffolded

Question 7

Glenroy Toys reports for the year ended 30 June 2026: net sales \$400 000, net profit \$32 000, total assets \$190 000 at the start of the year and \$210 000 at the end. Calculate the average total assets, the Return on Assets and the Asset Turnover.

Question 8

Pinehurst Nursery reports for the year ended 30 June 2026: net sales \$660 000, net profit \$39 600, total assets \$310 000 at the start of the year and \$290 000 at the end. Calculate the Return on Assets and the Asset Turnover.

Question 9

Ashcombe Marine reports for the year ended 30 June 2026: net sales \$1 000 000, net profit \$120 000, total assets \$610 000 at the start of the year and \$640 000 at the end. Calculate the Net Profit Margin, the Asset Turnover and the Return on Assets, and verify that $ROA = \text{Net Profit Margin} \times \text{Asset Turnover}$.

Question 10

Marlow Traders reports a Return on Assets of 15.0% and an Asset Turnover of 2.5 times for the year ended 30 June 2026. Using the relationship $ROA = \text{Net Profit Margin} \times \text{Asset Turnover}$, calculate the business's Net Profit Margin.

Question 11

Sherwood Bakery reports: net sales \$500 000 (2025) and \$550 000 (2026); net profit \$40 000 (2025) and \$49 500 (2026); total assets \$240 000 → \$260 000 across 2025 and \$260 000 → \$290 000 across 2026. Calculate the Return on Assets for each year, decompose each into Net Profit Margin and Asset Turnover, and state which lever drove the change.

Question 12

Kelvin Deli reports: net sales \$1 000 000 (2025) and \$900 000 (2026); net profit \$80 000 (2025) and \$72 000 (2026); total assets \$390 000 → \$410 000 across 2025 and \$410 000 → \$490 000 across 2026. Calculate the Return on Assets for each year and diagnose whether the change is a margin or a turnover problem.

Question 13

Highpoint Jewellers reports net sales \$500 000, net profit \$60 000, and average total assets of \$500 000 (opening \$490 000, closing \$510 000). Valeway Grocers reports net sales \$1 200 000, net profit \$48 000, and average total assets of \$400 000 (opening \$380 000, closing \$420 000). Calculate the Return on Assets, Net Profit Margin and Asset Turnover for each business, and explain how two very different businesses can report the same Return on Assets.

Question 14

Crestwood Kitchens reports for the year ended 30 June 2026: net sales \$750 000, net profit \$37 500, total assets \$360 000 at the start of the year and \$390 000 at the end. Calculate the Return on Assets, the Net Profit Margin and the Asset Turnover, and discuss one margin lever and one turnover lever the business could use to improve its Return on Assets.

Question 15

Dandaloo Fashion reports for the year ended 30 June 2026: net sales \$1 600 000, net profit \$112 000, total assets \$760 000 at the start of the year and \$840 000 at the end. Calculate the average total assets, the Return on Assets and the Asset Turnover, and confirm that $ROA = \text{Net Profit Margin} \times \text{Asset Turnover}$.

Question 16

Barwon Pharmacy reports: net sales \$600 000 (2025) and \$620 000 (2026); net profit \$90 000 (2025) and \$74 400 (2026); total assets \$295 000 → \$305 000 across 2025 and \$305 000 → \$315 000 across 2026. Calculate the Return on Assets for each year and diagnose whether the fall is a margin or a turnover problem.

Question 17

Elsternwick Tiles reports: net sales \$1 000 000 (2025) and \$945 000 (2026); net profit \$100 000 (2025) and \$85 050 (2026); total assets \$390 000 → \$410 000 across 2025 and \$410 000 → \$490 000 across 2026. Calculate the Return on Assets, Net Profit Margin and Asset Turnover for each year, and explain what has driven the change in ROA.

Question 18

Moorabool Outdoor reports: net sales \$800 000 (2025) and \$990 000 (2026); net profit \$48 000 (2025) and \$69 300 (2026); total assets \$390 000 → \$410 000 across 2025 and \$410 000 → \$490 000 across 2026. Calculate the Return on Assets for each year, decompose the change into its margin and turnover components, and recommend one action for management.

Answers

1.
 - a. \$250 000 b. 14.0% c. 2.0 times
2.
 - a. NPM 7.5%; ATO 2.4 times b. 18.0% c. $7.5\% \times 2.4 = 18.0\%$ ✓
3.
 - a. 2025 = 20.0%; 2026 = 16.0% b. Fell by 4.0 percentage points c. NPM fell 10.0% → 8.0%; ATO unchanged at 2.0 times → the margin drove the fall
4.
 - a. 2025 = 18.0%; 2026 = 13.5% b. NPM 9.0% both years; ATO 2.0 → 1.5 times c. Turnover problem (NPM steady, ATO fell as assets grew without matching sales)
5.
 - a. \$600 000 b. ROA 16.0%; ATO 2.0 times c. Below, by 2.0 percentage points
6.
 - a. 12.0% b. NPM 6.0%; ATO 2.0 times c. See solutions
7. Average total assets \$200 000; ROA 16.0%; ATO 2.0 times
8. ROA 13.2%; ATO 2.2 times (average total assets \$300 000)
9. NPM 12.0%; ATO 1.6 times; ROA 19.2%; $12.0\% \times 1.6 = 19.2\%$ ✓
10. $\text{NPM} = 15.0\% \div 2.5 = 6.0\%$
11. 2025 ROA 16.0% (NPM 8.0%, ATO 2.0); 2026 ROA 18.0% (NPM 9.0%, ATO 2.0); rose 2.0 points — margin
12. 2025 ROA 20.0% (NPM 8.0%, ATO 2.5); 2026 ROA 16.0% (NPM 8.0%, ATO 2.0); turnover problem
13. Highpoint ROA 12.0% (NPM 12.0%, ATO 1.0); Valeway ROA 12.0% (NPM 4.0%, ATO 3.0); see solutions
14. ROA 10.0%; NPM 5.0%; ATO 2.0 times; see solutions
15. Average total assets \$800 000; ROA 14.0%; ATO 2.0 times; $\text{NPM } 7.0\% \times 2.0 = 14.0\%$ ✓
16. 2025 ROA 30.0% (NPM 15.0%, ATO 2.0); 2026 ROA 24.0% (NPM 12.0%, ATO 2.0); margin problem
17. 2025 ROA 25.0% (NPM 10.0%, ATO 2.5); 2026 ROA 18.9% (NPM 9.0%, ATO 2.1); both margin and turnover fell; see solutions
18. 2025 ROA 12.0% (NPM 6.0%, ATO 2.0); 2026 ROA 15.4% (NPM 7.0%, ATO 2.2); rose 3.4 points — both; see solutions

Fully-worked solutions

Question 1

- a. Average total assets = $(\$240\,000 + \$260\,000) \div 2 = \mathbf{\$250\,000}$.
- b. Return on Assets = $\$35\,000 \div \$250\,000 \times 100 = \mathbf{14.0\%}$.
- c. Asset Turnover = $\$500\,000 \div \$250\,000 = \mathbf{2.0\,times}$.

Return on Assets

Working	\$
Average total assets $(\$240\,000 + \$260\,000) \div 2$	250 000
Net profit	35 000
Return on Assets = $35\,000 \div 250\,000 \times 100$	14.0%

Question 2

- a. Average total assets = $(\$290\,000 + \$310\,000) \div 2 = \$300\,000$. Net Profit Margin = $\$54\,000 \div \$720\,000 \times 100 = \mathbf{7.5\%}$; Asset Turnover = $\$720\,000 \div \$300\,000 = \mathbf{2.4\,times}$.

- b. $\text{Return on Assets} = \$54\,000 \div \$300\,000 \times 100 = \mathbf{18.0\%}$.
- c. $\text{NPM} \times \text{ATO} = 7.5\% \times 2.4 = \mathbf{18.0\%}$, which equals the Return on Assets calculated directly — the identity holds because the net sales in the two ratios cancel.

Question 3

- a. 2025: $\text{Return on Assets} = \$60\,000 \div \$300\,000 \times 100 = \mathbf{20.0\%}$. 2026: $\text{Return on Assets} = \$48\,000 \div \$300\,000 \times 100 = \mathbf{16.0\%}$.
- b. Return on Assets **fell by 4.0 percentage points** ($20.0\% - 16.0\%$).
- c. 2025: $\text{NPM} = \$60\,000 \div \$600\,000 \times 100 = 10.0\%$; $\text{ATO} = \$600\,000 \div \$300\,000 = 2.0$ times. 2026: $\text{NPM} = \$48\,000 \div \$600\,000 \times 100 = 8.0\%$; $\text{ATO} = \$600\,000 \div \$300\,000 = 2.0$ times. The **Asset Turnover was unchanged at 2.0 times**, so the fall in ROA was driven entirely by the **Net Profit Margin**, which dropped from 10.0% to 8.0% — a margin (profitability-of-sales) problem.

Question 4

- a. 2025: average total assets = $(\$390\,000 + \$410\,000) \div 2 = \$400\,000$; $\text{Return on Assets} = \$72\,000 \div \$400\,000 \times 100 = \mathbf{18.0\%}$. 2026: average total assets = $(\$410\,000 + \$670\,000) \div 2 = \$540\,000$; $\text{Return on Assets} = \$72\,900 \div \$540\,000 \times 100 = \mathbf{13.5\%}$.
- b. 2025: $\text{NPM} = \$72\,000 \div \$800\,000 \times 100 = 9.0\%$; $\text{ATO} = \$800\,000 \div \$400\,000 = 2.0$ times. 2026: $\text{NPM} = \$72\,900 \div \$810\,000 \times 100 = 9.0\%$; $\text{ATO} = \$810\,000 \div \$540\,000 = 1.5$ times.
- c. It is a **turnover problem**: the Net Profit Margin held steady at 9.0% while the Asset Turnover fell from 2.0 to 1.5 times, because average total assets rose sharply (from \$400 000 to \$540 000) without a matching rise in sales, so each asset dollar now generates fewer sales.

Question 5

- a. Average total assets = $(\$580\,000 + \$620\,000) \div 2 = \mathbf{\$600\,000}$.
- b. $\text{Return on Assets} = \$96\,000 \div \$600\,000 \times 100 = \mathbf{16.0\%}$; $\text{Asset Turnover} = \$1\,200\,000 \div \$600\,000 = \mathbf{2.0}$ times.
- c. At 16.0% the business is **below** the 18% benchmark, by **2.0 percentage points** — it is earning less profit per dollar of assets than comparable businesses, so management should examine both its margin and its asset efficiency to find the shortfall.

Return on Assets

Working	\$
Average total assets $(\$580\,000 + \$620\,000) \div 2$	600 000
Net profit	96 000
$\text{Return on Assets} = 96\,000 \div 600\,000 \times 100$	16.0%

Question 6

- a. Average total assets = $(\$430\,000 + \$470\,000) \div 2 = \$450\,000$; $\text{Return on Assets} = \$54\,000 \div \$450\,000 \times 100 = \mathbf{12.0\%}$.
- b. $\text{Net Profit Margin} = \$54\,000 \div \$900\,000 \times 100 = \mathbf{6.0\%}$; $\text{Asset Turnover} = \$900\,000 \div \$450\,000 = \mathbf{2.0}$ times ($6.0\% \times 2.0 = 12.0\%$ ✓).
- c. To raise its Return on Assets, Trentham could work on either lever. A **margin lever** would lift the Net Profit Margin — for example by negotiating lower cost prices from suppliers to widen the gross profit margin, or by controlling operating expenses such as wages and advertising, so that more than 6 cents of each sales dollar survives as profit. A **turnover lever** would lift the Asset Turnover — for example by generating more sales from the existing assets through better marketing or faster inventory turnover, or by disposing of any idle or

under-used assets so the same sales are produced by a smaller asset base. Because $ROA = NPM \times ATO$, an improvement in *either* raises the return, though the business must ensure a price cut made to chase turnover does not erode the margin by more than the extra volume is worth.

Question 7

Average total assets = $(\$190\,000 + \$210\,000) \div 2 = \mathbf{\$200\,000}$. Return on Assets = $\$32\,000 \div \$200\,000 \times 100 = \mathbf{16.0\%}$. Asset Turnover = $\$400\,000 \div \$200\,000 = \mathbf{2.0\text{ times}}$.

Question 8

Average total assets = $(\$310\,000 + \$290\,000) \div 2 = \$300\,000$. Return on Assets = $\$39\,600 \div \$300\,000 \times 100 = \mathbf{13.2\%}$. Asset Turnover = $\$660\,000 \div \$300\,000 = \mathbf{2.2\text{ times}}$.

Question 9

Average total assets = $(\$610\,000 + \$640\,000) \div 2 = \$625\,000$. Net Profit Margin = $\$120\,000 \div \$1\,000\,000 \times 100 = \mathbf{12.0\%}$. Asset Turnover = $\$1\,000\,000 \div \$625\,000 = \mathbf{1.6\text{ times}}$. Return on Assets = $\$120\,000 \div \$625\,000 \times 100 = \mathbf{19.2\%}$. Verification: $NPM \times ATO = 12.0\% \times 1.6 = \mathbf{19.2\%} = ROA \checkmark$.

Question 10

Rearranging $ROA = NPM \times ATO$ gives $NPM = ROA \div ATO = 15.0\% \div 2.5 = \mathbf{6.0\%}$. Marlow keeps 6 cents of profit out of each sales dollar; multiplied by the 2.5 sales dollars generated per asset dollar, this produces the 15.0% Return on Assets.

