Finance and accounts (3.1-3.9)

International Baccalaureate · IB Diploma · Business Management · HL

Finance and accounts

IB Diploma Programme Business Management HL, Unit 3 *Finance and accounts* (first assessment 2024). This topic covers sections 3.1 to 3.9: why businesses need finance and where they get it, costs and revenues, final accounts, ratio analysis, cash flow, investment appraisal and budgets. Debt/equity ratio analysis (3.6), budgets (3.9), net present value, intangible assets and depreciation are HL only. The worked examples use the course's repair business in its second year as a company, so every number below fits with every other.

In 2017 the bike-sharing company ofo had millions of yellow bikes on the streets of Chinese cities and had raised billions of dollars from investors. By the end of 2018 it had spent most of that money, and more than ten million users were waiting in an online queue to get their deposits back. Customers liked the product. The company failed because cash ran out. This topic shows how a business plans its money, reads its accounts and checks whether a project is worth the cost.

Must-know for this topic:

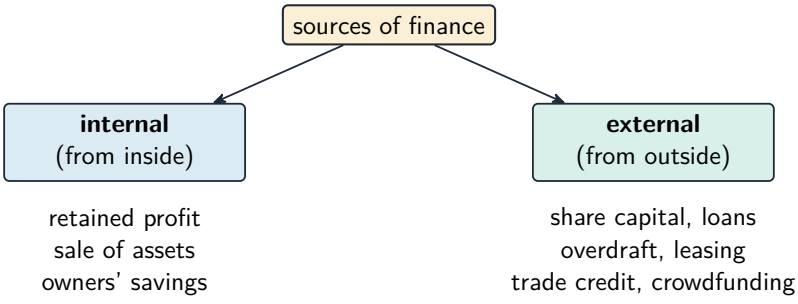
Idea	Key content
finance	capital against revenue expenditure; internal against external sources
final accounts	income statement; statement of financial position; HL depreciation
profitability	gross profit margin 40%, profit margin 15%, ROCE 25%
liquidity	current ratio 2.0, acid test 1.25
efficiency (HL)	stock turnover 15 times, debtor days 27, creditor days 25, gearing 44%
cash flow	profit is not cash; working capital cycle; forecast
appraisal	payback 3 years, ARR 8.3%; HL: NPV +18,600 at 6%
budgets (HL)	cost and profit centres; favourable and adverse variances

Finance and its sources

A business spends money in two ways.

- **Capital expenditure** buys **non-current assets**, things the business keeps for more than a year: a workshop, a machine, a van.
- **Revenue expenditure** pays for day-to-day running: wages, parts, rent and electricity.

The money for each should come from a source that fits. A long-term asset needs long-term finance. Paying for a new workshop with an overdraft is risky, because the bank can ask for the overdraft back at any time.



Internal finance comes from inside the business; external finance comes from outside

Internal finance comes from inside the business:

- **personal funds**: the owner's own savings, the main source for a sole trader;
- **retained profit**: profit kept in the business instead of being paid to the owners. It costs no interest, but a new or loss-making business has none;
- the **sale of assets** the business no longer needs, such as an old van.

External finance comes from outside:

Source	What it is	For and against
share capital	money from selling shares (companies only)	never repaid and no interest; the owners lose some control
loan capital	a bank loan repaid with interest over years	large sums; interest must be paid even in a bad year
overdraft	the bank lets the account go below zero	flexible and quick; expensive, and the bank can end it at any time
trade credit	suppliers let the business pay 30 to 60 days later	free; paying late harms the relationship
crowdfunding	many people each give a small amount online	also tests the idea; most campaigns fail to reach their target
leasing	renting equipment instead of buying it	no large payment; costs more in total
microfinance	small loans to people that banks will not serve	helps very small and new businesses; amounts are small
business angels	rich individuals who invest and give advice	money plus experience; they want a share of the business

Sources are also short term (under a year: overdraft, trade credit), medium term (one to five years: leasing, most loans) or long term (over five years: share capital, long loans). To choose, a manager weighs the cost, the amount needed, how long it is needed for, control of the business, and how much the business has already borrowed.

> **Worked example.** The repair business built a second workshop for 120,000. Half came from retained profit and half from a five-year bank loan. The workshop will earn money for many years, so long-term finance fits. The monthly parts bill uses trade credit. For eleven days in December, when wages were paid before customers paid their bills, the business used its overdraft.

