Capstone Financial Foundations

Understanding the Numbers and Making Decisions

Matthew D. Langenkamp · Isenberg School of Management, UMass Amherst

Prepared in collaboration with Thea · September 17, 2026

CLASSROOM WORKBOOK DRAFT — Foundations and the Andrews case

For the Capstone simulation, the in-class financial foundations exercise, and final-exam preparation.

This revision contains the financial foundations and a detailed actual Andrews case, including its decisions, capacity purchases and sales, financial results, and classroom exercises. The complete A–G worksheet sequence, expanded ratio coverage, full glossary, and scorecard discussion remain later sections. Answers are provided separately for the instructor.

Contents

Introduction: Learning to read a company

When I started working in finance in Hong Kong, I encountered reports from British companies whose accounts looked somewhat different from the US financial statements I knew. A book by Geoffrey Holmes and Alan Sugden, *Interpreting Company Reports and Accounts*, helped me make sense of them. Its usefulness lay in helping me understand what I was looking at and what the numbers could tell me about a company.

This booklet has a similar practical purpose: to help you interpret Capstone's financial statements, whose presentation may differ from what you encountered in your accounting and finance classes at UMass Isenberg. We will use familiar US terminology and concentrate on the financial understanding you need for our course and Capstone. The aim is not to turn you into an accountant. It is to help you read a company's results, ask sensible questions, and understand the financial consequences of a business decision.

You will use this booklet in three ways:

• **For the Capstone simulation:** to understand the reports and connect your decisions to sales, costs, profit, assets, debt, and cash.

• **For the in-class exercise:** to practice calculations, show your working, and explain what your answers mean.

• **For the final exam:** to review the concepts and practice using them in unfamiliar examples. Your instructor's exam guidance determines the specific assessment requirements.

We begin with three financial statements. The income statement tells us whether the company earned a profit during a period. The balance sheet shows what the company owns and owes at a particular date. The cash flow statement explains the cash that came in and went out during the period. They describe the same business, but each answers a different question.

A profitable company can run short of cash. A company with a large bank balance can be losing money. A business can increase its sales while tying up so much money in inventory and customer credit that it needs another loan. These are not accounting tricks. They are ordinary situations that become understandable once we distinguish profit, financial position, and cash.

We will work through this booklet together in class. Read the explanation, follow the worked example, and use a pencil to answer each practice question in the space provided. In the worksheets, show the formula, insert the figures, label the answer, and explain its meaning. A correct percentage is useful; understanding what produced it is more useful still.

The small worked examples use an invented sensor company to introduce the arithmetic. The Andrews case then applies these ideas to actual decisions and results from Capstone 2.0, industry CP134139_1. Keep the two datasets separate: Harbor is a teaching illustration; Andrews is the actual simulation case. The Capstone glossary at **langenkamp.io/capstone/** is our companion reference. For simulation rules, use the official guides and the reports for your assigned industry.

1. Three statements, one company

What question are we trying to answer?

Before trying to think of a formula, consider the question. If the question is “Did we make money this year?” that is an income statement question. If the question is “What do we owe banks at year-end?” that is a balance sheet question. If the question is “Can we explain why the bank balance fell?” that is a cash flow statement question. These questions require different information.

Statement	Main question	Time covered
Income statement	What revenue and expenses produced our profit or loss?	A period, such as the year ended December 31
Balance sheet	What are our assets, liabilities, and shareholders' equity?	A date, such as December 31
Cash flow statement	What cash came in and went out, and why?	A period, such as the year ended December 31

Think of the balance sheet as a photograph of the company’s assets and liabilities. Shareholders’ equity is the difference between the recorded value of assets and liabilities. The other two statements describe activity between photographs taken at successive year-ends: one measures profit, while the other follows cash. Neither is a complete picture on its own.

Profit is an accounting measure, not the cash balance

Profit measures earnings under accounting rules; it is not a count of cash in the bank. We do not need a detailed survey of revenue-recognition rules to understand the practical distinction. The income statement records **revenue earned and expenses incurred**. It does not simply list deposits into and withdrawals from the bank account. A customer may receive a product in December and pay in January. The sale can belong to December's revenue even though its cash arrives later.

Similarly, a machine can be paid for today and used for many years. The cash payment happens now; the machine's cost is normally recognized as expense over its useful life through depreciation. This is one reason the income statement and cash flow statement report different amounts.

The matching principle: recognize the cost as the machine is used

The **matching principle** helps explain why paying for something and recognizing an expense are not always the same event. Under accrual accounting, we try to recognize the costs of earning revenue in the same periods as the related revenue. A machine helps produce goods over several years, not just in the year we pay for it. Charging its entire cost against the purchase year's revenue would place several years of cost in one year and leave later years without their share. Instead, we **capitalize** the purchase: record it as an asset, then allocate its depreciable cost over its estimated useful life. This allocation is called **depreciation**. It represents the use of the machine's economic benefits over time, rather than the timing of the cash payment. It is a systematic allocation, not an exact measurement of wear or resale value.

Follow the same machine through the three statements:

• **Cash flow statement — when did we pay?** If we buy the machine for cash, the purchase is an investing cash outflow in the year of payment. Later depreciation charges are not additional payments.

When operating cash flow starts with net income, depreciation is added back because it reduced profit without using cash in that period. The original equipment payment remains in investing cash flow; it is not counted twice.

• **Income statement — how much cost belongs to this period?** Depreciation charges a share of the machine's cost to the periods benefiting from its use. In Capstone's presentation, this expense reduces operating profit and, other things equal, net income. The full equipment purchase price is not deducted from profit when paid.

• **Balance sheet — how much cost remains?** At purchase, cash decreases and equipment increases by the same amount, assuming no borrowing or transaction costs. As depreciation is recorded, accumulated depreciation increases and the equipment's net book value falls. Lower net income also means lower retained earnings than there would otherwise have been, ignoring tax effects. The balance sheet therefore carries the remaining unallocated cost into future periods; it does not show a cash reserve for replacing the machine.

A simple illustration, not a Capstone depreciation schedule: suppose a machine costs $10,000, is paid for before use, and provides five full years of service with no residual value. With straight-line depreciation, the purchase produces a $10,000 investing cash outflow and a $10,000 equipment asset, but no immediate $10,000 expense. Each full year of use then brings $2,000 of depreciation expense. After the first full year, net book value is $8,000. That year's depreciation reduces profit by $2,000 before tax effects, but requires no further equipment payment. The same purchase thus appears as **cash paid at purchase, expense allocated during use, and remaining cost on the balance sheet**.