Question 11

2025: average total assets = $(\$240\,000 + \$260\,000) \div 2 = \$250\,000$; $ROA = \$40\,000 \div \$250\,000 \times 100 = \mathbf{16.0\%}$; $NPM = \$40\,000 \div \$500\,000 \times 100 = 8.0\%$; $ATO = \$500\,000 \div \$250\,000 = 2.0\text{ times}$. 2026: average total assets = $(\$260\,000 + \$290\,000) \div 2 = \$275\,000$; $ROA = \$49\,500 \div \$275\,000 \times 100 = \mathbf{18.0\%}$; $NPM = \$49\,500 \div \$550\,000 \times 100 = 9.0\%$; $ATO = \$550\,000 \div \$275\,000 = 2.0\text{ times}$.

Return on Assets **rose by 2.0 percentage points** (16.0% → 18.0%). The Asset Turnover held steady at 2.0 times, so the improvement was driven by the **Net Profit Margin**, which rose from 8.0% to 9.0% — Sherwood is keeping more profit out of each sales dollar, a margin gain.

Question 12

2025: average total assets = $(\$390\,000 + \$410\,000) \div 2 = \$400\,000$; $ROA = \$80\,000 \div \$400\,000 \times 100 = \mathbf{20.0\%}$; $NPM = \$80\,000 \div \$1\,000\,000 \times 100 = 8.0\%$; $ATO = \$1\,000\,000 \div \$400\,000 = 2.5\text{ times}$. 2026: average total assets = $(\$410\,000 + \$490\,000) \div 2 = \$450\,000$; $ROA = \$72\,000 \div \$450\,000 \times 100 = \mathbf{16.0\%}$; $NPM = \$72\,000 \div \$900\,000 \times 100 = 8.0\%$; $ATO = \$900\,000 \div \$450\,000 = 2.0\text{ times}$.

Return on Assets fell from 20.0% to 16.0%. This is a **turnover problem**: the Net Profit Margin was unchanged at 8.0%, but the Asset Turnover fell from 2.5 to 2.0 times, because average total assets grew (from \$400 000 to \$450 000) while net sales fell (from \$1 000 000 to \$900 000), so each asset dollar generated fewer sales.

Question 13

Highpoint Jewellers: $ROA = \$60\,000 \div \$500\,000 \times 100 = \mathbf{12.0\%}$; $NPM = \$60\,000 \div \$500\,000 \times 100 = \mathbf{12.0\%}$; $ATO = \$500\,000 \div \$500\,000 = \mathbf{1.0\text{ times}}$. Valeway Grocers: $ROA = \$48\,000 \div \$400\,000 \times 100 = \mathbf{12.0\%}$; $NPM = \$48\,000 \div \$1\,200\,000 \times 100 = \mathbf{4.0\%}$; $ATO = \$1\,200\,000 \div \$400\,000 = \mathbf{3.0\text{ times}}$.

Both businesses report the **same 12.0% Return on Assets**, but they earn it in opposite ways. Highpoint, the jeweller, earns a **high margin** (12 cents of profit per sales dollar) on a **low turnover** (each asset dollar generates only \$1.00 of sales) — high-value stock that sells slowly. Valeway, the grocer, earns a **thin margin** (4 cents per sales dollar) on a **high turnover** (each asset dollar generates \$3.00 of sales) — low-value stock that sells rapidly. Because $ROA = NPM \times ATO$, $12.0\% \times 1.0$ and $4.0\% \times 3.0$ both equal 12.0%. The decomposition shows that the *same* return can be reached by a high-margin or a high-turnover strategy, which is why ROA figures are only comparable between businesses of a similar nature.

Question 14

Average total assets = $(\$360\,000 + \$390\,000) \div 2 = \$375\,000$. Return on Assets = $\$37\,500 \div \$375\,000 \times 100 = \mathbf{10.0\%}$. Net Profit Margin = $\$37\,500 \div \$750\,000 \times 100 = \mathbf{5.0\%}$. Asset Turnover = $\$750\,000 \div \$375\,000 = \mathbf{2.0\text{ times}}$ ($5.0\% \times 2.0 = 10.0\%$ ✓).

To improve the 10.0% return, Crestwood could pull either lever. A **margin lever** would raise the Net Profit Margin above 5.0% — for example by lifting selling prices where demand allows, negotiating lower cost prices to widen the gross profit margin, or cutting operating expenses so more of each sales dollar becomes profit. A **turnover lever** would raise the Asset Turnover above 2.0 times — for example by generating more sales from the existing assets (stronger marketing, a better product range, faster inventory turnover) or by reducing the asset base through disposing of under-used non-current assets and clearing surplus inventory. Lifting either the margin or the turnover raises ROA, but the business must watch the trade-off: discounting to boost turnover can shrink the margin, so the net effect on the return must be positive.

Question 15

Average total assets = $(\$760\,000 + \$840\,000) \div 2 = \mathbf{\$800\,000}$. Return on Assets = $\$112\,000 \div \$800\,000 \times 100 = \mathbf{14.0\%}$. Asset Turnover = $\$1\,600\,000 \div \$800\,000 = \mathbf{2.0\text{ times}}$. Net Profit Margin = $\$112\,000 \div \$1\,600\,000 \times 100 = \mathbf{7.0\%}$. Confirmation: $\text{NPM} \times \text{ATO} = 7.0\% \times 2.0 = \mathbf{14.0\%} = \text{ROA}$ ✓.

Question 16

2025: average total assets = $(\$295\,000 + \$305\,000) \div 2 = \$300\,000$; ROA = $\$90\,000 \div \$300\,000 \times 100 = \mathbf{30.0\%}$; NPM = $\$90\,000 \div \$600\,000 \times 100 = 15.0\%$; ATO = $\$600\,000 \div \$300\,000 = 2.0\text{ times}$. 2026: average total assets = $(\$305\,000 + \$315\,000) \div 2 = \$310\,000$; ROA = $\$74\,400 \div \$310\,000 \times 100 = \mathbf{24.0\%}$; NPM = $\$74\,400 \div \$620\,000 \times 100 = 12.0\%$; ATO = $\$620\,000 \div \$310\,000 = 2.0\text{ times}$.

Return on Assets fell from 30.0% to 24.0%. This is a **margin problem**: the Asset Turnover held steady at 2.0 times, so the assets kept generating sales just as efficiently, but the Net Profit Margin fell from 15.0% to 12.0% — the business is keeping less profit out of each sales dollar, pointing to higher cost of sales or expenses rather than any loss of asset efficiency.

Question 17

2025: average total assets = $(\$390\,000 + \$410\,000) \div 2 = \$400\,000$; ROA = $\$100\,000 \div \$400\,000 \times 100 = \mathbf{25.0\%}$; NPM = $\$100\,000 \div \$1\,000\,000 \times 100 = \mathbf{10.0\%}$; ATO = $\$1\,000\,000 \div \$400\,000 = \mathbf{2.5\text{ times}}$. 2026: average total assets = $(\$410\,000 + \$490\,000) \div 2 = \$450\,000$; ROA = $\$85\,050 \div \$450\,000 \times 100 = \mathbf{18.9\%}$; NPM = $\$85\,050 \div \$945\,000 \times 100 = \mathbf{9.0\%}$; ATO = $\$945\,000 \div \$450\,000 = \mathbf{2.1\text{ times}}$.

Return on Assets fell from 25.0% to 18.9%, a fall of 6.1 percentage points. Unlike a single-cause change, **both** levers moved against the business: the Net Profit Margin fell from 10.0% to 9.0% (a margin deterioration — less profit kept per sales dollar) *and* the Asset Turnover fell from 2.5 to 2.1 times (a turnover deterioration — each asset dollar generating fewer sales, as the asset base grew while sales fell). Because $\text{ROA} = \text{NPM} \times \text{ATO}$, the two declines compounded ($10.0\% \times 2.5 = 25.0\%$ versus $9.0\% \times 2.1 = 18.9\%$), so management must address both the squeeze on margin and the drop in asset efficiency.

Question 18

2025: average total assets = $(\$390\,000 + \$410\,000) \div 2 = \$400\,000$; ROA = $\$48\,000 \div \$400\,000 \times 100 = \mathbf{12.0\%}$; NPM = $\$48\,000 \div \$800\,000 \times 100 = \mathbf{6.0\%}$; ATO = $\$800\,000 \div \$400\,000 = \mathbf{2.0\text{ times}}$. 2026: average total assets = $(\$410\,000 + \$490\,000) \div 2 = \$450\,000$; ROA = $\$69\,300 \div \$450\,000 \times 100 = \mathbf{15.4\%}$; NPM = $\$69\,300 \div \$990\,000 \times 100 = \mathbf{7.0\%}$; ATO = $\$990\,000 \div \$450\,000 = \mathbf{2.2\text{ times}}$.

Return on Assets **rose by 3.4 percentage points** ($12.0\% \rightarrow 15.4\%$). Decomposing the change shows **both** levers improved: the Net Profit Margin rose from 6.0% to 7.0% (more profit kept out of each sales dollar) *and* the Asset Turnover rose from 2.0 to 2.2 times (the growing asset base generated proportionally more sales — net sales rose from $\$800\,000$ to $\$990\,000$). Because $\text{ROA} = \text{NPM} \times \text{ATO}$, the two gains reinforced each other ($6.0\% \times 2.0 = 12.0\%$ versus $7.0\% \times 2.2 = 15.4\%$). This is a strongly favourable result on both fronts; management should identify what produced the twin improvement — for example the pricing or cost-control that widened the margin and the sales

growth that lifted turnover — and **sustain those practices**, while continuing to compare the 15.4% return against prior years and similar businesses to confirm the trend holds.

Chapter 18 Evaluating performance: profitability — 18D Net Profit Margin and Gross Profit Margin

Theory

Two firms can report the same net profit in dollars yet be run very differently: one may keep tight control of the cost of the inventory it sells, the other of the wages, rent and advertising it pays to run the business. To see *where* a firm keeps — or loses — the profit in each sales dollar, two profitability indicators are read side by side: the **Gross Profit Margin** and the **Net Profit Margin**. Both are **ratios of the Income Statement**, because the profit figure and the sales figure that make them up are taken straight from that report.

Net Sales — the common base. Every margin in this section is measured against **Net Sales**, the sales the business actually kept after goods were returned:

$$\text{Net Sales} = \text{Sales} - \text{Sales Returns}$$

Measuring against net sales (rather than total Sales) means the margin is not flattered by revenue that was later reversed by a **Sales Return**.

Gross Profit Margin (GPM). The Gross Profit Margin expresses **Gross Profit** as a percentage of Net Sales:

$$\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100$$

Because $\text{Gross Profit} = \text{Net Sales} - \text{Cost of Goods Sold}$, the GPM is the cents of gross profit left in every sales dollar **after the cost of the inventory sold** but **before** any other expense. A GPM of 44% means 44 cents of every sales dollar is gross profit and the other 56 cents was the cost of the goods sold. The GPM is driven by the **selling price (mark-up)** the firm sets and by its **cost of sales** — the buying price of inventory plus product costs such as cartage inwards. It measures how well the firm controls the gap between what it **pays** for its inventory and what it **sells** it for.

Net Profit Margin (NPM). The Net Profit Margin expresses **Net Profit** as a percentage of Net Sales:

$$\text{Net Profit Margin} = \frac{\text{Net Profit}}{\text{Net Sales}} \times 100$$

Net Profit is what remains after **every** expense of the period — cost of goods sold **and** all other expenses (wages, advertising, rent, interest and so on) — has been deducted, and after any other revenue is added. The NPM is therefore the cents of net profit left in every sales dollar once the firm has paid for **both** its inventory and its operations. An NPM of 17% means 17 cents of every sales dollar survives as net profit. Because it captures control of cost of sales **and** other expenses at once, the NPM is the **broadest** single measure of profitability.

Reading the two margins together — the gap is the expense story. Other expenses are deducted *after* Gross Profit, so whenever other expenses exceed other revenue — the usual case — the NPM sits below the GPM. The **gap between the GPM and the NPM is the proportion of net sales consumed by other expenses** (net of any other revenue):

$$\text{GPM} - \text{NPM} = \frac{\text{Other Expenses} - \text{other revenue}}{\text{Net Sales}} \times 100$$

For a firm with no other revenue, the gap is simply other expenses as a percentage of net sales; in the uncommon case where other revenue (such as **Discount Revenue**, added after Gross Profit) exceeds other expenses, the gap turns negative and the NPM sits *above* the GPM. This makes the two margins a **diagnostic pair**: the GPM reports what happens **above** the Gross Profit line, the gap reports what happens **below** it, and the NPM is the net result of the two. When profitability changes, comparing how each margin *moves* locates the cause:

- If the **GPM falls**, the problem lies **above** the Gross Profit line — in **cost of sales or pricing**: cost prices have risen, selling prices have been cut or marked down (a thinner **mark-up**), or the sales mix has shifted towards lower-margin lines. A falling GPM is a **cost-of-sales / pricing** problem.

- If the **GPM holds steady but the NPM falls**, cost of sales is under control; the deterioration lies **below** the Gross Profit line — the **gap widens** because other expenses are growing faster than sales. A steady GPM with a falling NPM is an **other-expenses (operating-cost) control** problem.
- If **both** margins fall, the firm is losing ground on both fronts; the size of each fall shows which matters more — the fall in the GPM measures the cost-of-sales share, and any *extra* fall in the NPM beyond that measures the other-expenses share.

Controlling expenses — strategies to lift each margin. Because the two margins isolate two different cost problems, they point to two different sets of corrective strategies:

- **To improve the Gross Profit Margin** (a cost-of-sales / pricing lever): negotiate lower buying prices with suppliers or buy in larger volumes for a **bulk discount**, which reduces the recorded cost of the inventory itself; reduce product costs such as cartage inwards; review the **mark-up** and lift selling prices where the market allows; cut the size and frequency of **mark-downs** on selling prices; and shift the sales mix towards higher-margin lines.
- **To improve the Net Profit Margin by narrowing the gap** (an other-expenses lever): review and rein in **other expenses** — improve rostering so wages rise no faster than sales, cut discretionary spending such as low-return advertising, renegotiate rent or insurance, reduce power and administration costs, refinance high-interest debt, and trim the **settlement discounts** allowed to customers, which are recorded as **Discount Expense**. Because these expenses sit below the Gross Profit line, controlling them lifts the NPM **without** touching the GPM.