Costs, revenues and final accounts

Costs and revenues

- A **fixed cost** does not change with output: rent, salaries, insurance.
- A **variable cost** changes with output: car parts, paint, energy for the machines.
- A **semi-variable cost** has a fixed part and a variable part, such as a phone contract with a monthly charge plus a cost per call.

- A **direct cost** belongs to one product or department, such as the parts used in one repair. An **indirect cost**, or **overhead**, is shared, such as the manager's salary.

Total revenue is price × quantity sold. The repair business does 2,000 repairs a month at an average price of 25, so its revenue is $2{,}000 \times 25 \times 12 = 600{,}000$ a year. Many businesses also have other **revenue streams**: the repair business sells tyres, rents out its car wash and earns a fee from an insurance company for every customer it sends.

Final accounts

The **final accounts** are prepared at the end of each year. Many **stakeholders** read them: owners and shareholders check profit, banks check the business can repay, suppliers check it can pay its bills, employees check their jobs are safe, and the government checks tax.

The **income statement** shows how much profit the business made over the year.

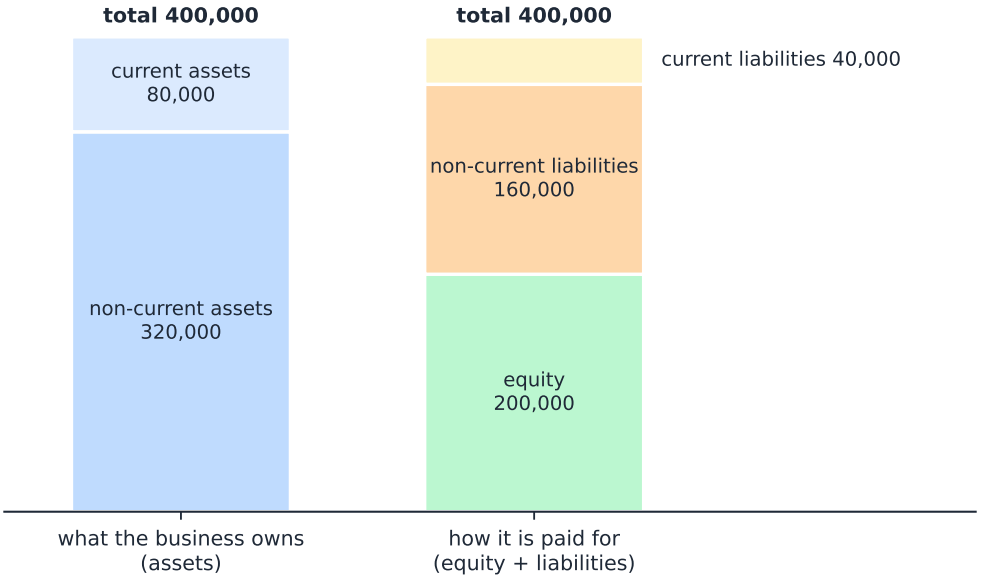
Income statement for the year	**$**
sales revenue	600,000
cost of sales	(360,000)
gross profit	240,000
expenses (wages, rent, marketing)	(150,000)
profit before interest and tax	90,000
interest	(10,000)
profit before tax	80,000
tax at 25%	(20,000)
profit for the period	60,000
dividends	(20,000)
retained profit	40,000

Brackets mean the number is taken away. **Cost of sales** is the direct cost of the repairs that were sold: opening stock 18,000, plus parts bought 372,000, minus closing stock 30,000, gives 360,000.

The **statement of financial position**, or balance sheet, is a picture of the business on one day: what it owns (**assets**), what it owes (**liabilities**) and the owners' money (**equity**).

Statement of financial position on 31 December	$
non-current assets: property 240,000; equipment 80,000	320,000
current assets: stock 30,000; debtors 45,000; cash 5,000	80,000
current liabilities: creditors 25,000; overdraft 5,000; short-term loan 10,000	(40,000)
net current assets (working capital)	40,000
non-current liabilities: bank loan	(160,000)
net assets	200,000
equity: share capital 120,000; retained earnings 80,000	200,000

Current assets turn into cash within a year. **Debtors** are customers who still owe money. **Current liabilities** must be paid within a year; **creditors** are suppliers the business still owes. Current assets minus current liabilities is **working capital**: $80{,}000 - 40{,}000 = 40{,}000$, the money available for day-to-day running. Net assets always equal equity, because everything the business owns is paid for either by borrowing or by the owners.