In Capstone, buying extra capacity or increasing automation uses cash in the decision year, while the capitalized cost is allocated through depreciation over time under the simulation's accounting rules. The added capacity and new automation become available next year. Keep that operational timing distinct from the accounting allocation: use the simulation's reported depreciation rather than imposing the five-year illustration above. Selling capacity has a different timing rule: it brings cash in and removes capacity this year. The sale also removes the equipment's original cost and associated accumulated depreciation from the balance sheet; the difference between proceeds and remaining book value is a gain or loss affecting profit. The Andrews case shows both directions of investment in the same round.

The connection to remember: the income statement measures earnings for a period, the cash flow statement explains the change in cash over that period, and the balance sheet shows the resulting assets, liabilities, and equity at its end. Matching helps explain why profit and cash differ without either statement being wrong.

The balance sheet contains the amounts carried forward at the reporting date: the unpaid customer bill is an asset called accounts receivable; the machine appears among the company's assets at its remaining accounting value.

Check the labels before calculating

Our recurring worked example, **Harbor Sensors**, reports dollar amounts in **$000**, meaning thousands of dollars. Thus 20,000 means $20 million. Unit quantities labeled “000 units” are also in thousands. A selling price of $40 per sensor, however, is still forty dollars per individual sensor.

Historical reports describe completed activity. **Pro forma statements** are projections based on planned decisions and assumptions. A forecast is not a promise that the cash will arrive.

Your turn — 1

1A. Identify the statement you would consult first for each item.

1A(a) Which statement would you consult first to find annual net profit?

1A(b) Which statement would you consult first to find year-end debt?

1A(c) Which statement would you consult first to find cash spent on equipment during the year?

1B. A company reports a profit of $2 million. Can you conclude that it has $2 million available in its bank account? Explain why or why not.

Capstone connection: check the round and reporting date. At the start of a new round, the completed-round report describes the previous year's results. Keep those results separate from the coming year's projections.

2. The income statement: from sales to profit

What remains after the costs of doing business?

Revenue is the value of the products sold. For one product sold at one price, **revenue = units sold × selling price**. Producing a sensor is not the same as selling it. Unsold sensors remain in inventory, and the relevant production costs remain assets until the products are sold.

Harbor Sensors sold 500 thousand sensors at $40 each. Its revenue was therefore 500 × $40 = 20,000 in $000, or $20 million. The following is a simplified Capstone-style presentation, with costs shown as positive amounts to subtract. All expense amounts are supplied for this example; do not infer a tax rate or simulation rule from them.

Income statement for Year 1	Amount ($000)
Revenue	20,000
Material cost of units sold	6,000
Labor cost of units sold	4,000
Inventory carrying expense	400
Total variable costs	10,400
Contribution margin	9,600
Depreciation	1,200
SG&A	3,000
EBIT (Earnings Before Interest and Taxes)	5,400
Interest expense	600
Tax expense	1,200
Net income	3,600

Assume no other expenses or profit sharing. SG&A is a single total here; do not deduct its component budgets again. **EBIT stands for Earnings Before Interest and Taxes**: profit before interest expense and income taxes are deducted. It is similar to operating profit; in this simplified example they are the same. In other reports, EBIT can include non-operating gains or losses excluded from operating profit, so check the report's definitions.

Contribution is not final profit

Contribution margin = revenue – variable costs. Harbor has 9,600 left after the variable costs shown above. Contribution margin as a percentage is 9,600 ÷ 20,000 × 100 = **48%**. In this presentation, each dollar of sales leaves 48 cents to cover the remaining expenses and contribute to profit.

Material and labor cost per sensor is (6,000 + 4,000) ÷ 500 = **$20**. Contribution per sensor before carrying expense is $40 – $20 = **$20**. After the $400 thousand carrying expense, contribution per sensor is 9,600 ÷ 500 = **$19.20**. Neither number is net profit per sensor: depreciation, SG&A, interest, and taxes still have to be covered.

From contribution to the bottom line

Period costs are costs charged to the period rather than assigned to individual units of inventory. In our Capstone-style presentation, **SG&A** groups R&D, promotion, sales, and administration expenses. The classification and placement of costs can differ in other companies' published statements; follow the labels on the report you are reading.

Subtracting depreciation and SG&A from contribution gives **EBIT**, earnings before interest and taxes: 9,600 − 1,200 − 3,000 = **5,400**. Subtract interest and tax expense to reach net income: 5,400 − 600 − 1,200 = **3,600**.

Net income is also called net profit. Harbor's **return on sales**, or net profit margin, is 3,600 ÷ 20,000 × 100 = **18%**. This is not the same as its 48% contribution margin. Nor is a Capstone product-level "net margin" necessarily company net profit: the product view can leave company-level expenses still to deduct.

What does EBITDA tell us?

EBITDA stands for Earnings Before Interest, Taxes, Depreciation, and Amortization. Start with EBIT and add back depreciation and amortization already deducted in arriving at EBIT. Depreciation allocates the cost of tangible assets such as machines; amortization can do the same for finite-lived intangible assets such as a purchased license. Chapter 3 explains both.

EBITDA = EBIT + depreciation + amortization.

Harbor has no amortization expense in this illustration, so EBITDA is 5,400 + 1,200 = **6,600 ($000)**. EBIT is 5,400 because it includes the depreciation charge; EBITDA is higher because it excludes that charge. Both are measures of earnings before interest and taxes, not the balance in the bank.

EBITDA can help compare earnings before financing costs, taxes, and these asset-cost allocations. But **EBITDA is not cash flow**. Customers may not yet have paid, inventory may have grown, and supplier bills may remain unpaid. Equipment purchases, interest payments, and taxes can also use cash without reducing EBITDA. Excluding depreciation does not make equipment free or remove the need to replace it. Read EBITDA alongside all three statements, not as a substitute for them.

Earning and collecting are different events

Accounting that recognizes revenue when earned and expenses when incurred is called **accrual accounting**. Harbor's revenue can include credit sales that customers have not yet paid. Its expenses can include bills not yet paid and noncash charges such as depreciation. Profit measures the result under these accounting rules, not the year's net bank deposits.