Any strategy carries a trade-off — cutting advertising may reduce sales, and lifting selling prices may cost volume — so a firm weighs the effect on the *margin* against the effect on total profit in dollars, and uses **non-financial information** (customer numbers, market conditions) alongside the ratios. A margin is also only meaningful **in comparison** — with the same firm over time, with a **budget**, or with **similar firms** — which is the qualitative characteristic of **comparability** at work.

Worked model. Brightwater Supplies reports Net Sales of \$500 000, Gross Profit of \$220 000 and Net Profit of \$85 000 for the year. Its Gross Profit Margin is $\$220\,000 \div \$500\,000 \times 100 = \mathbf{44.0\%}$, so 44 cents in every sales dollar is gross profit. Its Net Profit Margin is $\$85\,000 \div \$500\,000 \times 100 = \mathbf{17.0\%}$, so 17 cents in every sales dollar survives as net profit. The 27.0-percentage-point gap between them (44.0% – 17.0%) shows that other expenses consumed 27 cents of every sales dollar. If the firm could trim its other expenses by \$15 000 without affecting sales or gross profit, net profit would rise to \$100 000 and the NPM to $\$100\,000 \div \$500\,000 \times 100 = \mathbf{20.0\%}$ — the GPM unchanged, the whole improvement coming from below the Gross Profit line.

Worked examples (scaffolded)

Example 1 — calculating both margins and the expense gap

Kelvin Trading reports the following for the year ended 30 June 2026: Sales \$630 000, Sales Returns \$30 000, Cost of Sales \$360 000 and other expenses totalling \$150 000. Calculate the Gross Profit Margin, the Net Profit Margin, and the proportion of net sales consumed by other expenses.

Working	Comment
Net Sales = \$630 000 – \$30 000 = \$600 000	Always measure a margin against <i>net</i> sales — Sales less Sales Returns.
Gross Profit = \$600 000 – \$360 000 = \$240 000	Gross Profit = Net Sales – Cost of Goods Sold.
GPM = $\$240\,000 \div \$600\,000 \times 100 = \mathbf{40.0\%}$	40 cents of every sales dollar is gross profit.
Net Profit = \$240 000 – \$150 000 = \$90 000	Deduct all other expenses from Gross Profit.
NPM = $\$90\,000 \div \$600\,000 \times 100 = \mathbf{15.0\%}$	15 cents of every sales dollar survives as net profit.
Gap = 40.0% – 15.0% = 25.0%	The gap is other expenses as a share of net sales ($\$150\,000 \div \$600\,000 \times 100 = 25.0\%$).

So of every sales dollar, 40 cents is gross profit; other expenses then take 25 cents, leaving 15 cents of net profit.

Example 2 — diagnosing a fall: a cost-of-sales problem

Marloo Hardware reports Net Sales \$500 000, Gross Profit \$210 000 and Net Profit \$80 000 in 2025, and Net Sales \$540 000, Gross Profit \$205 200 and Net Profit \$64 800 in 2026. Calculate each margin for both years and diagnose the cause of any change in profitability.

Working	Comment
2025 GPM = $\$210\,000 \div \$500\,000 \times 100 = 42.0\%$	The base year.
2026 GPM = $\$205\,200 \div \$540\,000 \times 100 = 38.0\%$	GPM fell 4 percentage points.
2025 NPM = $\$80\,000 \div \$500\,000 \times 100 = 16.0\%$	The base year.
2026 NPM = $\$64\,800 \div \$540\,000 \times 100 = 12.0\%$	NPM also fell 4 percentage points.
2025 gap = $42.0\% - 16.0\% = 26.0\%$; 2026 gap = $38.0\% - 12.0\% = 26.0\%$	The expense gap is unchanged .
Diagnosis	The gap held steady, so other-expense control did not change; the entire fall came from the GPM — a cost-of-sales / pricing problem.

Because the GPM fell by 4 points while the gap stayed at 26.0%, the whole 4-point fall in the NPM is traced **above** the Gross Profit line: cost of sales rose as a share of sales (dearer buying prices, a trimmed mark-up or marked-down selling prices, or a shift towards lower-margin lines). Other expenses are being kept in step with sales, so management should target buying prices and pricing, not operating costs.

Worked examples (unscaffolded)

Example 3 — diagnosing a fall: an other-expenses problem

Deniston Electrical reports Net Sales \$400 000, Gross Profit \$180 000 and Net Profit \$72 000 in 2025, and Net Sales \$450 000, Gross Profit \$202 500 and Net Profit \$63 000 in 2026. Calculate both margins for each year and identify where the change in profitability arose.

2025 GPM = $\$180\,000 \div \$400\,000 \times 100 = 45.0\%$; 2026 GPM = $\$202\,500 \div \$450\,000 \times 100 = 45.0\%$ — the Gross Profit Margin is **unchanged**. 2025 NPM = $\$72\,000 \div \$400\,000 \times 100 = 18.0\%$; 2026 NPM = $\$63\,000 \div \$450\,000 \times 100 = 14.0\%$ — the Net Profit Margin **fell 4 percentage points**. The expense gap therefore widened from 27.0% ($45.0\% - 18.0\%$) to 31.0% ($45.0\% - 14.0\%$).

∴ because the GPM held steady while the NPM fell, cost of sales is under control and the deterioration is entirely **below** the Gross Profit line: other expenses grew faster than sales, widening the gap by 4 points. This is an **other-expenses (operating-cost) control** problem, so management should review and rein in its other expenses — improved rostering, tighter discretionary spending — rather than its buying prices or mark-up.

Example 4 — modelling an expense-control strategy

Ferngrove Traders reports Net Sales of \$800 000, Gross Profit of \$280 000 and Net Profit of \$88 000 for the year. Calculate both margins and the expense gap, then justify one strategy to raise the Net Profit Margin.

GPM = $\$280\,000 \div \$800\,000 \times 100 = 35.0\%$; NPM = $\$88\,000 \div \$800\,000 \times 100 = 11.0\%$; the gap is 24.0%, so other expenses consume 24 cents of every sales dollar.

∴ the firm keeps 35 cents of gross profit in each sales dollar but only 11 cents of net profit, so over two-thirds of its gross profit (\$192 000 of \$280 000) is absorbed by other expenses — a large gap that points to **other-expense control** as the area with most to gain. A defensible strategy is to review its **discretionary other expenses** — for example, cutting low-return advertising and improving staff rostering so wages rise no faster than sales. Because these costs sit below the Gross Profit line, trimming them would narrow the 24-point gap and lift the NPM **without** altering the GPM: if other expenses fell by \$24 000, net profit would rise to \$112 000 and the NPM to 14.0%, a 3-point gain, with gross-level performance untouched.

Practice questions — scaffolded

Question 1

Sandford Supplies reports Sales \$420 000, Sales Returns \$20 000, Gross Profit \$160 000 and Net Profit \$60 000 for the year.

- Calculate Net Sales.
- Calculate the Gross Profit Margin.
- Calculate the Net Profit Margin.

Question 2

Westbrook Trading reports Net Sales \$600 000, Gross Profit \$270 000 and Net Profit \$108 000.

- Calculate the Gross Profit Margin.
- Calculate the Net Profit Margin.
- Calculate the gap between the two margins, and state what that gap represents.

Question 3

Oakridge Motors reports Net Sales \$500 000, Gross Profit \$200 000 and Net Profit \$75 000 in 2025, and Net Sales \$500 000, Gross Profit \$185 000 and Net Profit \$60 000 in 2026.

- Calculate the Gross Profit Margin for each year.
- Calculate the Net Profit Margin for each year.
- State whether the fall in profitability is a cost-of-sales problem or an other-expenses problem, and justify your answer.

Question 4

Pinehaven Homewares reports Net Sales \$400 000, Gross Profit \$160 000 and Net Profit \$64 000 in 2025, and Net Sales \$400 000, Gross Profit \$160 000 and Net Profit \$48 000 in 2026.

- Calculate the Gross Profit Margin and the Net Profit Margin for each year.
- State whether the change points to a cost-of-sales problem or an other-expenses problem, and justify your answer.
- Suggest one strategy the business could use to address the change.

Question 5

Tarrowonga Cycles reports Net Sales \$300 000, Gross Profit \$135 000 and Net Profit \$36 000.

- Calculate the Gross Profit Margin and the Net Profit Margin.
- Explain, in one sentence, why the Net Profit Margin is lower than the Gross Profit Margin.
- Suggest one strategy the business could use to improve its Gross Profit Margin.

Question 6

Ashcombe Trading reports Net Sales \$500 000, Gross Profit \$225 000 and Net Profit \$75 000. Brindle Trading reports Net Sales \$500 000, Gross Profit \$200 000 and Net Profit \$80 000.

- Calculate the Gross Profit Margin and the Net Profit Margin for each business.
- State which business controls its other expenses better, and justify your answer using the expense gap.
- Explain how the two margins can rank the two businesses differently.

Practice questions — unscaffolded

Question 7

Calder Trading reports the following for the year ended 30 June 2026.

Income Statement (extract)
for the year ended 30 June
2026

	\$	\$
Sales	530 000	
less Sales Returns	30 000	
Net Sales		500 000
less Cost of Goods Sold		290 000
Gross Profit		210 000
less Other Expenses		135 000
Net Profit		75 000

Calculate the Gross Profit Margin, the Net Profit Margin, and the proportion of net sales consumed by other expenses.

Question 8

Hollybank Goods reports Sales \$680 000, Sales Returns \$30 000, Gross Profit \$260 000 and Net Profit \$91 000. Calculate Net Sales, the Gross Profit Margin, the Net Profit Margin and the expense gap.

Question 9

Rothbury Trading reports Net Sales \$600 000, Gross Profit \$240 000 and Net Profit \$96 000 in 2025, and Net Sales \$600 000, Gross Profit \$222 000 and Net Profit \$66 000 in 2026. Calculate both margins for each year and identify whether the fall in profitability was driven mainly by cost of sales, by other expenses, or by both.

Question 10

Millbrook Supplies reports Net Sales \$450 000, Gross Profit \$180 000 and Net Profit \$72 000 in 2025, and Net Sales \$480 000, Gross Profit \$192 000 and Net Profit \$57 600 in 2026. Calculate both margins for each year, identify the problem area, and recommend one expense-control strategy, justifying how it would work.

Question 11

Glenferrie Cycles reports Net Sales \$500 000, Gross Profit \$220 000 and Net Profit \$95 000 in 2025, and Net Sales \$500 000, Gross Profit \$195 000 and Net Profit \$70 000 in 2026. Calculate both margins for each year, diagnose the cause of the fall, and suggest one strategy to restore the Gross Profit Margin.

Question 12

Two sporting-goods retailers report for the year. Aldgate Sports — Net Sales \$400 000, Gross Profit \$180 000, Net Profit \$52 000. Balhannah Sports — Net Sales \$500 000, Gross Profit \$190 000, Net Profit \$80 000. Calculate the Gross Profit Margin and Net Profit Margin for each, state which is more profitable overall and which controls its other expenses better, and explain how the two margins rank the businesses differently.

Question 13

Nether Trading reports Net Sales \$800 000, Gross Profit \$320 000 and Net Profit \$96 000. Calculate the Gross Profit Margin, the Net Profit Margin and the percentage of every sales dollar consumed by other expenses. Then, assuming the business could reduce its other expenses by \$40 000 without affecting sales or gross profit, calculate the Net Profit Margin it would report, and state which margin is unchanged.

Question 14

Sedgwick Supplies reports Net Sales \$720 000, Gross Profit \$252 000 and Net Profit \$79 200. The business had set a Gross Profit Margin target of 36.0% and a Net Profit Margin target of 12.0%. Calculate both margins and state whether each target was met and, if not, by how many percentage points it was missed.

Question 15

Thornbury Traders reports Net Sales \$500 000, Gross Profit \$200 000 and Net Profit \$70 000 in 2025, and Net Sales \$650 000, Gross Profit \$260 000 and Net Profit \$84 500 in 2026. Calculate both margins for each year, and explain how the firm's net profit in dollars can rise while its Net Profit Margin falls — identifying the problem area.

Question 16

Rowan Trading reports Net Sales \$500 000, Gross Profit \$210 000 and Net Profit \$75 000 in 2025, and Net Sales \$500 000, Gross Profit \$190 000 and Net Profit \$45 000 in 2026. Calculate both margins for each year, then discuss two strategies — one to improve the Gross Profit Margin and one to improve the Net Profit Margin — justifying how each would work.

Question 17

Explain why a business monitors its Gross Profit Margin and Net Profit Margin **together** rather than relying on either one alone. In your answer, state one limitation of using these margins to judge how well a business controls its expenses.

Question 18

Wexford Wholesalers reports the following for two consecutive years.

Income Statement (extract)	2025 \$	2026 \$
Sales	840 000	930 000
less Sales Returns	40 000	30 000
Net Sales	800 000	900 000
less Cost of Goods Sold	440 000	522 000
Gross Profit	360 000	378 000
less Other Expenses	240 000	279 000
Net Profit	120 000	99 000

Calculate the Gross Profit Margin and the Net Profit Margin for each year, describe the trend in profitability, identify whether the change was driven mainly by cost of sales, by other expenses, or by both, and state which area management should treat as the priority.