The balance sheet balances: total assets of 400,000 are paid for by equity, long-term debt and short-term debt

■ Intangible assets and depreciation (HL)

An **intangible asset** has value but cannot be touched: a brand, a **patent**, a copyright, a trademark, or **goodwill** (the extra a buyer pays for a business's reputation and customers). They are hard to value, and the value can fall fast after a scandal.

Depreciation is the fall in value of a non-current asset as it is used and gets older. It spreads the cost of the asset over its life and is counted as an expense each year. The repair business buys a diagnostic machine for 22,000. It expects to use it for 4 years and then sell it for 2,000, its **residual value**.

- **Straight-line method**: $\frac{\text{cost} - \text{residual value}}{\text{years of life}} = \frac{22{,}000 - 2{,}000}{4} = 5{,}000$ a year, the same every year.
- **Units of production method**: the machine is expected to do 20,000 tests in its life, so each test costs $(22{,}000 - 2{,}000) \div 20{,}000 = 1$. In a year with 6,000 tests, depreciation is 6,000. This method fits machines that are used more in some years than in others.

Profitability and liquidity ratios

Ratio analysis compares numbers from the final accounts so that a business can be compared with last year and with its rivals.

Profitability ratios measure profit against sales or against the money invested.

$$\text{gross profit margin} = \frac{\text{gross profit}}{\text{sales revenue}} \times 100 = \frac{240{,}000}{600{,}000} \times 100 = 40\%$$

$$\text{profit margin} = \frac{\text{profit before interest and tax}}{\text{sales revenue}} \times 100 = \frac{90{,}000}{600{,}000} \times 100 = 15\%$$

Capital employed is non-current liabilities plus equity: $160{,}000 + 200{,}000 = 360{,}000$.

$$\text{ROCE} = \frac{\text{profit before interest and tax}}{\text{capital employed}} \times 100 = \frac{90{,}000}{360{,}000} \times 100 = 25\%$$

The **return on capital employed** (ROCE) of 25% is far above the roughly 6% interest on the bank loan, so borrowing to invest has paid off. To raise profitability, a business can raise prices where customers are loyal, buy parts more cheaply, cut waste, or sell more of its high-margin services.

Liquidity ratios show whether the business can pay its short-term debts.

$$\text{current ratio} = \frac{\text{current assets}}{\text{current liabilities}} = \frac{80{,}000}{40{,}000} = 2.0$$

$$\text{acid test ratio} = \frac{\text{current assets} - \text{stock}}{\text{current liabilities}} = \frac{80{,}000 - 30{,}000}{40{,}000} = 1.25$$

A current ratio between 1.5 and 2 is usually safe. The **acid test ratio** leaves out stock, because stock may be slow to sell; a result above 1 is usually safe. Both results here are healthy. A ratio far above the safe range is not good either: money is sitting idle instead of earning a return. To improve liquidity, a business can sell old stock, collect money from debtors faster, or turn an overdraft into a long-term loan. Each step has a cost: discounts to sell stock lower profit, and pushing customers to pay faster may lose some of them.

Efficiency ratios and gearing (HL)

Efficiency ratios show how well the business manages its stock and its credit. Average stock is (opening stock + closing stock) $\div$ 2 = (18,000 + 30,000) $\div$ 2 = 24,000.

$$\text{stock turnover} = \frac{\text{cost of sales}}{\text{average stock}} = \frac{360{,}000}{24{,}000} = 15 \text{ times a year}$$

or, in days, $\frac{24{,}000}{360{,}000} \times 365 = 24.3$ days. The business sells and replaces its stock of parts about every 24 days. Faster **stock turnover** frees cash; too little stock means customers wait for parts.

$$\text{debtor days} = \frac{\text{debtors}}{\text{sales revenue}} \times 365 = \frac{45{,}000}{600{,}000} \times 365 = 27.4 \text{ days}$$

$$\text{creditor days} = \frac{\text{creditors}}{\text{cost of sales}} \times 365 = \frac{25{,}000}{360{,}000} \times 365 = 25.3 \text{ days}$$