A loan brings cash into the company and creates an obligation to repay. We will follow borrowing and an equipment purchase step by step in Chapter 5.

Your turn — 2

2A. A separate sensor company has sales of 12,000, variable costs of 7,200, depreciation of 600, SG&A of 1,800, interest of 200, and tax expense of 500, all in $000. Assume no other expenses.

2A(a) Calculate contribution margin in dollars ($000). Show your working.

2A(b) Calculate contribution margin as a percentage. Show your working.

2A(c) Calculate EBIT ($000). Show your working.

2A(d) Calculate net income ($000). Show your working.

2B. A customer buys sensors on credit in December and pays in January. Assuming the sale qualifies for recognition in December, explain why December revenue and December cash receipts differ.

Actual Capstone connection: Andrews reported sales of 125,977 and net profit of 7,529 in 2027 ($000). Its income statement includes a 563 Other charge; the case explains why cash from selling plant is not sensor revenue and why a disposal can affect this line.

Existing worksheet connection: Part A asks you to build this same sequence with a different dataset. Keep its figures separate from Harbor's figures.

3. Asset purchases, depreciation, and amortization

Why is a machine purchase treated differently from an inventory purchase?

Both purchases initially create assets, not necessarily immediate expenses. Inventory is held for sale or used to make products for sale; a machine is used repeatedly to make those products. Paying cash for either exchanges one asset, cash, for another. Buying on credit instead creates an asset and an obligation to pay.

The difference is **when the asset's cost becomes an expense**. The cost of inventory becomes cost of goods sold when the related goods are sold. Unsold inventory remains on the balance sheet, assuming no write-down is needed. A machine provides benefits over many periods, so its depreciable cost is allocated over its useful life rather than charged entirely against one sale or the purchase year's revenue.

Suppose a retailer pays $1,000 for 100 items and sells 60 of them. Ignoring other costs, it recognizes $600 of cost of goods sold and carries the remaining $400 as inventory. A machine costing $1,000, with a five-year useful life and no residual value, instead produces $200 of straight-line depreciation per full year of use. These are separate hypothetical examples in ordinary dollars, not Capstone depreciation assumptions.

Both treatments illustrate the **matching principle**: recognize the inventory cost with the revenue from selling those goods, and allocate the machine's cost to the periods benefiting from its use. Cash payment may occur at a different time. Cash paid for inventory belongs in operating cash flow; cash paid for equipment belongs in investing cash flow. The balance sheet carries the cost not yet expensed. In Capstone's income statement, depreciation is shown separately from the variable costs of units sold.

Depreciation allocates the depreciable cost of a tangible asset over its useful life. It is an expense, but the annual depreciation charge is not another cash payment for the machine. Nor is depreciation a deposit into a replacement fund. It is an accounting allocation, not necessarily a measurement of the machine's current resale value.

A simple depreciation timeline

This illustration is separate from Harbor's company statements. A machine costs **$9,000**, has an estimated residual value of **$1,000**, and a useful life of **four years**. These figures are ordinary dollars, not $000. Assume straight-line depreciation, a full year's use each year, and no later changes in estimates or impairment.

Annual depreciation = (cost − residual value) ÷ useful life

($9,000 − $1,000) ÷ 4 = **$2,000 per year**.

Date	Cash paid for purchase	Depreciation expense in year	Accumulated depreciation	Net book value
Purchase	$9,000	—	$0	$9,000
End of Year 1	$0 additional	$2,000	$2,000	$7,000
End of Year 2	$0 additional	$2,000	$4,000	$5,000
End of Year 3	$0 additional	$2,000	$6,000	$3,000

Date	Cash paid for purchase	Depreciation expense in year	Accumulated depreciation	Net book value
End of Year 4	$0 additional	$2,000	$8,000	$1,000

Accumulated depreciation is the total depreciation recorded to date. Subtract it from the original recorded cost to find net book value. It reduces the reported asset balance; it is not a liability and does not tell us how much cash the company has saved.

What is amortization?

In this context, **amortization** serves a similar purpose for a finite-lived intangible asset, such as a purchased license with a limited useful life. A qualifying three-year license capitalized at $6,000, with no residual value and straight-line amortization, would produce $2,000 of expense per full year.

Not every intangible asset is amortized, and not every software or development payment qualifies to be recorded as an asset. For this booklet, the essential idea is the difference between paying for a resource and recognizing its cost as expense over time. We introduce amortization as general financial literacy; we do not assume a separate amortization line exists in your Capstone reports.

You may also hear “loan amortization.” That refers to paying down a loan over time. It is a different use of the word: loan principal payments are real cash outflows and are not the same as amortization expense on an intangible asset.

Your turn — 3

3A. Equipment costs $15,000, has an estimated residual value of $3,000, and a six-year life. Assume it is paid entirely in cash at purchase.

3A(a) Calculate annual straight-line depreciation. Show your working.

3A(b) Calculate book value after two full years. Show your working.

3A(c) State the cash outflow at purchase if paid entirely in cash.

3B. Someone says, “Depreciation means we pay for the machine again every year.” Correct the statement in two sentences.

Actual Capstone connection: Andrews sold capacity on four product lines, bought capacity on Acre, and increased automation on two lines. Its positive annual depreciation and falling accumulated-depreciation balance are compatible once we account for the assets sold.

Existing worksheet connection: Part B uses a separate equipment example. Use its stated life and residual value. Do not add that purchase to the company's Part D cash flow exercise.

4. The balance sheet: a snapshot

What does the company have, and who has claims on it?

An **asset** is a resource the company controls that is expected to provide economic benefit. A **liability** is an obligation the company owes. **Shareholders' equity** is the residual accounting interest after liabilities are subtracted from assets.

Assets − liabilities = shareholders' equity.

Start with what the company has, subtract what it owes, and the remainder is the owners' accounting interest. This is similar to equity in a home. A house worth **$1,000,000** with a **$500,000 mortgage** leaves the homeowner with **$500,000 of equity**, ignoring selling costs. Owning a million-dollar house does not mean having a million dollars of equity—or cash in the bank.

$1,000,000 house − $500,000 mortgage = $500,000 equity.

We can work in the other direction. If we know the homeowner's equity is $500,000 and the mortgage is $500,000, their sum gives the house value in this illustration:

$500,000 equity + $500,000 mortgage = $1,000,000 house.