Answers

1.
 - a. \$400 000 b. 40.0% c. 15.0%
2.
 - a. 45.0% b. 18.0% c. 27.0% — other expenses as a share of net sales
3.
 - a. 2025 40.0%, 2026 37.0% b. 2025 15.0%, 2026 12.0% c. Cost-of-sales problem (GPM fell, gap steady)
4.
 - a. 2025 GPM 40.0%/NPM 16.0%, 2026 GPM 40.0%/NPM 12.0% b. Other-expenses problem (GPM unchanged, NPM fell) c. See solutions
5.
 - a. GPM 45.0%, NPM 12.0% b. See solutions c. See solutions
6.
 - a. Ashcombe GPM 45.0%/NPM 15.0%; Brindle GPM 40.0%/NPM 16.0% b. Brindle (gap 24.0% vs 30.0%)
b. See solutions
7. GPM 42.0%, NPM 15.0%; other expenses 27.0% of net sales
8. Net Sales \$650 000; GPM 40.0%; NPM 14.0%; gap 26.0%
9. 2025 GPM 40.0%/NPM 16.0%; 2026 GPM 37.0%/NPM 11.0% — both, mainly cost of sales
10. 2025 GPM 40.0%/NPM 16.0%; 2026 GPM 40.0%/NPM 12.0% — other-expenses problem
11. 2025 GPM 44.0%/NPM 19.0%; 2026 GPM 39.0%/NPM 14.0% — cost-of-sales problem
12. Aldgate GPM 45.0%/NPM 13.0%; Balhannah GPM 38.0%/NPM 16.0%; Balhannah more profitable and better expense control
13. GPM 40.0%, NPM 12.0%; other expenses 28.0%; new NPM 17.0%; GPM unchanged
14. GPM 35.0% (target missed by 1.0 pp); NPM 11.0% (target missed by 1.0 pp)
15. 2025 GPM 40.0%/NPM 14.0%; 2026 GPM 40.0%/NPM 13.0%; other-expenses problem
16. 2025 GPM 42.0%/NPM 15.0%; 2026 GPM 38.0%/NPM 9.0%; see solutions
17. See solutions
18. 2025 GPM 45.0%/NPM 15.0%; 2026 GPM 42.0%/NPM 11.0%; both, mainly cost of sales

Fully-worked solutions

Question 1

- a. Net Sales = \$420 000 – \$20 000 = **\$400 000**.
- b. GPM = \$160 000 ÷ \$400 000 × 100 = **40.0%**.
- c. NPM = \$60 000 ÷ \$400 000 × 100 = **15.0%**.

Question 2

- a. GPM = \$270 000 ÷ \$600 000 × 100 = **45.0%**.
- b. NPM = \$108 000 ÷ \$600 000 × 100 = **18.0%**.
- c. Gap = 45.0% – 18.0% = **27.0%**. This gap is the proportion of net sales consumed by **other expenses** (net of other revenue): here, with no other revenue, other expenses of \$162 000 ÷ \$600 000 × 100 = 27.0%. It measures how much of each sales dollar is absorbed by operating costs below the Gross Profit line.

Question 3

- a. 2025 GPM = \$200 000 ÷ \$500 000 × 100 = **40.0%**; 2026 GPM = \$185 000 ÷ \$500 000 × 100 = **37.0%**.
- b. 2025 NPM = \$75 000 ÷ \$500 000 × 100 = **15.0%**; 2026 NPM = \$60 000 ÷ \$500 000 × 100 = **12.0%**.

- c. This is a **cost-of-sales problem**. The gap between the margins was 25.0% (40.0% – 15.0%) in 2025 and 25.0% (37.0% – 12.0%) in 2026 — **unchanged** — so other-expense control did not deteriorate. Both margins fell by exactly 3 percentage points, which means the whole fall came from **above** the Gross Profit line: cost of sales rose as a share of sales (dearer buying prices, a lower mark-up or marked-down selling prices, or a shift towards lower-margin lines). Sales were identical in both years, so the fall is a genuine loss of profitability, and management should target buying prices and pricing.

Question 4

- a. 2025 GPM = $\$160\,000 \div \$400\,000 \times 100 = 40.0\%$, NPM = $\$64\,000 \div \$400\,000 \times 100 = 16.0\%$; 2026 GPM = $\$160\,000 \div \$400\,000 \times 100 = 40.0\%$, NPM = $\$48\,000 \div \$400\,000 \times 100 = 12.0\%$.
- b. This points to an **other-expenses problem**. The Gross Profit Margin was **unchanged** at 40.0%, so control of cost of sales (buying prices and mark-up) held steady; but the Net Profit Margin fell 4 percentage points, from 16.0% to 12.0%. A steady GPM with a falling NPM means the deterioration occurred **below** the Gross Profit line — the gap widened from 24.0% to 28.0% as other expenses grew faster than sales.
- c. The business should **review and control its other expenses** — for example, improving staff rostering so that wage costs rise no faster than sales, cutting discretionary spending such as low-return advertising, or renegotiating rent. Any one such measure would narrow the gap and lift the NPM without touching the GPM.

Question 5

- a. GPM = $\$135\,000 \div \$300\,000 \times 100 = 45.0\%$; NPM = $\$36\,000 \div \$300\,000 \times 100 = 12.0\%$.
- b. The Net Profit Margin is lower because it is struck **after** deducting all other expenses (wages, advertising, rent, interest and so on), whereas the Gross Profit Margin is struck **before** those expenses — so the NPM is smaller by the 33 cents in every sales dollar (45.0% – 12.0%) that other expenses consume.
- c. To improve the **Gross Profit Margin**, the business could act **above** the Gross Profit line — for example, negotiate lower buying prices with suppliers (or buy in larger volumes for a bulk discount), reduce product costs such as cartage inwards, or lift its selling-price mark-up where the market allows. Each of these widens the gap between cost of sales and selling price, raising the GPM. (Any one reasonable cost-of-sales / pricing strategy.)

Question 6

- a. Ashcombe GPM = $\$225\,000 \div \$500\,000 \times 100 = 45.0\%$, NPM = $\$75\,000 \div \$500\,000 \times 100 = 15.0\%$; Brindle GPM = $\$200\,000 \div \$500\,000 \times 100 = 40.0\%$, NPM = $\$80\,000 \div \$500\,000 \times 100 = 16.0\%$.
- b. **Brindle** controls its other expenses better. Its expense gap is 40.0% – 16.0% = **24.0%**, against Ashcombe's 45.0% – 15.0% = **30.0%**; Brindle loses only 24 cents of each sales dollar to other expenses where Ashcombe loses 30.
- c. The two margins rank the firms **differently**. Ashcombe has the higher **Gross Profit Margin** (45.0% versus 40.0%), so it controls its cost of sales or sets a higher mark-up; but Brindle controls its **other expenses** so much better that it ends with the higher **Net Profit Margin** (16.0% versus 15.0%). Whichever firm looks “better” therefore depends on which margin is used — Ashcombe on the gross measure, Brindle on the net measure — so the two margins must be read together to see the full picture.

Question 7

GPM = $\$210\,000 \div \$500\,000 \times 100 = 42.0\%$. NPM = $\$75\,000 \div \$500\,000 \times 100 = 15.0\%$.

∴ 42 cents of every sales dollar is gross profit and 15 cents survives as net profit; other expenses consumed the intervening 27 cents ($\$135\,000 \div \$500\,000 \times 100 = 27.0\%$).

Question 8

Net Sales = $\$680\,000 - \$30\,000 = \$650\,000$. GPM = $\$260\,000 \div \$650\,000 \times 100 = 40.0\%$. NPM = $\$91\,000 \div \$650\,000 \times 100 = 14.0\%$. Gap = 40.0% – 14.0% = **26.0%** (other expenses of $\$169\,000 \div \$650\,000 \times 100 = 26.0\%$).

Question 9

2025 GPM = $\$240\,000 \div \$600\,000 \times 100 = 40.0\%$; 2026 GPM = $\$222\,000 \div \$600\,000 \times 100 = 37.0\%$. 2025 NPM = $\$96\,000 \div \$600\,000 \times 100 = 16.0\%$; 2026 NPM = $\$66\,000 \div \$600\,000 \times 100 = 11.0\%$.

Sales were identical in both years, so the falls are a real loss of profitability. The change was driven by **both**, but **mainly cost of sales**. The GPM fell 3 percentage points, showing cost of goods sold rose as a share of sales — the larger single cause. The NPM fell 5 points, which is 2 points *more* than the GPM, so the gap widened from 24.0% to 26.0%: other expenses also rose as a share of sales, adding a further 2 points to the decline. Of the 5-point fall in the NPM, 3 points came from the weaker gross margin and 2 from other expenses growing faster than sales.

Question 10

2025 GPM = $\$180\,000 \div \$450\,000 \times 100 = 40.0\%$; 2026 GPM = $\$192\,000 \div \$480\,000 \times 100 = 40.0\%$. 2025 NPM = $\$72\,000 \div \$450\,000 \times 100 = 16.0\%$; 2026 NPM = $\$57\,600 \div \$480\,000 \times 100 = 12.0\%$.

The Gross Profit Margin was **unchanged** at 40.0%, so cost of sales stayed in step with sales as the business grew; the deterioration is an **other-expenses problem**. The Net Profit Margin fell 4 percentage points and the gap widened from 24.0% to 28.0%, showing other expenses grew faster than sales. A defensible strategy is to **review and rein in discretionary other expenses** — for example, improved rostering so wages track sales, or cutting low-return advertising — because these costs sit below the Gross Profit line, so controlling them narrows the gap and lifts the NPM **without** altering the GPM.

Question 11

2025 GPM = $\$220\,000 \div \$500\,000 \times 100 = 44.0\%$; 2026 GPM = $\$195\,000 \div \$500\,000 \times 100 = 39.0\%$. 2025 NPM = $\$95\,000 \div \$500\,000 \times 100 = 19.0\%$; 2026 NPM = $\$70\,000 \div \$500\,000 \times 100 = 14.0\%$.

Sales were identical, so the falls are genuine. This is a **cost-of-sales problem**: the gap held steady at 25.0% (44.0% – 19.0% and 39.0% – 14.0%), so other-expense control did not change, and both margins fell by the same 5 percentage points — the whole fall traced to **above** the Gross Profit line. A strategy to **restore the Gross Profit Margin** is to act on cost of sales or pricing — negotiate lower buying prices (or buy in larger volumes for a bulk discount), reduce product costs such as cartage inwards, or lift the selling-price mark-up where the market allows — each of which widens the margin between cost of sales and selling price.

Question 12

Aldgate GPM = $\$180\,000 \div \$400\,000 \times 100 = 45.0\%$, NPM = $\$52\,000 \div \$400\,000 \times 100 = 13.0\%$; Balhannah GPM = $\$190\,000 \div \$500\,000 \times 100 = 38.0\%$, NPM = $\$80\,000 \div \$500\,000 \times 100 = 16.0\%$.

Balhannah is more profitable overall, because the Net Profit Margin — the broadest measure — is higher for Balhannah (16.0%) than for Aldgate (13.0%). Balhannah also **controls its other expenses far better**: its gap is 38.0% – 16.0% = 22.0%, against Aldgate's 45.0% – 13.0% = 32.0%. The two margins **rank the firms differently**: Aldgate has the higher Gross Profit Margin (45.0% versus 38.0%), so it prices or buys better at the gross level; but its other expenses take 32 cents of every sales dollar against Balhannah's 22, and this more than reverses Aldgate's gross-level advantage — giving Balhannah the higher net result. Both margins must be read together, as each alone would name a different “winner”.

Question 13

GPM = $\$320\,000 \div \$800\,000 \times 100 = 40.0\%$. NPM = $\$96\,000 \div \$800\,000 \times 100 = 12.0\%$. Other expenses as a share of net sales = 40.0% – 12.0% = **28.0%** ($\$224\,000 \div \$800\,000 \times 100 = 28.0\%$).

If other expenses fell by \$40 000, net profit would rise to $\$96\,000 + \$40\,000 = \$136\,000$, and the new NPM = $\$136\,000 \div \$800\,000 \times 100 = 17.0\%$ — a 5-point improvement. The **Gross Profit Margin is unchanged** at 40.0%, because the saving is entirely below the Gross Profit line; the whole gain shows up as a narrower gap (28.0% → 23.0%) and a higher NPM.

Question 14

GPM = $\$252\,000 \div \$720\,000 \times 100 = 35.0\%$. NPM = $\$79\,200 \div \$720\,000 \times 100 = 11.0\%$.

The GPM target of 36.0% was **not met** — actual 35.0%, short by **1.0 percentage point**. The NPM target of 12.0% was **not met** either — actual 11.0%, short by **1.0 percentage point**. Both margins fell 1 point short, so the gap (24.0%) is exactly on target; the shortfall arises **above** the Gross Profit line, in cost of sales, which then carries through to the NPM.

Question 15

2025 GPM = $\$200\,000 \div \$500\,000 \times 100 = 40.0\%$; 2026 GPM = $\$260\,000 \div \$650\,000 \times 100 = 40.0\%$. 2025 NPM = $\$70\,000 \div \$500\,000 \times 100 = 14.0\%$; 2026 NPM = $\$84\,500 \div \$650\,000 \times 100 = 13.0\%$.

Net profit in **dollars rose** (\$70 000 → \$84 500, up \$14 500), yet the Net Profit Margin **fell** from 14.0% to 13.0%. This is possible because net sales grew faster (\$500 000 → \$650 000, up 30%) than net profit did (up about 21%), so profit shrank as a *proportion* of sales even as the dollars rose. The Gross Profit Margin was **unchanged** at 40.0%, so cost of sales kept step with the higher sales; the 1-point fall in the NPM came from a widening gap (26.0% → 27.0%), meaning other expenses grew slightly faster than sales. It is therefore an **other-expenses problem** — modest, but real — that the rising dollar figure of profit conceals until the margin is calculated.

Question 16

2025 GPM = $\$210\,000 \div \$500\,000 \times 100 = 42.0\%$; 2026 GPM = $\$190\,000 \div \$500\,000 \times 100 = 38.0\%$. 2025 NPM = $\$75\,000 \div \$500\,000 \times 100 = 15.0\%$; 2026 NPM = $\$45\,000 \div \$500\,000 \times 100 = 9.0\%$.