Debtor days is how long customers take to pay; **creditor days** is how long the business takes to pay its suppliers. Here customers pay about two days more slowly than the business pays its suppliers, so the business pays out before it is paid. It could ask insurance companies to pay within 20 days, or ask suppliers for 45-day terms.

$$\text{gearing ratio} = \frac{\text{non-current liabilities}}{\text{capital employed}} \times 100 = \frac{160{,}000}{360{,}000} \times 100 = 44.4\%$$

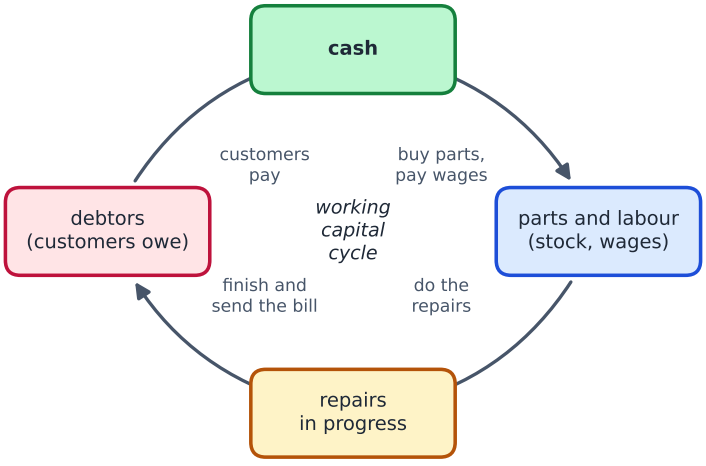
The **gearing ratio** shows how much of the long-term finance is borrowed. Above 50% a business is usually called highly geared. High gearing is risky: interest

must be paid even when sales fall, and banks may refuse more loans. When profit is strong, though, borrowing lets the owners earn more without giving away shares. At 44.4% the repair business is close to the line, so its next project should be paid for with share capital or retained profit, not another loan.

Cash flow

Profit and **cash flow** are different. Profit is revenue minus costs for the year. Cash flow is the money that actually comes in and goes out, and when. A repair finished on 28 December counts as revenue in December, but if the customer pays in February, the cash arrives in February. A profitable business can still fail if it has no cash to pay wages and suppliers. A business with cash can survive a loss-making year.

The **working capital cycle** is the time between paying for inputs and receiving cash from customers.



The longer the working capital cycle, the more cash the business needs to keep running

Businesses hold cash for three reasons: to pay day-to-day bills, to keep a safety reserve for surprises, and to take chances when they come, such as a supplier's discount for buying in bulk.

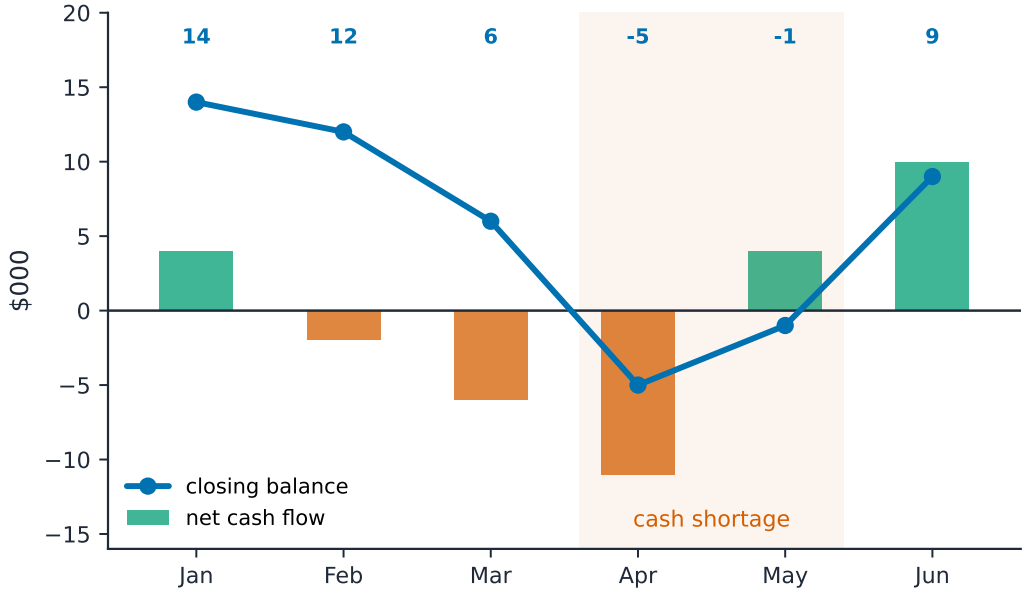
A **cash flow forecast** shows the cash a business expects to receive and pay out, month by month. Each month:

- net cash flow = cash in − cash out;
- closing balance = opening balance + net cash flow;
- the closing balance becomes next month's opening balance.