Rearranging the same relationship gives the familiar accounting equation:

Assets = liabilities + shareholders' equity.

The home example uses an assumed market value. A company's balance sheet uses recorded accounting values, which can differ from market values; liabilities also include obligations such as supplier bills, not only loans. The equation must balance, but does not imply assets could all be sold for book value or that shareholders' equity equals the stock market's valuation of the company.

Harbor's simplified balance sheet below is at the end of Year 1. All figures are $000. Gross equipment and accumulated depreciation are shown so you can see how net equipment is calculated; do not add all three figures into total assets.

Balance sheet item	Amount ($000)
Cash	3,000
Accounts receivable	2,000
Inventory	3,000
Total current assets	8,000
Gross plant and equipment	16,000
Less: accumulated depreciation	4,000
Net plant and equipment	12,000
Total assets	20,000
Accounts payable	2,000
Current debt	2,000
Total current liabilities	4,000
Long-term debt	6,000
Total liabilities	10,000
Common stock	6,000
Retained earnings	4,000
Total shareholders' equity	10,000
Total liabilities and equity	20,000

Not all assets can pay a bill tomorrow

Cash is available money. **Accounts receivable** are amounts customers owe for credit sales; we still need to collect them. **Inventory** consists of goods held for sale or production; we normally need to sell them and collect payment before their value becomes cash.

These are current assets, generally expected to be realized or used within a year or the operating cycle if longer. Current liabilities are obligations due in the corresponding short-term period. **Accounts payable** are amounts owed to suppliers. **Current debt** is short-term borrowing or debt due soon; long-term debt is due later.

Harbor's **net working capital** is current assets minus current liabilities: 8,000 − 4,000 = **4,000**. Its **current ratio** is 8,000 ÷ 4,000 = **2.0 times**. These indicate a cushion on paper, but receivables may arrive late and inventory may not sell as expected. A current ratio above one does not guarantee that next week's bills can be paid.

Equity is not a separate bank account

Common stock records contributed share capital in this simplified example. **Retained earnings** reflect accumulated profits kept in the business rather than distributed as dividends, reduced by losses. Retained earnings are not cash set aside somewhere. They may have financed machines, inventory, or customer credit.

In a simplified company without other equity adjustments, ending retained earnings equal beginning retained earnings plus net income minus dividends. Harbor's 4,000 therefore need not equal this year's 3,600 profit. It includes amounts retained from earlier years.

Your turn — 4

4A. A separate business reports current assets of 9,000, net equipment of 11,000, current liabilities of 5,000, and long-term debt of 7,000, all in $000. Show your working for each calculation.

4A(a) Calculate total assets ($000).

4A(b) Calculate total liabilities ($000).

4A(c) Calculate shareholders' equity ($000).

4A(d) Calculate net working capital ($000).

4A(e) Calculate the current ratio (times).

4B. Why would you be concerned if a company's inventory rose sharply while its sales were flat, even if its current ratio increased?

Actual Capstone connection: Andrews ended 2027 with 17,863 cash, 11,016 inventory, and 10,354 receivables ($000). Only the first amount is cash already held; the others require sales or collection. The balance sheet is a starting point for the next round's funding decisions.

Existing worksheet connection: Part C asks you to assemble the balance sheet, verify the equation, and distinguish liquidity from a favorable-looking ratio.

5. The cash flow statement: where the cash went

Why did the bank balance change?

The cash flow statement reconciles beginning cash to ending cash. It groups cash movements into **operating**, **investing**, and **financing** activities. Cash flow is measured over a period; cash on the balance sheet is measured at a date.

• **Operating:** cash associated with running the business, including collections from customers and payments for operating costs. Under US reporting, interest paid and income taxes paid are generally operating cash flows.

• **Investing:** cash used to buy long-lived assets, or received from selling them. Equipment purchases are capital expenditures.

• **Financing:** cash received from borrowing or issuing shares, and cash paid to repay principal, distribute dividends, or repurchase shares.

Noncash transactions do not become cash flows merely because they change assets or debt. For example, equipment obtained entirely through noncash financing is not a cash purchase. Our worked example assumes the listed equipment purchases were paid in cash.

Start simply: borrow money, then purchase capacity

Consider a separate hypothetical company with $100,000 cash, no other assets, no liabilities, and $100,000 shareholders' equity. Use ordinary dollars here, not $000. We will look only at two cash transactions, before any interest, depreciation, fees, taxes, or operating activity.

Step 1 — borrow $200,000. The lender deposits the funds in the company's bank account. Cash rises from $100,000 to $300,000, and debt rises from zero to $200,000. The cash flow statement records a $200,000 financing inflow. There is no income or expense from receiving the loan principal. Equity remains $100,000: assets of $300,000 minus liabilities of $200,000.

Step 2 — pay $150,000 for capacity. Cash falls from $300,000 to $150,000 and plant and equipment rises by $150,000. The cash flow statement records a $150,000 investing outflow. Total assets remain $300,000, now split between cash and equipment. Debt is still $200,000 and equity is still $100,000. The purchase itself does not create an immediate $150,000 expense.

Position (ordinary dollars)	Before borrowing	After borrowing	After capacity purchase
Cash	$100,000	$300,000	$150,000
Equipment	$0	$0	$150,000
Total assets	$100,000	$300,000	$300,000
Debt / total liabilities	$0	$200,000	$200,000
Equity: assets minus liabilities	$100,000	$100,000	$100,000

The two transactions increase cash by $50,000 overall: $200,000 financing inflow minus $150,000 investing outflow. Beginning cash of $100,000 plus that increase gives ending cash of **$150,000**. Neither

transaction generates operating cash flow or profit at that moment. Later, interest and depreciation affect earnings. In Capstone, the purchased capacity becomes available next round; the cash payment occurs in the decision year.

Once these direct cash movements are clear, we can examine the more complicated relationship between profit and operating cash flow.

Starting with profit and explaining the differences

Operating cash flow is often presented using the **indirect method**: begin with net income, then adjust for noncash items and changes in operating working capital. This is still a statement about actual cash; it simply explains that cash by reconciling it with profit.

For this simplified example:

Operating cash flow = net income + depreciation − increase in receivables − increase in inventory + increase in payables.

Assume no other noncash items or operating balance changes, including no changes in interest or tax payables. Real statements may require additional adjustments.