Sales were identical, so both falls are genuine: the GPM fell 4 points and the NPM 6, and the gap widened from 27.0% to 29.0% — the firm lost ground **both** above and below the Gross Profit line.

- **To improve the Gross Profit Margin**, act on cost of sales or pricing: negotiate lower buying prices or buy in larger volumes for a bulk discount, reduce product costs such as cartage inwards, or lift the selling-price mark-up where the market allows. This works because the GPM is the gap between selling price and cost of sales, so widening that gap restores the 4 points lost above the Gross Profit line.
- **To improve the Net Profit Margin**, narrow the expense gap by controlling **other expenses**: improve rostering so wages rise no faster than sales, cut low-return advertising, or renegotiate rent and interest. This works because these costs sit below the Gross Profit line, so trimming them lifts the NPM directly (and closes the 2-point widening in the gap) without touching the GPM.

A well-run response would tackle both, because the deterioration came from both; each strategy carries a trade-off (a higher price may cost volume, cutting advertising may cost sales), so the firm should weigh each against total profit in dollars and against non-financial information before acting.

Question 17

A business monitors the two margins **together** because each isolates a different part of its cost structure, and only the pair reveals *where* profitability is being won or lost. The **Gross Profit Margin** reports control of cost of sales and pricing (what happens **above** the Gross Profit line); the **Net Profit Margin** reports the final result after all expenses; and the **gap between them** reports control of other expenses (what happens **below** the line). Reading them together lets a user **diagnose** a change: a falling GPM points to a cost-of-sales / pricing problem, while a steady GPM with a falling NPM points to an other-expenses problem. Either margin alone could mislead — a healthy GPM can hide runaway operating costs, and a falling NPM does not by itself say whether the cause lies in cost of sales or in other expenses.

One **limitation** is that these margins show only *that* an expense problem exists, not *which* expense caused it — the NPM and the gap lump wages, advertising, rent and interest together, so a business must turn to more detailed tools (such as **vertical analysis** of each expense line) and to **non-financial information** to identify and act on the specific cost. A margin is also only meaningful **against a benchmark** (a prior year, a budget or an industry figure), and it says nothing about the **absolute size** of profit or about cash flow.

Question 18

2025 GPM = $\$360\,000 \div \$800\,000 \times 100 = 45.0\%$; 2026 GPM = $\$378\,000 \div \$900\,000 \times 100 = 42.0\%$. 2025 NPM = $\$120\,000 \div \$800\,000 \times 100 = 15.0\%$; 2026 NPM = $\$99\,000 \div \$900\,000 \times 100 = 11.0\%$.

Trend: profitability **deteriorated** — the Gross Profit Margin fell 3 percentage points and the Net Profit Margin fell 4, so even though net sales grew from \$800 000 to \$900 000, the business kept fewer cents of profit in every sales dollar.

Driver: the change was driven by **both**, but **mainly cost of sales**. The 3-point fall in the GPM shows cost of goods sold rose as a share of sales (from 55% to 58% of net sales), the larger single cause. Because the NPM fell by 4 points — 1 point more than the GPM — the gap widened from 30.0% to 31.0%, so **other expenses** also rose slightly as a share of sales, adding to the decline.

Priority: management should treat **cost of sales** as the priority, since it caused three of the four points lost — reviewing buying prices, mark-up and sales mix — while also keeping other-expense control (the remaining 1-point widening in the gap) in view as a secondary concern.

Chapter 18 Evaluating performance: profitability — 18E Vertical analysis, non-financial information and strategies

Theory

A single profitability indicator, or a single year's dollar profit, tells the owner very little on its own. To judge how well a business is really performing, the figures must be turned into **proportions** and then **compared** — with earlier years, with a similar business, or with a benchmark. **Vertical analysis** is the tool that makes those comparisons possible, and **non-financial information** and practical **strategies** are what the owner uses to explain the results and act on them.

Vertical analysis (also called **common-size analysis**) restates every item in the Income Statement as a **percentage of a common base**. For the Income Statement the base is **Net Sales**, which is set to **100%**, so that each item is expressed as a percentage of net sales:

$$\text{item as a \% of net sales} = \frac{\text{item}}{\text{Net Sales}} \times 100$$

The result is conventionally rounded to **one decimal place**. Net Sales is chosen as the base because selling inventory is the main activity of a trading business and the source of its profit, so every cost and every profit measure is most usefully judged against the sales it took to generate them.

Applied to the whole report, vertical analysis produces a percentage for every line:

- **Cost of Sales %** — the proportion of each sales dollar absorbed by the cost of the goods sold.
- **Gross Profit %** — the proportion left after cost of sales; this *is* the **Gross Profit Margin**. With a single cost-of-sales line, **Cost of Sales % + Gross Profit % = 100%**.
- **each expense %** — the proportion of each sales dollar consumed by advertising, wages, rent, interest and so on.
- **Net Profit %** — the proportion of each sales dollar that remains as profit; this *is* the **Net Profit Margin**. It follows that **Net Profit % = Gross Profit % (+ other revenue %) – total expenses %**.

Reading the percentage column. Read down the column, each figure answers the question “out of every dollar of sales, how many cents does this line take (or leave)?” A Cost of Sales of **60.0%** means 60 cents of every sales dollar is the cost of the inventory sold; a Wages figure of **18.0%** means 18 cents goes on wages; a Net Profit of **8.0%** means just 8 cents of every sales dollar is left as profit. The percentages make the *structure* of performance visible in a way the raw dollars cannot.

Why proportions beat dollars. Because every line is expressed relative to net sales, vertical analysis **removes the effect of size and of changing sales volume**. This makes two kinds of comparison possible that raw dollars cannot support:

- **Over time (trend analysis).** A business can compare this year's structure with last year's even when sales have grown or shrunk. Net Profit measured in dollars might *rise* while the **Net Profit % falls** — meaning the business kept a *smaller* share of each sales dollar, so it actually became **less** efficient. Vertical analysis exposes this; the dollar figure alone hides it.
- **Between firms (benchmarking).** A small business and a large business report very different dollar figures, but their percentage structures can be compared directly. The firm that keeps the higher **Net Profit %** is the more profitable *per sales dollar*, regardless of which reports the bigger dollar profit. Comparing only *similar* businesses, prepared on consistent methods, respects the qualitative characteristic of **comparability**.

Identifying the “problem line”. The real power of vertical analysis is diagnosis. When the **Net Profit %** has fallen, the owner reads *down* the two years' percentage columns to find *which* line moved against the business — the line whose percentage **rose** the most (an expense or cost of sales), or the margin that **fell** the most. That line is the **problem line**, and it tells the owner exactly where to direct a strategy:

- If **Cost of Sales %** has risen (so **Gross Profit %** has fallen), the problem is in **buying and selling** — supplier prices, the selling price/mark-up, discounting, or inventory loss.

- If a particular **expense %** has risen, the problem is in **controlling that operating cost** — wages, advertising, rent or interest.

Two changes can pull in opposite directions: total expenses might be *better* controlled (a lower expense %) while a rising cost of sales still drags the Net Profit % down. Only by examining each line separately can the owner see the true cause.

Non-financial information. Non-financial information is information that is **not expressed in dollars** and **does not appear in the financial reports** — the Income Statement, Balance Sheet and Cash Flow Statement — yet is still useful for assessing and improving profitability. Financial indicators and vertical analysis tell the owner **what** has happened to the structure of profit; non-financial information often explains **why**, and helps **predict** what will happen next. Information relevant to profitability includes:

- the **number of sales transactions** or **units sold**, and the **number of customers**;
- **customer satisfaction, feedback and complaints**, and rates of **repeat custom** or loyalty;
- **staff numbers, productivity, expertise and turnover** (the rate at which employees leave);
- **market share, competitors' prices and activity**, and general **economic conditions**;
- **supplier reliability and lead times**, the **level of sales returns or warranty claims**, and the business's **reputation** on social, ethical and environmental matters.

A rising Cost of Sales % might be explained by a supplier's price increase or by the business discounting to match a new competitor; a rising Wages % might reflect extra staff hired to lift service. None of this appears in the ledger, but all of it is needed before the owner can decide what to do.

Strategies to improve profitability. Once vertical analysis has located the problem and non-financial information has explained it, the owner can choose a strategy. Every strategy works through one of three levers, and every strategy carries a **trade-off** — a way in which pursuing it can harm another figure, so the *net* effect on profit must always be weighed.

- **Increase sales revenue and/or the selling margin.** Sell more units (promotion, better service, a wider or better range), or raise the **selling price / mark-up**, or shift the sales mix toward **higher-margin lines**. *Trade-offs:* raising prices can drive volume-conscious customers to competitors; extra advertising raises expenses; and discounting to lift volume **erodes the Gross Profit %**, so more is sold but less is earned on each sale.
- **Control the cost of sales (lift the Gross Profit %).** Negotiate lower prices from suppliers, buy in larger quantities for bulk discounts, find cheaper or more reliable suppliers, reduce inventory loss, theft and wastage, or review the mark-up. *Trade-offs:* a cheaper supplier may cut **quality**, raising returns and damaging reputation; bulk buying ties up cash and risks obsolescence.
- **Control the operating expenses (lift the Net Profit %).** Target the expense the vertical analysis shows is rising — roster staff more efficiently, review advertising spend, relocate to cheaper premises, or repay debt to cut interest. *Trade-offs:* cutting advertising can reduce sales; cutting staff or wages can harm service, sales and morale; and cutting quality-related costs can damage the business's reputation. Cost control should trim **waste**, not the spending that actually generates sales.

The owner must also weigh **short-term versus long-term** effects and any **ethical** considerations — for example, squeezing a supplier or cutting staff training may lift this year's profit but weaken the business later. The sound approach is to use vertical analysis to **target** the right line, non-financial information to **understand** the cause, and a strategy whose benefit clearly outweighs its trade-off.

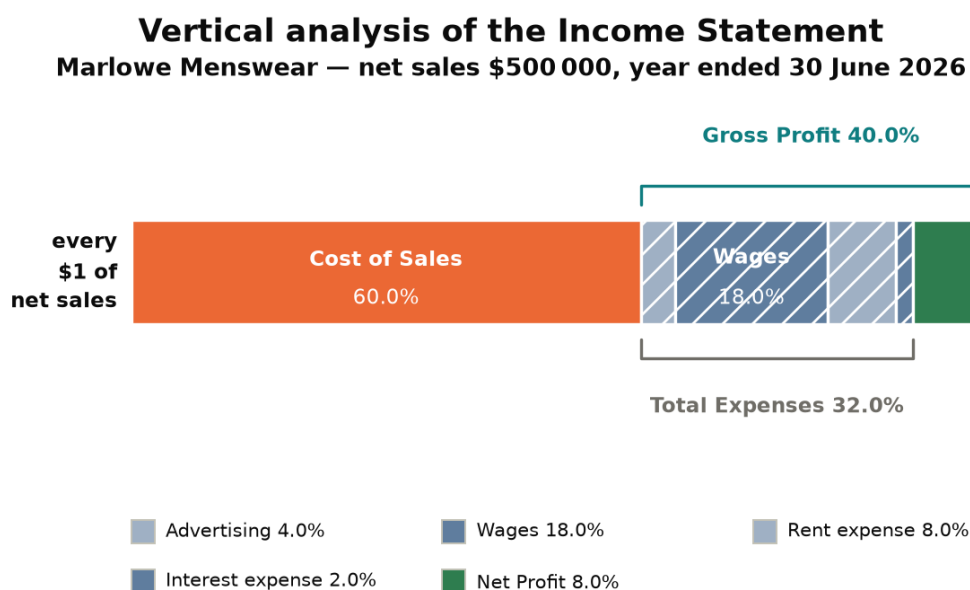
Worked model. Marlowe Menswear provides the following for the year ended 30 June 2026. Net Sales were \$500 000, Cost of Sales \$300 000, Advertising \$20 000, Wages \$90 000, Rent expense \$40 000 and Interest expense \$10 000. Expressing each item as a percentage of net sales:

Item	\$	% of net sales
Net Sales	500 000	100.0
less Cost of Sales	300 000	60.0
Gross Profit	200 000	40.0

Item	\$	% of net sales
less Advertising	20 000	4.0
less Wages	90 000	18.0
less Rent expense	40 000	8.0
less Interest expense	10 000	2.0
Total Expenses	160 000	32.0
Net Profit	40 000	8.0

Of every sales dollar, 60 cents is the cost of the goods (Gross Profit **40.0%**), a further 32 cents is consumed by operating expenses, and **8.0 cents** is left as Net Profit. Whether that structure is satisfactory can only be judged by comparing it with Marlowe's earlier years or with similar menswear retailers.

Expressed as one bar, the whole report becomes a single sales dollar and its pieces:



Of every sales dollar, 60 cents is the cost of the goods and a further 32 cents is consumed by expenses, leaving 8 cents of net profit.

Marlowe Menswear's Income Statement as one sales dollar

The segments are drawn at the percentages calculated above, so their widths are the vertical analysis rather than a picture of it. What the bar shows at a glance, and the column of percentages does not, is that the largest single claim on the sales dollar by far is **Cost of Sales** at 60.0 cents — so a business hunting for the problem line should look there before it starts trimming the operating expenses that share the remaining 32.0 cents.

Ethical considerations in improving performance. Every strategy to improve business performance can be judged not only by its effect on profit but by whether it is **ethical** — whether it is fair to the people and the community the business deals with. Some ways of lifting short-term profit push costs onto others: cutting **wages** or hours below a fair level, buying cheaper inventory of lower **quality**, pressing **suppliers** for price cuts they cannot sustain, or trimming spending on safety, staff training or waste disposal. Each of these can raise this year's Net Profit % while harming staff, customers, suppliers or the environment — and often the reputation of the business itself. Other tactics raise no profit at all: **delaying payments to suppliers** beyond agreed terms holds on to cash for longer, but under the **accrual basis** an expense is recognised when it is *incurred*, not when it is paid, so the Net Profit % is **unchanged** — and any settlement discount forfeited actually *reduces* Discount Revenue and profit. Such a tactic strains the supplier relationship without even delivering the profit gain that appears to justify it. The owner therefore has to weigh the financial benefit of a strategy against its **social and environmental consequences**, not merely its effect on the figures.