Worked example. The repair business forecasts the first half of next year (in $000).

	Jan	Feb	Mar	Apr	May	Jun
opening balance	10	14	12	6	−5	−1
cash in	46	44	42	44	50	54
cash out	42	46	48	55	46	44
net cash flow	4	−2	−6	−11	4	10
closing balance	14	12	6	−5	−1	9

In April the yearly insurance and a large parts order are paid in the same month, and the balance falls to −5,000. The forecast shows the problem in January, so the manager has three months to arrange an overdraft or move a payment.



The closing balance falls below zero in April and May: the forecast warns of a cash shortage three months early

A forecast is only as good as its guesses. Sales may be lower than expected, customers may pay late, and costs may rise. Managers should change it as new information comes in.

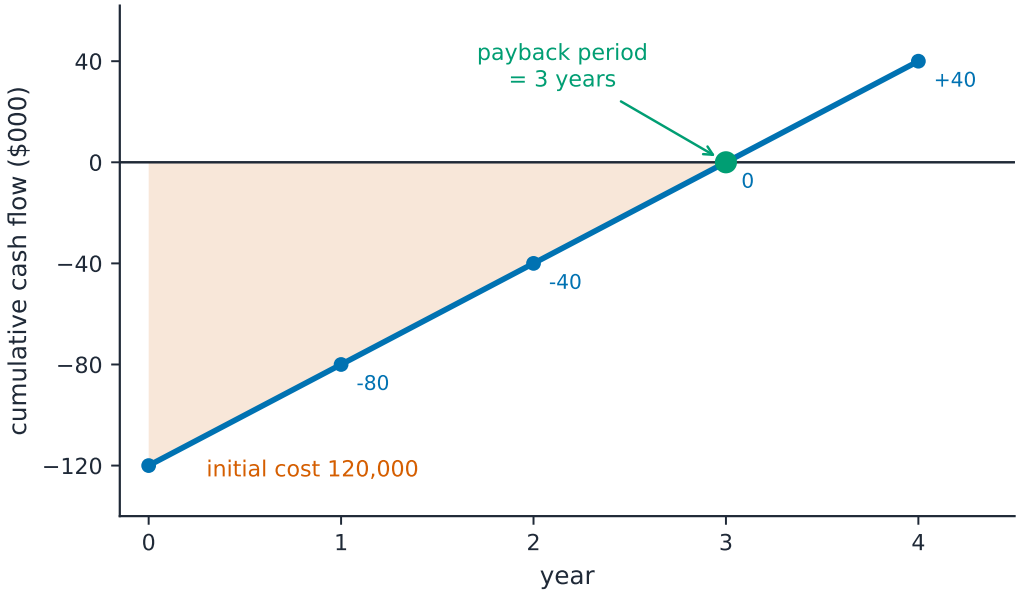
A business can deal with a cash flow problem in three ways:

Approach	Examples	Drawback
reduce cash outflows	delay buying new equipment; lease instead of buy; ask suppliers for longer credit	old equipment may break; suppliers may refuse
improve cash inflows	ask customers to pay faster; offer a discount for paying cash; sell old stock	discounts lower profit; customers may go elsewhere
find more finance	overdraft; short-term loan; sell an asset	interest costs; the asset may be needed later

Investment, profit and cash flow are linked. A new workshop uses a lot of cash now and earns profit only later, so even a good investment can cause a cash shortage in its first months.

Investment appraisal

Investment appraisal checks whether a capital project is worth its cost. The repair business plans a third workshop. It costs 120,000 and should bring in a net cash flow of 40,000 a year for four years.