Harbor: operating cash reconciliation, Year 1	Amount ($000)
Net income	3,600
Add depreciation	+1,200
Subtract increase in accounts receivable	−500
Subtract increase in inventory	−1,000
Add increase in accounts payable	+300
Cash flow from operations	3,600

Why these signs? Depreciation reduced profit without a current cash payment, so we add it back. Increasing receivables means some revenue has not yet been collected. Increasing inventory means more resources are tied up in unsold goods. Increasing payables means some supplier bills have not yet been paid, leaving more cash in the company for now.

An inventory increase does not prove every inventory purchase was paid in cash. The separate payable adjustment accounts for supplier credit in this simplified reconciliation. If these balances decrease rather than increase, the signs reverse.

Harbor's operating cash flow happens to equal its profit: the adjustments net to zero. That coincidence does not make profit and cash the same concept.

Then account for investment and financing

Harbor: total cash reconciliation, Year 1	Amount ($000)
Beginning cash	4,000
Operating cash flow	+3,600
Cash equipment purchases / investing cash flow	−5,000
New borrowing	+1,000
Loan principal repaid	−600
Financing cash flow	+400
Net change in cash	−1,000
Ending cash	3,000

Assume no asset sales, share transactions, dividends, or other cash flows. Financing cash flow is a subtotal, not an additional flow to count again: +1,000 − 600 = +400. Total cash change is +3,600 − 5,000 + 400 = **−1,000**.

Harbor earned a profit of 3,600 and generated 3,600 from operations, but invested 5,000 in equipment. Net borrowing of 400 covered only part of the difference. The company used 1,000 of its beginning cash. Ending cash of 3,000 matches the balance sheet.

Using the definition **free cash flow = operating cash flow − capital expenditure**, Harbor's free cash flow is 3,600 − 5,000 = **−1,400**. A negative figure can reflect investment in future capacity rather than a failing business. We still need to ask whether the investment is sensible and how the company will pay for it. Other sources use different free-cash-flow definitions; always identify the formula.

Your turn — 5

5A. Start with borrowing. A separate company has $50,000 cash, no other assets, no liabilities, and $50,000 equity. It receives a $100,000 bank loan in cash. Ignore interest, fees, and all other activity. These are ordinary dollars.

5A(a) How much cash does the company have immediately after borrowing?

5A(b) What are its total liabilities and shareholders' equity after borrowing? Use assets minus liabilities to check equity.

5A(c) Identify the cash flow category and amount of the loan receipt. Does receiving the principal change profit?

5B. Now purchase capacity. The same company pays $80,000 cash for additional production capacity. Consider the position immediately after payment, before depreciation or any other activity.

5B(a) Calculate the remaining cash and the recorded equipment asset.

5B(b) Calculate total assets, liabilities, and shareholders' equity after the purchase.

5B(c) Identify the cash flow category of the payment. Explain why the purchase is not an immediate $80,000 expense and when the added capacity becomes available in Capstone.

5C. Put the two transactions together. Use the borrowing and capacity purchase from 5A–5B; assume no other cash flows.

5C(a) State operating, investing, and financing cash flow, then calculate the net change in cash.

5C(b) Reconcile beginning cash to ending cash. Explain why the cash increase is not profit.

5D. A separate company's net income is 2,000, depreciation is 500, receivables increase by 300, inventory decreases by 200, and payables decrease by 100, all in $000. Assume no other adjustments.

5D(a) Calculate operating cash flow ($000). Show your working.

5D(b) Explain the sign used for the inventory change.

5D(c) Explain the sign used for the accounts payable change.

5E. Beginning cash is 1,000. Use your answer to 5D, equipment purchases of 3,000, new borrowing of 800, and principal repayments of 200. Assume no other cash flows. All amounts are $000.

5E(a) Calculate the net change in cash ($000). Show your working.

5E(b) Calculate ending cash ($000). Show your working.

Actual Capstone connection: Andrews generated 11,062 of operating cash and received a net 3,370 through plant transactions in 2027 ($000). Those are different sources of cash, and neither equals its 7,529 profit. The case provides the full bridge.

Existing worksheet connection: Part D uses the profit calculated in Part A and should reconcile to the cash balance in Part C. Part B's separate machine is not an extra cash outflow here.

6. Putting the statements together

Follow the transaction, not just the label

The three statements are connected because the same business events affect them. A transaction can change cash without changing profit, or change profit before cash moves. Asking what happened is more useful than memorizing that a particular word "belongs" to only one statement.

The examples below are independent illustrations, in ordinary dollars. They are not additional transactions to insert into Harbor's statements. Ignore taxes and other incidental effects in this table.

Transaction	Income statement effect	Balance sheet effect	Cash effect at that time
Sell goods on credit for $100; their inventory cost was $60	Revenue +$100 and cost of goods sold +$60; profit +$40	Receivables +$100; inventory −$60; equity +$40	None until collection
Collect that $100 receivable later	No new revenue or profit	Cash +$100; receivables −$100	Operating inflow $100
Buy $80 of inventory on supplier credit	No immediate expense for goods still unsold	Inventory +$80; payables +$80	None until payment
Pay that $80 supplier bill	No new expense	Cash −$80; payables −$80	Operating outflow $80
Buy equipment for $1,000 cash	No immediate expense for the full purchase	Cash −$1,000; equipment +$1,000	Investing outflow $1,000
Record $100 of depreciation	Expense +$100; profit −$100	Net equipment −$100; equity −$100	No current cash payment
Borrow $500 cash	No revenue or profit	Cash +$500; debt +$500	Financing inflow $500
Repay $200 of loan principal	No expense	Cash −$200; debt −$200	Financing outflow $200

Paying interest is different from repaying principal: interest is the cost of borrowing and affects profit. Principal repayment reduces the amount owed. Similarly, dividends are distributions to shareholders, not operating expenses.

Three links to check

1. Profit connects to equity. Harbor began Year 1 with retained earnings of 400. Add net income of 3,600 and subtract zero dividends to reach ending retained earnings of **4,000**. This is the amount on the balance sheet, not an additional cash account.

2. Investment and depreciation connect to net equipment. Harbor began with gross equipment of 11,000 and accumulated depreciation of 2,800, so opening net equipment was 8,200. With 5,000 of purchases, 1,200 of depreciation, and no disposals or other adjustments, closing net equipment is 8,200 + 5,000 − 1,200 = **12,000**.