A second ethical question concerns the **reports themselves**. The indicators and the vertical analysis the owner relies on are only useful if the underlying figures are prepared honestly. Manipulating a **budget** so that later results look favourable, or explaining away an unfavourable **variance** by shifting figures between periods or lines, misleads the

very people the reports are meant to inform — the owner, a lender or an investor. Presenting only the indicators that flatter the business, while hiding those that do not, is equally misleading. The accountant must resist this pressure and maintain **integrity, impartiality, objectivity and confidentiality**, reporting all relevant information faithfully whether or not it shows the business in a good light.

Balancing profit against ethical considerations does not mean profit is unimportant; it means the sound strategy is one whose gain does not depend on treating employees, customers, suppliers or the community unfairly, and whose short-term benefit is not outweighed by longer-term damage. **ICT tools such as spreadsheets** let the owner model the financial effects of alternative strategies — projecting the Net Profit % under each option — so that the ethical and the financial consequences can be compared side by side before a decision is made.

Worked examples (scaffolded)

Example 1 — preparing a vertical-analysis Income Statement

Brightwater Homewares provides the following for the year ended 30 June 2025: Net Sales \$400 000; Cost of Sales \$260 000; Advertising \$16 000; Wages \$72 000; Rent expense \$26 000; Interest expense \$8 000. Prepare a vertical-analysis Income Statement, expressing each item as a percentage of net sales.

Working	Comment
Gross Profit = Net Sales \$400 000 – Cost of Sales \$260 000 = \$140 000 .	The dollar figures come first; percentages are then taken on each line.
Cost of Sales % = $\$260\,000 \div \$400\,000 \times 100 = 65.0\%$.	Each item is divided by net sales (the base) and multiplied by 100.
Gross Profit % = $\$140\,000 \div \$400\,000 \times 100 = 35.0\%$.	Cost of Sales % + Gross Profit % = 65.0 + 35.0 = 100.0%.
Total Expenses = \$16 000 + \$72 000 + \$26 000 + \$8 000 = \$122 000 (30.5%) .	Rent at $\$26\,000 \div \$400\,000 = 6.5\%$; the expenses are summed and their percentage taken.
Net Profit = \$140 000 – \$122 000 = \$18 000 ; Net Profit % = 35.0 – 30.5 = 4.5% .	Net Profit % = Gross Profit % – total expenses %.

Item	\$	% of net sales
Net Sales	400 000	100.0
less Cost of Sales	260 000	65.0
Gross Profit	140 000	35.0
less Advertising	16 000	4.0
less Wages	72 000	18.0
less Rent expense	26 000	6.5
less Interest expense	8 000	2.0
Total Expenses	122 000	30.5
Net Profit	18 000	4.5

Example 2 — comparing two years' structure and identifying the problem line

Cedar & Co reports Net Sales of \$400 000 in 2025 and \$500 000 in 2026. Its results were: 2025 — Cost of Sales \$240 000, Wages \$60 000, Advertising \$20 000, Rent expense \$40 000; 2026 — Cost of Sales \$325 000, Wages \$75 000, Advertising \$25 000, Rent expense \$40 000. Compare the two years using vertical analysis and identify the line responsible for the change in Net Profit %.

Working	Comment
2025: Gross Profit = \$160 000 (40.0%); Total Expenses \$120 000 (30.0%); Net Profit \$40 000 (10.0%).	Cost of Sales $\$240\,000 \div \$400\,000 = 60.0\%$.
2026: Gross Profit = \$175 000 (35.0%); Total Expenses	Cost of Sales $\$325\,000 \div \$500\,000 = 65.0\%$.

Working	Comment
\$140 000 (28.0%); Net Profit \$35 000 (7.0%).	
Net Profit % fell from 10.0% to 7.0% — down 3.0 percentage points .	Even though 2026 has <i>higher</i> net sales, a smaller share of each dollar is kept.
Cost of Sales % rose from 60.0% to 65.0% (+5.0 points); Gross Profit % fell from 40.0% to 35.0%.	This is the problem line — the deterioration is in buying and selling.
Total Expenses % actually <i>improved</i> , from 30.0% to 28.0% (Rent fell from 10.0% to 8.0%).	Expenses were controlled; they are not the cause of the fall in Net Profit %.

∴ although Cedar & Co controlled its operating expenses (expense % fell 2.0 points), a **5.0-point rise in Cost of Sales %** dragged the Net Profit % down from 10.0% to 7.0%. The problem line is **Cost of Sales**, so the owner should investigate supplier prices, the selling mark-up, and any discounting or inventory loss — not the expenses.

Worked examples (unscaffolded)

Example 3 — preparing a statement and recommending an expense strategy

Ironbark Hardware provides for the year ended 30 June 2026: Net Sales \$800 000; Cost of Sales \$480 000; Advertising \$96 000; Wages \$120 000; Rent expense \$48 000; Interest expense \$16 000. Prepare a vertical-analysis Income Statement and recommend one strategy to improve the Net Profit %.

Gross Profit is \$800 000 – \$480 000 = \$320 000 (40.0%); the four expenses total \$280 000 (35.0%), leaving a Net Profit of \$40 000 (5.0%).

Item	\$	% of net sales
Net Sales	800 000	100.0
less Cost of Sales	480 000	60.0
Gross Profit	320 000	40.0
less Advertising	96 000	12.0
less Wages	120 000	15.0
less Rent expense	48 000	6.0
less Interest expense	16 000	2.0
Total Expenses	280 000	35.0
Net Profit	40 000	5.0

Reading down the column, the standout line is **Advertising at 12.0%** of net sales — nearly one dollar in eight is spent on advertising, far more than rent (6.0%) or interest (2.0%), and it is the single largest operating expense after wages. The owner should **review the advertising spend**, checking which campaigns actually generate sales and cutting those that do not; even a modest reduction would flow straight through to a higher Net Profit %.

∴ the recommended strategy is to **control the advertising expense**, with the important trade-off that advertising drives sales — cutting it too far could reduce net sales and therefore Gross Profit, so the owner should trim *ineffective* advertising rather than advertising as a whole.

Example 4 — using non-financial information to interpret a change and choose a strategy

Seaside Grocers reports Net Sales of \$600 000 in both 2025 and 2026. Cost of Sales was \$390 000 in each year. Expenses were: 2025 — Wages \$90 000, Advertising \$30 000, Rent expense \$36 000; 2026 — Wages \$120 000, Advertising \$30 000, Rent expense \$36 000. The owner also reports that staff numbers rose from six to eight during 2026, while the number of customers served each week was unchanged. Compare the two years, identify the problem line, and use the non-financial information to recommend a strategy.

Net Sales and Cost of Sales are unchanged, so Gross Profit is \$210 000 (35.0%) in both years. In 2025 expenses totalled \$156 000 (26.0%) and Net Profit was \$54 000 (9.0%); in 2026 expenses totalled \$186 000 (31.0%) and Net Profit fell to \$24 000 (4.0%).

Item	2025 \$	2025 %	2026 \$	2026 %
Net Sales	600 000	100.0	600 000	100.0
less Cost of Sales	390 000	65.0	390 000	65.0
Gross Profit	210 000	35.0	210 000	35.0
less Wages	90 000	15.0	120 000	20.0
less Advertising	30 000	5.0	30 000	5.0
less Rent expense	36 000	6.0	36 000	6.0
Total Expenses	156 000	26.0	186 000	31.0
Net Profit	54 000	9.0	24 000	4.0

The Gross Profit % is unchanged at 35.0%, so the problem is not in buying and selling. The **Wages %** rose from 15.0% to 20.0% (+5.0 points) — the whole \$5.0-point fall in Net Profit % comes from wages. The relevant **non-financial information** is that staff numbers rose from six to eight while customer numbers and net sales did *not* rise: the additional wages generated no additional sales, so staff **productivity** (sales per employee) fell.

∴ the problem line is **Wages**, and the recommended strategy is to **control the wages cost** — review rostering and staffing levels against actual customer numbers and trading hours so that staff numbers match demand. The trade-off is that cutting staff too far could lengthen queues and worsen **customer service**, so the owner should monitor customer feedback and sales as staffing is reduced.

Practice questions — scaffolded

Question 1

Willow Lane Bakery provides for the year ended 30 June 2026: Net Sales \$250 000; Cost of Sales \$150 000; Advertising \$10 000; Wages \$50 000; Rent expense \$20 000.

- Calculate the Gross Profit and the Net Profit (in dollars).
- Prepare a vertical-analysis Income Statement, expressing each item as a percentage of net sales.
- State how many cents of each sales dollar are absorbed by cost of sales, and how many are left as net profit.

Question 2

Cobar Cycles provides for the year ended 30 June 2025: Net Sales \$300 000; Cost of Sales \$195 000; Advertising \$15 000; Wages \$54 000; Interest expense \$6 000.

- Calculate the Cost of Sales % and the Gross Profit % of net sales.
- Calculate the Net Profit % of net sales.
- State what the Gross Profit % and the Net Profit % each tell the owner about a dollar of sales.

Question 3

Harborview Electrical reports Net Sales of \$400 000 in 2025 and \$500 000 in 2026. Its results were: 2025 — Cost of Sales \$240 000, Advertising \$24 000, Wages \$72 000, Rent expense \$24 000; 2026 — Cost of Sales \$310 000, Advertising \$30 000, Wages \$95 000, Rent expense \$25 000.

- Calculate the Net Profit % for each year.
- State whether the profitability structure improved or deteriorated, and by how many percentage points.
- Identify the line responsible for the change and explain your choice in one sentence.

Question 4

Pinewood Furniture reports the following, with net sales of \$500 000 in each year: 2025 — Cost of Sales \$290 000, Advertising \$20 000, Wages \$80 000, Rent expense \$30 000, Interest expense \$10 000; 2026 — Cost of Sales \$290 000, Advertising \$20 000, Wages \$110 000, Rent expense \$30 000, Interest expense \$10 000.

- Calculate the Wages % of net sales for each year.
- Identify the “problem line” — the item whose proportion of net sales rose most — and state the change in percentage points.
- Recommend one strategy to address it and state one trade-off of that strategy.

Question 5

Rosella Gifts reports Net Sales of \$300 000 in 2025 and \$450 000 in 2026. Its results were: 2025 — Cost of Sales \$180 000, Advertising \$15 000, Wages \$45 000, Rent expense \$18 000; 2026 — Cost of Sales \$288 000, Advertising \$36 000, Wages \$54 000, Rent expense \$18 000.

- Calculate the Advertising % of net sales for each year.
- Identify one piece of non-financial information that would help explain the change in the Advertising % and its effect on sales.
- Explain whether the higher advertising spending appears to have been worthwhile, referring to the figures.

Question 6

Tanglewood Toys provides for the year ended 30 June 2026: Net Sales \$500 000; Cost of Sales \$350 000; Advertising \$25 000; Wages \$75 000; Rent expense \$30 000; Interest expense \$10 000.

- Calculate the Cost of Sales % and the Gross Profit % of net sales.
- State whether the thin Net Profit is caused more by the cost of sales (compare the Gross Profit %) or by the operating expenses (compare the total expenses %).
- Discuss one strategy to improve the Gross Profit %, and state one trade-off.

Practice questions — unscaffolded

Question 7

Kingfisher Sports provides for the year ended 30 June 2025: Net Sales \$400 000; Cost of Sales \$260 000; Advertising \$20 000; Wages \$64 000; Rent expense \$16 000. Prepare a vertical-analysis Income Statement, expressing each item as a percentage of net sales.

Question 8

Blackwood Timber provides for the year ended 30 June 2026: Net Sales \$500 000; Cost of Sales \$280 000; Cartage Inwards \$20 000; Discount Revenue \$10 000; Advertising \$30 000; Wages \$90 000; Rent expense \$25 000; Interest expense \$15 000. Prepare a vertical-analysis Income Statement (show Cost of Goods Sold as Cost of Sales plus Cartage Inwards, and add the Discount Revenue after Gross Profit), expressing each item as a percentage of net sales.

Question 9

Meridian Fashion reports Net Sales of \$500 000 in 2025 and \$600 000 in 2026. Its results were: 2025 — Cost of Sales \$300 000, Advertising \$25 000, Wages \$85 000, Rent expense \$30 000, Interest expense \$10 000; 2026 — Cost of Sales \$384 000, Advertising \$30 000, Wages \$102 000, Rent expense \$24 000, Interest expense \$12 000. Calculate the Net Profit % for each year, state whether the structure improved or deteriorated, identify the problem line, and recommend one strategy.

Question 10

Sapphire Homeware reports the following, with net sales of \$400 000 in each year: 2025 — Cost of Sales \$240 000, Advertising \$16 000, Wages \$60 000, Rent expense \$20 000, Interest expense \$4 000; 2026 — Cost of Sales \$240 000, Advertising \$16 000, Wages \$60 000, Rent expense \$40 000, Interest expense \$4 000. Identify the problem line and the change in its percentage of net sales, and recommend one strategy to address it together with one trade-off.

Question 11

Larkhill Traders reports Net Sales of \$500 000 for the year. Its Cost of Sales was 62% of net sales and its total expenses were 26% of net sales. Calculate the Cost of Sales (\$), the Gross Profit (\$ and %), the Total Expenses (\$) and the Net Profit (\$ and %).