The third workshop pays back its 120,000 cost after exactly three years

The **payback period** is the time a project takes to earn back its cost. After three years the workshop has earned $3 \times 40{,}000 = 120{,}000$, so the payback period is 3 years. If the cash flow is not the same each year, add the years until the total

covers the cost, then work out the part year: $\text{months} = \dfrac{\text{amount still needed}}{\text{cash flow in that year}} \times 12$. Payback is simple and shows risk, because money that comes back sooner is safer. It ignores everything that happens after the payback date.

The **average rate of return** (ARR) is the average yearly profit as a percentage of the cost.

$$\text{ARR} = \frac{(\text{total returns} - \text{capital cost}) \div \text{years of use}}{\text{capital cost}} \times 100 = \frac{(160{,}000 - 120{,}000) \div 4}{120{,}000} \times 100 = 8.3\%$$

ARR uses all the years of the project and can be compared with the interest rate on a loan. It ignores timing: 40,000 received in year 4 is treated the same as 40,000 received in year 1.

■ Net present value (HL)

Money received in the future is worth less than money today, because money today could be saved and earn interest. **Net present value** (NPV) turns each future cash flow into its value today with a **discount factor** , then subtracts the cost. At a discount rate of 6%:

Year	Net cash flow	Discount factor (6%)	Present value
1	40,000	0.943	37,720
2	40,000	0.890	35,600
3	40,000	0.840	33,600
4	40,000	0.792	31,680
		total	138,600

NPV = 138,600 − 120,000 = +18,600. A positive NPV means the project earns more than the 6% the money could earn elsewhere, so it is worth doing. NPV counts timing, but the result depends on the discount rate chosen, and it is harder to explain to non-specialists.

All three methods depend on forecasts of cash flow, which may be wrong. Managers also weigh things the numbers leave out: the effect on staff, the business's image, and the risk that a rival opens nearby.

Budgets (HL)

A **budget** is a financial plan for a future period, such as next year's sales or costs for one workshop. A forecast predicts what will happen; a budget sets a target for what should happen. Budgets help a business plan, share out resources, give managers clear targets, and check results.

A **cost centre** is a part of the business whose costs are recorded, such as the repair business's IT department. A **profit centre** has both costs and revenues recorded, so its profit can be measured, such as each workshop. Profit

centres show which parts do well, but they can make managers compete with each other instead of working together.

A **variance** is the difference between the budget and the actual result. It is **favourable** (F) when it raises profit and **adverse** (A) when it lowers profit.

> **Worked example.** Workshop 3, one month:

	Budget	Actual	Variance
repairs	520 at 25	560 at 24	
revenue	13,000	13,440	440 F
parts	4,160	4,760	600 A
wages	5,000	4,900	100 F
profit	3,840	3,780	60 A

Revenue rose because the workshop cut its price to win more repairs. But the extra repairs needed more parts, and parts became dearer, so profit is 60 below budget. A manager should find the cause of each variance before acting: was the price cut a good decision, or did parts cost more because of a new supplier? Used this way, budgets and variances feed back into the business's plans for next year.

Checklist

- Capital and revenue expenditure; internal sources (personal funds, retained profit, sale of assets) and eight external sources; short, medium and long term; matching the source to the need (3.1–3.2).
- Fixed, variable, semi-variable, direct and indirect costs; total revenue and revenue streams (3.3).
- The income statement from sales revenue 600,000 to retained profit 40,000; the statement of financial position with net assets and equity of 200,000; who reads the accounts. HL: intangible assets; straight-line depreciation 5,000 a year and units of production 1 per test (3.4).
- Gross profit margin 40%, profit margin 15%, ROCE 25%; current ratio 2.0, acid test 1.25; ways to improve each (3.5).
- HL: stock turnover 15 times (24.3 days), debtor days 27.4, creditor days 25.3, gearing 44.4%; ways to improve each (3.6).
- Profit against cash flow; the working capital cycle; the January–June forecast with its −5,000 in April; three ways to fix a cash problem (3.7).
- Payback 3 years, ARR 8.3%; HL: NPV +18,600 at 6%; what each method can and cannot show (3.8).
- HL: budgets, cost and profit centres, the variance table with its 60 A profit variance (3.9).

Paper 2 tests the calculations: write the formula, put in the numbers and give the

answer with its unit, then say what it means for the business. Paper 1 asks about sources of finance and cash flow in the case-study business. All numbers here are original.