3. Cash flows connect the two cash balances. Beginning cash of 4,000 plus operating cash of 3,600, minus investment spending of 5,000, plus net financing cash of 400 produces ending cash of **3,000**.

All Harbor figures in these three links are $000. These checks are a way of reading the story consistently, not merely proving that arithmetic works.

What should management ask next?

Harbor's statements do not, by themselves, tell us that its strategy is good. They tell us where to investigate. Will the new equipment support profitable demand? Why is inventory rising? Are customers paying on time? Does the business have enough cash for the next round if sales disappoint?

Before a Capstone decision, ask what will happen to each statement. More production can mean more inventory and less available cash if sales fall short. Buying capacity uses cash now but produces benefits according to the simulation's timing rules. Borrowing can relieve a cash shortage while increasing debt and future interest costs. Financial understanding helps us evaluate these trade-offs.

Your turn — 6

6A. A company earns a profit but ends with less cash. Give two possible reasons.

6A(a) Give one possible reason and identify its cash flow category.

6A(b) Give a second possible reason and identify its cash flow category.

6B. In 60–100 words, explain why Harbor's cash declined despite its profit. Use at least two figures from the statements. Then identify one question you would ask before judging its equipment investment.

Before moving on

You should now be able to distinguish revenue from cash receipts, expense from cash payment, profit from retained earnings, and investment from operating expense. You should be able to explain the three statements to another student without simply listing their line items.

Next, the Andrews case connects these principles to actual Capstone decisions and financial results. Expanded ratio coverage will follow. The existing Financial Foundations assignment supplies the A–G calculation and interpretation sequence; its full worksheets and the complete course glossary will be incorporated in the expanded workbook.

Sources and scope

Course companion: https://langenkamp.io/capstone/ — Capstone 2.0 Glossary & Guidance, consulted September 17, 2026. Existing exercise source: *Reading the Courier: Financial Foundations*, September 16, 2026. Official simulation guides are linked from the course companion.

Organizing inspiration: Geoffrey Holmes and Alan Sugden, *Interpreting Company Reports and Accounts*, FT/Prentice Hall. A later edition, also credited to Paul Gee, has a contents/preface record at https://catdir.loc.gov/catdir/toc/ecip086/2007049783.html. This booklet uses original prose and invented examples; it is not a reproduction or an edition-specific adaptation of that book.

Andrews: decisions, capacity, and the three statements

A classroom case from Capstone 2.0

We now move from the small illustrations to an actual simulation company: **Andrews, industry CP134139_1**. The baseline is Round 0, ending December 31, 2026. Management made the Round 1 decisions for 2027; the resulting reports are the starting information for Round 2 in 2028. The numbers below come from the matching Year 0 and Year 1 Excel reports, the Year 1 Courier, and the supplied decision summary.

Imagine sitting with your team before submitting decisions. You can improve products, change prices, set promotion and sales budgets, plan production, sell or buy capacity, and change automation. Each choice has consequences beyond the screen on which you make it. Production choices affect cash and equipment; marketing choices affect expenses and demand; customer payments affect receivables as well as cash. The task is to understand these connections before deciding whether the company performed well.

Reading convention: financial-statement amounts and budgets are in $000; product quantities and capacity are in thousands of units. Prices are dollars per sensor. Actual results are not forecasts. Financial reports contain rounded numbers, so some displayed components differ from reported totals by 1 in $000. Keep reported totals; a small rounding difference is not an unexplained transaction.

1. What management decided

Andrews repositioned four products while leaving Acre's performance and size unchanged. It increased Able's promotion and sales budgets and made different price decisions across the five products. The decision summary records the following settings; the later results tell us what happened, not necessarily why management chose them.

Decision	Able	Acre	Adam	Aft	Agape
Performance	5.7	3.0	8.9	10.4	4.7
Size	14.3	17.0	11.1	15.3	9.6
Reliability (hours)	17,500	14,000	23,000	25,000	19,000
Price ($/sensor)	29.50	20.00	39.50	34.50	34.50
Promotion ($000)	1,350	900	800	700	700
Sales budget ($000)	1,400	900	800	700	700
Sales forecast (000 units)	1,370	1,970	430	430	370
Production order (000 units)	1,370	2,200	440	440	380
Capacity change (000 units)	−800	+300	−500	−200	−200
Automation next round	5	6	3	3	3

The finance decisions were zero new borrowing, zero bond retirement, zero stock issue or repurchase, and zero dividends. Accounts receivable and accounts payable policies were both 30 days. A zero borrowing

decision does not remove existing loans: Andrews still carried 41,700 of long-term debt and incurred 5,421 of interest expense.

2. Buying capacity: pay now, produce more next year

Capacity measures how many units a line can produce on one shift. It is not the number of units you order this year, and it is not inventory waiting to be sold. If the forecast rises, management must decide whether its existing line and a second shift can meet demand, or whether the company needs more capacity for the future.

Andrews bought 300 thousand units of capacity for Acre. Its existing first-shift capacity was 1,400 thousand units; the purchase raised next-round capacity to 1,700. **The new capacity was not available to produce this year's sensors.** Acre's 2,200 thousand production order therefore required extensive second-shift use against the existing 1,400 capacity. The order-to-capacity calculation is 2,200 ÷ 1,400 = 157.1%, consistent with the Courier's utilization figure.

Buying capacity uses cash in the decision year and adds to plant and equipment. It is an investing cash outflow, not an immediate operating expense for the entire purchase price. Depreciation allocates the capitalized cost over its accounting life. If the team finances the purchase with a loan, the borrowing is a separate financing inflow; it does not turn the equipment purchase into revenue.

Capstone's supplied guide prices capacity at **$6 plus $4 times the automation rating per unit of capacity**. Read the investment amount displayed by the simulation, especially when capacity and automation change together. Do not guess the total from a single slider. The general timing rule is simple: the payment affects this year's finances, while added capacity becomes usable next year.

3. Investing in automation: pay now, reduce labor costs next year

Capacity determines how much a line can produce; **automation determines how much human labor is needed to produce each unit**. More automated machinery performs more of the production tasks, reducing labor hours per sensor. Buying capacity and increasing automation are therefore different decisions: one expands the line's production capability, while the other changes how the work is done.