Question 12

Ambleside Traders reports a Gross Profit of \$150 000, which is 30% of its net sales, and a Net Profit of \$25 000. Calculate the Net Sales, the Cost of Sales (\$ and %), the Total Expenses (\$ and %), and the Net Profit %.

Question 13

Driftwood Surf provides for the year ended 30 June 2026: Net Sales \$800 000; Cost of Sales \$560 000; Advertising \$40 000; Wages \$120 000; Rent expense \$32 000; Interest expense \$16 000. Prepare a vertical-analysis Income Statement, identify the main structural weakness, and recommend one strategy to improve the Gross Profit %, stating one trade-off.

Question 14

Coolabah Traders reports Net Sales of \$400 000 in 2025 and \$600 000 in 2026. Its Net Profit was \$40 000 in 2025 and \$42 000 in 2026. The 2025 results were Cost of Sales \$240 000, Advertising \$20 000, Wages \$72 000, Rent expense \$28 000; the 2026 results were Cost of Sales \$390 000, Advertising \$30 000, Wages \$108 000, Rent expense \$30 000. The owner claims: "Net Profit has risen, so the business is more profitable." Discuss whether the owner is correct, using vertical analysis and referring to one limitation of relying on the dollar Net Profit alone.

Question 15

Everglade Nursery reports the following, with net sales of \$500 000 in each year: 2025 — Cost of Sales \$300 000, Advertising \$25 000, Wages \$75 000, Rent expense \$30 000, Interest expense \$10 000; 2026 — Cost of Sales \$300 000, Advertising \$25 000, Wages \$110 000, Rent expense \$30 000, Interest expense \$10 000. Calculate the Net Profit % for each year, identify the problem line, suggest one piece of non-financial information that would help explain it, and recommend one strategy with a trade-off.

Question 16

Brookvale Traders has Net Sales of \$500 000 and total expenses of 25% of net sales. Its Cost of Sales is currently 65% of net sales. The owner is considering negotiating better supplier prices that would reduce the Cost of Sales to 60% of net sales, with net sales and expenses unchanged. Model the effect of the strategy on the Gross Profit (\$ and %) and the Net Profit (\$ and %), state the improvement, and discuss one trade-off the owner should consider.

Question 17

Aldgate Traders reports Net Sales of \$300 000, Cost of Sales \$180 000 and total expenses \$90 000. Belmont Traders reports Net Sales of \$900 000, Cost of Sales \$585 000 and total expenses \$270 000. Calculate the Net Profit (\$ and %) for each business, state which business earns the higher dollar Net Profit and which keeps the higher proportion of each sales dollar, and explain, with reference to comparability, why vertical analysis allows a meaningful comparison of two businesses of very different size.

Question 18

Grandview Department Store reports Net Sales of \$1 000 000 in each of 2025 and 2026. Its results were: 2025 — Cost of Sales \$600 000, Advertising \$50 000, Wages \$180 000, Rent expense \$60 000, Interest expense \$20 000; 2026 — Cost of Sales \$650 000, Advertising \$50 000, Wages \$210 000, Rent expense \$60 000, Interest expense \$20 000. Prepare a two-year vertical-analysis comparison, identify the two problem lines, recommend and justify one strategy for each, incorporate one piece of non-financial information, and discuss one trade-off.

Question 19

Fernglen Trading has watched its Net Profit % slip over two years and the owner wants to lift it next year. Three changes are under consideration, and the owner believes each would raise the projected Net Profit %: switching to a supplier whose goods are cheaper but of noticeably lower quality, cutting casual staff hours so that fewer employees

cover the same trading hours, and delaying payments to suppliers well beyond their agreed terms to hold on to cash for longer. State the effect each change would have on the projected Net Profit %, discuss the financial and the ethical considerations the owner should weigh before adopting these strategies, and explain why the highest projected Net Profit % is not automatically the best decision.

Question 20

Rosemont Traders is applying to its bank for a loan to fund an expansion. In preparing the information for the bank, the owner asks the accountant to present only the indicators that have improved — the higher dollar Net Profit and the higher net sales — and to leave out the vertical analysis, which shows the Net Profit % has fallen because the Cost of Sales % rose. Discuss the ethical considerations involved, referring to the qualities the accountant is expected to maintain and to the effect on the bank as a user of the information.

Answers

1.
 - a. Gross Profit \$100 000; Net Profit \$20 000 b. See solutions c. 60 cents cost of sales; 8 cents net profit
2.
 - a. Cost of Sales 65.0%; Gross Profit 35.0% b. Net Profit 10.0% c. See solutions
3.
 - a. 2025 = 10.0%; 2026 = 8.0% b. Deteriorated, by 2.0 percentage points c. Cost of Sales (rose 60.0% → 62.0%)
4.
 - a. 2025 = 16.0%; 2026 = 22.0% b. Wages, up 6.0 percentage points c. See solutions
5.
 - a. 2025 = 5.0%; 2026 = 8.0% b. See solutions c. See solutions
6.
 - a. Cost of Sales 70.0%; Gross Profit 30.0% b. Cost of sales (Gross Profit only 30.0%) c. See solutions
7. Net Profit \$40 000 (10.0%); Gross Profit \$140 000 (35.0%)
8. Cost of Goods Sold \$300 000 (60.0%); Gross Profit \$200 000 (40.0%); Net Profit \$50 000 (10.0%)
9. 2025 = 10.0%; 2026 = 8.0%; deteriorated; problem line Cost of Sales (60.0% → 64.0%) — strategy, see solutions
10. Rent expense, up 5.0 percentage points (5.0% → 10.0%); Net Profit % 15.0% → 10.0% — strategy and trade-off, see solutions
11. Cost of Sales \$310 000; Gross Profit \$190 000 (38.0%); Total Expenses \$130 000; Net Profit \$60 000 (12.0%)
12. Net Sales \$500 000; Cost of Sales \$350 000 (70.0%); Total Expenses \$125 000 (25.0%); Net Profit 5.0%
13. Gross Profit \$240 000 (30.0%); Net Profit \$32 000 (4.0%); weakness = Cost of Sales 70.0% — strategy and trade-off, see solutions
14. Net Profit rose (\$40 000 → \$42 000) but Net Profit % fell 10.0% → 7.0% — see solutions
15. 2025 = 12.0%; 2026 = 5.0%; problem line Wages (15.0% → 22.0%) — non-financial information, strategy and trade-off, see solutions
16. Before: Gross Profit \$175 000 (35.0%), Net Profit \$50 000 (10.0%); After: Gross Profit \$200 000 (40.0%), Net Profit \$75 000 (15.0%); Net Profit up \$25 000 / 5.0 points — trade-off, see solutions
17. Aldgate Net Profit \$30 000 (10.0%); Belmont \$45 000 (5.0%); Belmont higher \$, Aldgate higher % — comparability, see solutions
18. Cost of Sales 60.0% → 65.0% and Wages 18.0% → 21.0%; Net Profit % 9.0% → 1.0% — see solutions
19. Cheaper supplier lowers the Cost of Sales % and raises the Net Profit %; fewer casual hours lower the Wages % and raise the Net Profit %; delaying supplier payments leaves the Net Profit % **unchanged** (cash timing only, and forfeited discounts reduce it) — discussion, see solutions
20. See solutions

Fully-worked solutions

Question 1

- a. Gross Profit = Net Sales \$250 000 – Cost of Sales \$150 000 = **\$100 000**; Total Expenses = \$10 000 + \$50 000 + \$20 000 = \$80 000, so Net Profit = \$100 000 – \$80 000 = **\$20 000**.

Item	\$	% of net sales
Net Sales	250 000	100.0
less Cost of Sales	150 000	60.0
Gross Profit	100 000	40.0
less Advertising	10 000	4.0
less Wages	50 000	20.0
less Rent expense	20 000	8.0

Item	\$	% of net sales
Total Expenses	80 000	32.0
Net Profit	20 000	8.0

- c. Cost of Sales is **60.0%**, so **60 cents** of every sales dollar is the cost of the goods sold; Net Profit is **8.0%**, so **8 cents** of every sales dollar is left as profit.

Question 2

- a. Cost of Sales % = $\$195\,000 \div \$300\,000 \times 100 = \mathbf{65.0\%}$; Gross Profit = $\$300\,000 - \$195\,000 = \$105\,000$, so Gross Profit % = $\$105\,000 \div \$300\,000 \times 100 = \mathbf{35.0\%}$.
- b. Total Expenses = $\$15\,000 + \$54\,000 + \$6\,000 = \$75\,000$ (25.0%), so Net Profit = $\$105\,000 - \$75\,000 = \$30\,000$; Net Profit % = $\$30\,000 \div \$300\,000 \times 100 = \mathbf{10.0\%}$ (or Gross Profit % 35.0 – expenses % 25.0).
- c. The Gross Profit % of **35.0%** means that after paying for the goods sold, **35 cents** of every sales dollar is left to cover expenses; the Net Profit % of **10.0%** means that after *all* expenses, **10 cents** of every sales dollar remains as profit.

Question 3

- a. **2025:** Gross Profit \$160 000, Total Expenses \$120 000, Net Profit \$40 000 → Net Profit % = $\$40\,000 \div \$400\,000 \times 100 = \mathbf{10.0\%}$. **2026:** Gross Profit \$190 000, Total Expenses \$150 000, Net Profit \$40 000 → Net Profit % = $\$40\,000 \div \$500\,000 \times 100 = \mathbf{8.0\%}$.
- b. The Net Profit % fell from 10.0% to 8.0%, so the profitability structure **deteriorated by 2.0 percentage points** — even though the dollar Net Profit was unchanged at \$40 000, a smaller share of each sales dollar is now kept.
- c. The line responsible is **Cost of Sales**: its percentage rose from $\$240\,000 \div \$400\,000 = 60.0\%$ to $\$310\,000 \div \$500\,000 = 62.0\%$ (so Gross Profit % fell from 40.0% to 38.0%), while the Total Expenses % stayed at 30.0% — the whole 2.0-point fall in Net Profit % comes from the higher cost of sales.

Question 4

- a. **2025:** Wages % = $\$80\,000 \div \$500\,000 \times 100 = \mathbf{16.0\%}$. **2026:** Wages % = $\$110\,000 \div \$500\,000 \times 100 = \mathbf{22.0\%}$.
- b. The **problem line is Wages**, up **6.0 percentage points** (16.0% → 22.0%). Cost of Sales % is unchanged at 58.0% (Gross Profit % 42.0%), and every other expense % is unchanged, so the entire fall in Net Profit % (14.0% → 8.0%) is due to wages.
- c. **Strategy:** control the wages cost — review staff rosters and staffing levels so that hours worked match actual trading demand, and lift staff productivity (sales generated per employee). **Trade-off:** cutting staff or hours too far risks slower service and longer queues, which could reduce sales and customer satisfaction — so the reduction should remove genuine over-staffing, not the staff who drive sales.

Question 5

- a. **2025:** Advertising % = $\$15\,000 \div \$300\,000 \times 100 = \mathbf{5.0\%}$. **2026:** Advertising % = $\$36\,000 \div \$450\,000 \times 100 = \mathbf{8.0\%}$.
- b. Useful **non-financial information** includes the **number of customers or units sold**, the **number of sales transactions**, **customer feedback**, or whether a **new competitor** opened nearby — any of which would show whether the extra advertising actually drew in more business.
- c. The higher advertising spending **does appear to have been worthwhile in dollar terms**: net sales rose from \$300 000 to \$450 000 and the dollar Net Profit rose from \$42 000 to \$54 000. But the structure weakened — the Cost of Sales % rose from 60.0% to 64.0%, so the Gross Profit % fell from 40.0% to 36.0%, and the Net Profit % slipped from 14.0% to 12.0%. So while the strategy grew the business and lifted dollar profit, each sales dollar became *less* profitable. The figures do not show **why** the Cost of Sales % rose: discounting to win the extra volume, a supplier price increase and a shift toward lower-margin lines are all consistent with them,

which is exactly why the non-financial information in part b is needed. The owner should establish the cause, confirm the extra volume is sustainable, and watch that the margin does not erode further.

Question 6

- Cost of Sales % = $\$350\,000 \div \$500\,000 \times 100 = 70.0\%$; Gross Profit = $\$150\,000$, so Gross Profit % = $\$150\,000 \div \$500\,000 \times 100 = 30.0\%$.
- The thin Net Profit (2.0%) is caused **more by the cost of sales**: at 70.0% of net sales, cost of sales leaves a Gross Profit of only 30.0%, whereas the operating expenses total 28.0%. The business earns only 30 cents of gross profit on each sales dollar before expenses even begin, so the structural weakness is the **low gross profit margin**, not the level of expenses.
- Strategy**: improve the Gross Profit % by **reducing the cost of sales** — negotiate lower prices with suppliers, buy in larger quantities for bulk discounts, or review and lift the selling mark-up. **Trade-off**: switching to a cheaper supplier may reduce the **quality** of the inventory (increasing returns and harming reputation), and raising selling prices may drive price-conscious customers to competitors, so the gain in margin must be weighed against a possible loss of sales.

Question 7

Gross Profit = $\$400\,000 - \$260\,000 = \$140\,000$; Total Expenses = $\$20\,000 + \$64\,000 + \$16\,000 = \$100\,000$; Net Profit = $\$40\,000$.

Item	\$	% of net sales
Net Sales	400 000	100.0
less Cost of Sales	260 000	65.0
Gross Profit	140 000	35.0
less Advertising	20 000	5.0
less Wages	64 000	16.0
less Rent expense	16 000	4.0
Total Expenses	100 000	25.0
Net Profit	40 000	10.0

Question 8

Cost of Goods Sold = Cost of Sales $\$280\,000$ + Cartage Inwards $\$20\,000 = \$300\,000$ (60.0%); Gross Profit = $\$500\,000 - \$300\,000 = \$200\,000$ (40.0%). Discount Revenue $\$10\,000$ (2.0%) is added after Gross Profit; the four expenses total $\$160\,000$ (32.0%), so Net Profit = $\$200\,000 + \$10\,000 - \$160\,000 = \$50\,000$ (10.0%).