Automation is particularly important in the **Low End segment**, where customers place a high weight on price. Lower labor cost per unit can support a competitive price, improve contribution margin, or help offset the higher labor cost of a second shift. Low End customers also prefer older products, so frequent repositioning is often less attractive than in the high-technology segments. This makes automation a potentially useful fit, not an automatic instruction to choose the maximum rating.

There is a trade-off. **Higher automation can slow R&D projects that reposition a product.** Think of robots and specialized equipment that must be adjusted, retooled, and reprogrammed for the revised design: efficient repetition can make change more time-consuming. The supplied guide specifically notes that short repositioning moves take longer at higher automation; long moves are less affected by this difference. Do not assume every type of R&D change receives the same delay. Check the proposed revision date on the R&D screen.

That delay matters when customers expect rapidly improving performance and size. A cheaper production process is not enough if the revised product reaches the market too late. Production and R&D should therefore consider automation together: how much labor cost could we save, and how much product-development flexibility do we need?

Follow the investment through the statements

The automation investment uses cash now: it is an **investing cash outflow**, and its capitalized cost increases plant and equipment on the balance sheet. Depreciation allocates that cost over time and affects the income statement. The new automation becomes effective **next round**, when reduced labor requirements can benefit production costs. Actual labor cost per unit also depends on wages, shift use, and any applicable productivity effects; the automation rating alone does not explain every change.

For a simple standalone illustration, the guide's $4 per unit of capacity per point of automation means that raising a line with 1,000,000 units of capacity from rating 5 to 6 costs **$4,000,000**. This is an investment payment, not a promise of $4,000,000 annual savings. If capacity changes at the same time, use the simulation's displayed investment calculation. Lowering automation also incurs retooling cost; it is not a sale that releases cash.

Andrews: Able and Acre

Andrews raised **Able from 4 to 5** and **Acre from 5 to 6** in its 2027 decisions, effective in 2028. Acre is the Low End product. Management invested in both additional Acre capacity and greater automation, addressing future production volume and labor efficiency separately. Able's upgrade also seeks greater efficiency, but its future R&D schedule remains important in the Traditional segment.

The investment affected 2027 cash and equipment, but the new ratings did not produce labor savings in 2027. We have not yet observed the 2028 results, so those benefits are prospective, not verified savings. Before the next decision, compare forecast demand, expected unit labor cost, the investment required, available cash, and R&D completion dates.

4. Selling capacity: cash now, less production capability now

Selling capacity reverses part of the earlier investment. Andrews sold 800 thousand units of Able capacity, 500 of Adam, 200 of Aft, and 200 of Agape. **Sold capacity is removed in the decision year.** This differs from the delay on capacity purchases.

Able began with 1,800 thousand units of capacity. After selling 800, only 1,000 remained. Management nevertheless ordered 1,370 thousand units of production. Dividing the order by the remaining first-shift capacity gives **137% utilization**. The sale brought in cash but also made the company use a second shift. Second-shift labor is more expensive under the simulation's rules. Whether the sale was sensible depends on the value of the cash released, future demand, and the added operating cost—not simply on whether the cash balance increased.

The guide states that capacity sells for **65% of its original investment value**. This is not necessarily 65% of its remaining book value. The original cost and accumulated depreciation attached to the sold equipment are removed from the balance sheet. Compare the cash proceeds with the equipment's remaining book value to determine the accounting gain or loss.

Gain or loss on sale = cash proceeds − net book value of the assets sold.

A sale can therefore bring cash into the company while producing an accounting loss. There is no contradiction: the company received something valuable, but received less than the asset's remaining recorded value. The entire proceeds belong in investing cash flow. Only the gain or loss affects profit; the proceeds are not sensor sales revenue.

A small disposal example — hypothetical, not Andrews' transaction

Suppose a piece of capacity originally cost $100,000 and has accumulated depreciation of $30,000. Its net book value is $70,000. If sold for $65,000, it generates **$65,000 of investing cash inflow and a $5,000 loss**. Remove $100,000 of gross equipment and $30,000 of accumulated depreciation from the balance sheet. Net assets decline by $5,000 after adding the cash, matching the loss's effect on equity before tax effects.

When preparing operating cash flow by the indirect method, add back the $5,000 loss that reduced net income. That does not create another receipt: it keeps the disposal's accounting loss out of operating cash flow while the full $65,000 receipt appears under investing. A gain would be subtracted instead. This simplified example ignores taxes and transaction fees.

Selling every unit of a product's capacity has an additional Capstone consequence: the guide treats it as discontinuing that sensor and liquidates remaining inventory under its stated rules. Andrews retained capacity for all five products; that full-line liquidation rule is not what happened here.

Follow the timing and the statements

Event	Cash flow	Balance sheet	Income statement / production timing
Buy capacity	Investing outflow in decision year	Plant rises; cash falls unless separately financed	Cost allocated through depreciation; capacity available next year
Sell capacity	Investing inflow in decision year	Remove original cost and associated accumulated depreciation; add proceeds to cash	Gain/loss based on book value; capacity removed this year
Raise automation	Investing outflow	Capitalized investment increases plant	Depreciation over time; new automation effective next year
Borrow to fund investment	Financing inflow	Cash and debt rise	Loan proceeds are not revenue; interest is expense

5. What happened to Andrews' equipment and cash?

Andrews made purchases and sales in the same year. The cash flow report presents their **net** effect as a positive 3,370 under “Net Plant Improvements.” Positive here means investing brought cash into the company overall. It does not mean the company spent only 3,370, nor does it mean it made no investment.

Reported measure ($000)	End 2026	End 2027
Gross plant and equipment	113,800	98,600
Accumulated depreciation (deduction)	37,933	33,240
Net plant and equipment	75,867	65,360
Annual depreciation expense	7,587	6,573

Accumulated depreciation fell even though Andrews recorded a positive depreciation expense. Why? Selling equipment also removes the accumulated depreciation attached to that equipment. The year-end balance is not simply last year's balance plus this year's expense when assets have been sold.

Reconstructing the net investment — calculated, not separately reported totals

Using the baseline capacity costs and the guide's 65% sale rule, we can reconstruct original cost sold: Able 800 × $22 = 17,600, plus Adam/Aft/Agape combined 900 × $18 = 16,200, giving **33,800** in $000. The $22 and $18 costs follow the baseline automation ratings of 4 and 3 respectively. This reconstruction assumes those baseline assets carry the guide's standard cost basis; it is consistent with the supplied reports.

Sale proceeds at 65% are therefore **21,970**. Against reported net investing receipts of 3,370, the implied combined capacity-and-automation spending is **18,600**. These are reconstructed gross amounts, not extra line items displayed in the Courier. The gross plant roll-forward agrees: 113,800 + 18,600 − 33,800 = **98,600**.

The accumulated-depreciation roll-forward implies **11,266** removed on disposal: 37,933 + 6,573 − 33,240. Net book value removed is then 33,800 − 11,266 = **22,534**. Comparing that with proceeds of 21,970 implies a loss of **564**, within 1 of the report's 563 noncash gains/losses/write-offs adjustment. These reconstructed amounts use rounded inputs; use **563 as reported**, not a forced correction to 564. The evidence supports the disposal explanation without pretending the rounded export contains transaction-level precision.

6. Profit, operating cash, and the bank balance

Andrews generated sales of 125,977 in 2027. After variable costs, depreciation, SG&A, other charges, interest, taxes, and profit sharing, it reported profit of **7,529**. That is not the cash generated by the year's operations and not the amount sitting in the bank.

Operating cash reconciliation, 2027 ($000)	Reported amount
Net income	7,529
Add depreciation	6,573
Add extraordinary gains/losses/write-offs adjustment	563
Accounts payable adjustment	841
Inventory adjustment	−2,398
Accounts receivable adjustment	−2,047
Reported cash from operations	11,062

The displayed components sum to 11,061; the report's rounded total is 11,062. Inventory grew, tying up funds in goods not yet sold. Receivables grew, meaning some recorded sales had not yet become cash. Payables also grew, leaving some supplier obligations unpaid at year-end. The noncash adjustments explain why depreciation and the disposal-related adjustment affect profit differently from cash.

From beginning cash to ending cash, 2027 ($000)	Amount
Beginning cash	3,431
Cash from operations	+11,062

From beginning cash to ending cash, 2027 ($000)	Amount
Net cash from investing	+3,370
Cash from financing	0
Increase in cash	+14,432
Ending cash	17,863

This bridge reconciles exactly using the reported totals. Part of the cash increase came from net plant transactions, not from selling sensors. A team that looks only at the growing bank balance could miss the accompanying reduction in productive assets and increased second-shift dependence.

Andrews paid no dividend in 2027. Its retained earnings rose from 29,579 to 37,108: **29,579 + 7,529 − 0 = 37,108**. Retained earnings did not become a separate cash reserve. The company still had cash, receivables, inventory, and equipment financed by liabilities and equity.

7. Forecasts are product-specific

Product	Forecast sales (000)	Actual total sales (000)	Actual minus forecast (000)
Able	1,370	1,407	+37
Acre	1,970	1,984	+14
Adam	430	474	+44
Aft	430	404	−26
Agape	370	352	−18
Total	4,570	4,621	+51

The total forecast looks reasonably close, but it hides different problems across products. Adam sold more than forecast and ended with only 2 thousand units of inventory. Aft sold less than forecast and ended with 109 thousand. We cannot move unsold Aft sensors onto Adam's line in a spreadsheet and assume that the shortage disappears: they serve different customer needs.

Production orders also differ from adjusted output. For Able, the rounded reports imply output of 1,407 sales + 138 ending inventory − 189 beginning inventory = **1,356**, rather than the 1,370 order. Use the simulation's adjusted-production figure where available; do not silently assume every ordered unit became finished output.

Your turn — Andrews case

Use the actual decision and report tables above unless a question explicitly says hypothetical. Show calculations and label dollar amounts, quantities, percentages, and years.

C1(a). Calculate Able's remaining first-shift capacity after the sale.

C1(b). Calculate Able's production-order utilization percentage using its remaining capacity.

C2. Explain how selling Able capacity could improve this year's cash balance while increasing this year's labor cost per unit.

C3(a). Calculate Acre's capacity available next round.

C3(b). Explain why Acre's purchase did not remove the need for second-shift production in 2027.

C4. Hypothetical: capacity originally cost $200,000 and has accumulated depreciation of $80,000. It sells for 65% of original cost. Calculate the cash proceeds.

C5(a). Using C4, calculate net book value.

C5(b). Using C4 and C5(a), calculate the gain or loss on sale. Ignore tax effects.

C6. Using C4–C5, explain where the sale proceeds and gain or loss appear in the income statement and cash flow statement. Do not count the receipt twice.

C7. Using Andrews' reconstructed proceeds of 21,970 and net investing inflow of 3,370, calculate implied capacity-and-automation spending. All figures are $000.

C8. Explain why Andrews' accumulated depreciation decreased while depreciation expense remained positive.

C9. Reconcile Andrews' beginning cash to ending cash using the three reported cash flow totals.

C10. Explain why the increase in cash is greater than net profit. Identify one noncash adjustment, one working-capital effect, and the investing cash flow.

C11. Calculate Adam's forecast error as a percentage of forecast sales: (actual – forecast) ÷ forecast × 100. Round to two decimals.

C12. Before deciding whether Andrews should sell more capacity next round, identify two pieces of evidence you would examine and explain why each matters.

What we can conclude—and what still needs judgment

The company earned profit, generated operating cash, released net cash through plant transactions, and avoided an emergency loan. These facts do not prove every decision was optimal. Evaluate future demand, contribution, second-shift costs, inventory, product development, and the course's scorecard before recommending the next move. A higher bank balance is one result, not a complete strategy.

Sources: CP134139_1 Round 0 (2026) and Round 1 (2027) Excel exports; Round 1 Courier, Financial Summary and Product Analysis; supplied Andrews Decision Details screenshot; Capstone 2.0 Administrator Guide, Production section. The earlier CP134136_1 screenshots are not used as the decision record for this case. A configured scorecard and pre-decision financial pro formas have not yet been supplied, so no overall score or forecast-profit variance is claimed.

C13. Explain why greater automation might suit Acre's Low End strategy. Identify one benefit and one R&D trade-off.

C14. Andrews increased Able's and Acre's automation in its 2027 decisions. Explain the effects on 2027 cash and equipment, when the operational benefits begin, and why the investment is not expensed entirely when paid.