Item	\$	% of net sales
Net Sales	500 000	100.0
less Cost of Goods Sold		
Cost of Sales	280 000	56.0
add Cartage Inwards	20 000	4.0
Cost of Goods Sold	300 000	60.0
Gross Profit	200 000	40.0
add Discount Revenue	10 000	2.0
less Advertising	30 000	6.0
less Wages	90 000	18.0
less Rent expense	25 000	5.0
less Interest expense	15 000	3.0
Total Expenses	160 000	32.0
Net Profit	50 000	10.0

Question 9

2025: Gross Profit = \$500 000 – \$300 000 = \$200 000 (40.0%); Total Expenses = \$25 000 + \$85 000 + \$30 000 + \$10 000 = \$150 000 (30.0%); Net Profit = \$50 000 → **10.0%**. **2026:** Gross Profit = \$600 000 – \$384 000 = \$216 000 (36.0%); Total Expenses = \$30 000 + \$102 000 + \$24 000 + \$12 000 = \$168 000 (28.0%); Net Profit = \$48 000 → **8.0%**.

The structure **deteriorated**: Net Profit % fell from 10.0% to 8.0%. The **problem line is Cost of Sales**, whose percentage rose from 60.0% to 64.0% (so Gross Profit % fell from 40.0% to 36.0%); the Total Expenses % actually *improved* from 30.0% to 28.0%, so expenses are not the cause. **Strategy:** address the cost of sales — negotiate better supplier prices, review the selling mark-up, and check whether discounting or inventory loss has risen — since the deterioration is in buying and selling, not in operating costs. The trade-off is that a cheaper supplier may reduce quality, and raising the mark-up may reduce sales volume.

Question 10

Every line is unchanged except **Rent expense**, which rose from \$20 000 (5.0% of net sales) to \$40 000 (10.0%) — a rise of **5.0 percentage points**, and the only reason Net Profit % fell from 15.0% to 10.0% (Gross Profit % held at 40.0%; wages, advertising and interest percentages all unchanged). The **problem line is Rent expense**.

Strategy: control the occupancy cost — for example, renegotiate the lease at review, sub-let surplus space, or relocate to cheaper premises. **Trade-off:** a cheaper or relocated site may be in a less visible or less convenient location, reducing passing trade and therefore sales, so the saving in rent must be weighed against any loss of customers.

Question 11

Cost of Sales = 62% × \$500 000 = **\$310 000**. Gross Profit = \$500 000 – \$310 000 = **\$190 000**, and Gross Profit % = 100.0 – 62.0 = **38.0%**. Total Expenses = 26% × \$500 000 = **\$130 000**. Net Profit = Gross Profit \$190 000 – Total Expenses \$130 000 = **\$60 000**, and Net Profit % = 38.0 – 26.0 = **12.0%** (check: \$60 000 ÷ \$500 000 × 100 = 12.0%).

Question 12

Gross Profit \$150 000 is 30% of net sales, so Net Sales = \$150 000 ÷ 0.30 = **\$500 000**. Cost of Sales = Net Sales – Gross Profit = \$500 000 – \$150 000 = **\$350 000**, and Cost of Sales % = \$350 000 ÷ \$500 000 × 100 = **70.0%**. Total Expenses = Gross Profit – Net Profit = \$150 000 – \$25 000 = **\$125 000** (25.0%). Net Profit % = \$25 000 ÷ \$500 000 × 100 = **5.0%**.

Question 13

Gross Profit = \$800 000 – \$560 000 = \$240 000 (30.0%); Total Expenses = \$40 000 + \$120 000 + \$32 000 + \$16 000 = \$208 000 (26.0%); Net Profit = \$32 000 (4.0%).

Item	\$	% of net sales
Net Sales	800 000	100.0
less Cost of Sales	560 000	70.0
Gross Profit	240 000	30.0
less Advertising	40 000	5.0
less Wages	120 000	15.0
less Rent expense	32 000	4.0
less Interest expense	16 000	2.0
Total Expenses	208 000	26.0
Net Profit	32 000	4.0

The main structural weakness is the **Cost of Sales at 70.0%** of net sales, which leaves a Gross Profit of only 30.0% — the expenses (26.0%) then consume almost all of it, leaving a Net Profit of just 4.0%. **Strategy:** lift the Gross Profit % by reducing the cost of sales — negotiate lower supplier prices, buy in bulk for discounts, or increase the selling mark-up. **Trade-off:** a cheaper supplier may lower quality (raising returns and harming reputation), and a higher mark-up may reduce sales volume, so the improvement in margin must not cost more in lost or returned sales than it gains.

Question 14

The owner is **only partly correct**. It is true that the dollar Net Profit rose, from \$40 000 to \$42 000. But vertical analysis tells a different story. In 2025: Gross Profit \$160 000 (40.0%), Total Expenses \$120 000 (30.0%), Net Profit **10.0%**. In 2026: Gross Profit \$210 000 (35.0%), Total Expenses \$168 000 (28.0%), Net Profit **7.0%**. So although sales grew from \$400 000 to \$600 000 and dollar profit edged up, the **Net Profit % fell from 10.0% to 7.0%** — the business kept a *smaller* share of each sales dollar, so on this measure it became **less** profitable. The cause is the **Cost of Sales %**, which rose from 60.0% to 65.0% (Gross Profit % fell from 40.0% to 35.0%), only partly offset by better expense control (30.0% → 28.0%). This shows a **limitation** of judging performance by the dollar Net Profit alone: a rising dollar figure can hide a deteriorating structure, because it does not relate profit to the sales (or the size of the business) that produced it. ∴ the higher dollar Net Profit does **not** prove the business is more profitable — measured against sales, it is less so.

Question 15

2025: Gross Profit = \$200 000 (40.0%); Total Expenses = \$25 000 + \$75 000 + \$30 000 + \$10 000 = \$140 000 (28.0%); Net Profit = \$60 000 → **12.0%**. **2026:** Gross Profit = \$200 000 (40.0%); Total Expenses = \$25 000 + \$110 000 + \$30 000 + \$10 000 = \$175 000 (35.0%); Net Profit = \$25 000 → **5.0%**.

The Gross Profit % is unchanged at 40.0%, so the problem is not cost of sales. The **problem line is Wages**, up from 15.0% to 22.0% (+7.0 points) — the sole cause of the fall in Net Profit % from 12.0% to 5.0%. A useful piece of **non-financial information** is the **number of staff employed** (or staff productivity / sales per employee): if more staff were hired but net sales did not rise, the extra wages were unproductive. **Strategy:** control the wages cost by matching rosters and staffing to actual demand and lifting productivity. **Trade-off:** cutting staff too far may worsen customer service and lose sales, so the owner should reduce genuine over-staffing while monitoring customer feedback and sales.

Question 16

Total Expenses are $25\% \times \$500\,000 = \$125\,000$ in both cases. **Before:** Cost of Sales = $65\% \times \$500\,000 = \$325\,000$, Gross Profit = \$175 000 → **35.0%**; Net Profit = \$175 000 – \$125 000 = \$50 000 → **10.0%**. **After:** Cost of Sales = $60\% \times \$500\,000 = \$300\,000$, Gross Profit = \$200 000 → **40.0%**; Net Profit = \$200 000 – \$125 000 = \$75 000 → **15.0%**.

Item	Before \$	Before %	After \$	After %
Net Sales	500 000	100.0	500 000	100.0
less Cost of Sales	325 000	65.0	300 000	60.0
Gross Profit	175 000	35.0	200 000	40.0
less Total Expenses	125 000	25.0	125 000	25.0
Net Profit	50 000	10.0	75 000	15.0

The strategy lifts the Gross Profit % from 35.0% to 40.0% and, because expenses are unchanged, the Net Profit % from 10.0% to 15.0% — a rise of **5.0 percentage points**, or **\$25 000** more Net Profit (from \$50 000 to \$75 000).

Trade-off: better supplier prices are worthwhile only if the goods are of the same quality and reliability; a cheaper supplier that delivers inferior or late stock could raise sales returns, disappoint customers and damage the business's reputation, so the owner must confirm the saving does not come at the cost of quality or supply.

Question 17

Aldgate: Gross Profit = \$300 000 – \$180 000 = \$120 000; Net Profit = \$120 000 – \$90 000 = **\$30 000**; Net Profit % = $\$30\,000 \div \$300\,000 \times 100 = 10.0\%$. **Belmont:** Gross Profit = \$900 000 – \$585 000 = \$315 000; Net Profit = \$315 000 – \$270 000 = **\$45 000**; Net Profit % = $\$45\,000 \div \$900\,000 \times 100 = 5.0\%$.

Belmont earns the higher **dollar** Net Profit (\$45 000 versus \$30 000), but **Aldgate** keeps the higher **proportion** of each sales dollar (**10.0%** versus 5.0%) — Aldgate also has the lower Cost of Sales % (60.0% versus 65.0%). Judged on dollars alone, the larger business looks better; but the dollar figures are not comparable, because Belmont's sales are three times Aldgate's. **Vertical analysis** removes the effect of size by expressing every figure as a percentage of net sales, so the two structures can be placed side by side and compared directly. This supports the qualitative characteristic of **comparability** — information is more useful when it can be compared with that of another entity — allowing the conclusion that, per sales dollar, **Aldgate is the more profitable business** despite being the smaller one.

Question 18

Item	2025 \$	2025 %	2026 \$	2026 %
Net Sales	1 000 000	100.0	1 000 000	100.0
less Cost of Sales	600 000	60.0	650 000	65.0
Gross Profit	400 000	40.0	350 000	35.0
less Advertising	50 000	5.0	50 000	5.0
less Wages	180 000	18.0	210 000	21.0
less Rent expense	60 000	6.0	60 000	6.0
less Interest expense	20 000	2.0	20 000	2.0
Total Expenses	310 000	31.0	340 000	34.0
Net Profit	90 000	9.0	10 000	1.0

The Net Profit % collapsed from 9.0% to 1.0% — a fall of 8.0 percentage points — and reading down the two columns shows **two problem lines**. First, **Cost of Sales %** rose from 60.0% to 65.0% (Gross Profit % fell from 40.0% to 35.0%), a 5.0-point deterioration in buying and selling. Second, **Wages %** rose from 18.0% to 21.0%, a 3.0-point rise; advertising, rent and interest percentages were unchanged. Together these two lines account for the whole 8.0-point fall.

Strategy for cost of sales: negotiate better supplier prices, buy in larger quantities for bulk discounts, review the selling mark-up, and investigate whether discounting or inventory loss has increased — to restore the Gross Profit % toward 40.0%. **Strategy for wages:** review rostering and staffing against actual demand and lift staff productivity, to bring the Wages % back toward 18.0%. A useful piece of **non-financial information** would be **staff numbers and productivity** (were more staff employed for the same sales?) and **competitor pricing** (did a rival's prices force Grandview to discount, raising its cost of sales relative to sales?) — both help explain *why* the two lines moved. **Trade-off:** cutting wages too far risks poorer customer service and lost sales, and squeezing suppliers or lifting prices risks lower quality or reduced volume, so each strategy must be applied so that its benefit clearly outweighs its cost to sales.

Question 19

Financially, only **two** of the three changes would lift the projected Net Profit %. A cheaper supplier lowers the Cost of Sales % and so raises the Gross Profit %; fewer casual hours lower the Wages %. The third change would **not** raise the Net Profit % at all: under the **accrual basis**, an expense is recognised when it is *incurred*, not when it is paid, so paying suppliers late changes only the **timing of cash** — the purchases and expenses reported, and therefore the Net Profit %, are unchanged. If anything it *lowers* profit, because settlement discounts available for prompt payment would be forfeited, reducing **Discount Revenue**. The owner has confused **cash with profit**: modelling the three options in a spreadsheet would show the first two shifting the Net Profit % and the third shifting only the bank balance. Each change also carries an **ethical** cost the figures alone do not show. The lower-quality inventory may bring more faults and returns and, if the goods are unsafe or misdescribed, treats **customers** unfairly — damaging the business's reputation and, in time, its sales. Cutting casual hours pushes the remaining **staff** to cover the same work for less pay, harming morale, service and employees' livelihoods. Delaying payments beyond agreed terms uses **suppliers** as a source of free finance and breaks the terms the business agreed to, straining relationships the business

depends on — an ethical cost carrying no profit benefit whatever, so it should be rejected outright. For the other two, the owner must weigh the financial gain against the **social consequences** for customers and staff — and against the longer-term financial harm (lost customers, higher staff turnover, unreliable supply) that unethical short-term gains can cause. ∴ the **highest projected Net Profit % is not automatically the best decision**: a sound strategy improves profit without depending on treating others unfairly, so the owner should prefer changes whose benefit does not come at an unacceptable ethical or long-term cost.

Question 20

The owner is asking the accountant to present the information **selectively** — showing only the favourable indicators (the higher dollar Net Profit and higher net sales) while omitting the vertical analysis that reveals a falling Net Profit %. This is misleading: the dollar figures on their own suggest improving performance, but the omitted **Net Profit %** shows the business is keeping a *smaller* share of each sales dollar because the **Cost of Sales %** has risen. A lender needs a **faithful** and complete picture to judge whether the business can service the loan, so leaving out unfavourable indicators could lead the bank to a decision it would not make on the full facts. The accountant is expected to maintain **integrity, impartiality, objectivity and confidentiality** — reporting all relevant information honestly and without bias, whether or not it flatters the business. ∴ the accountant should **decline to present the figures selectively** and instead provide the complete analysis, including the vertical analysis and the fall in the Net Profit %, so that the bank receives a faithful representation on which to base its decision. Doing so protects the bank as a **user** of the information and preserves the trust and reputation on which the business's own future dealings depend.