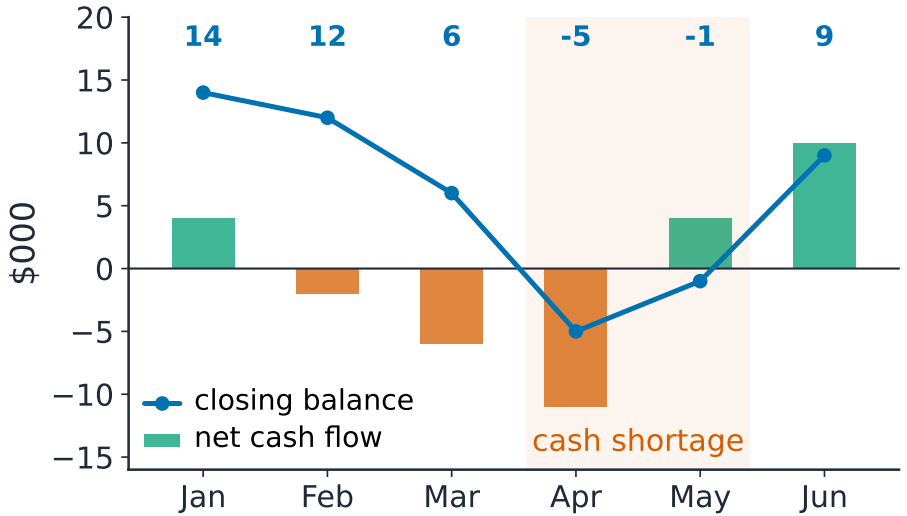
Exercise walk-through

3.5
Investment appraisal and budgets

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Figure: Cash flow



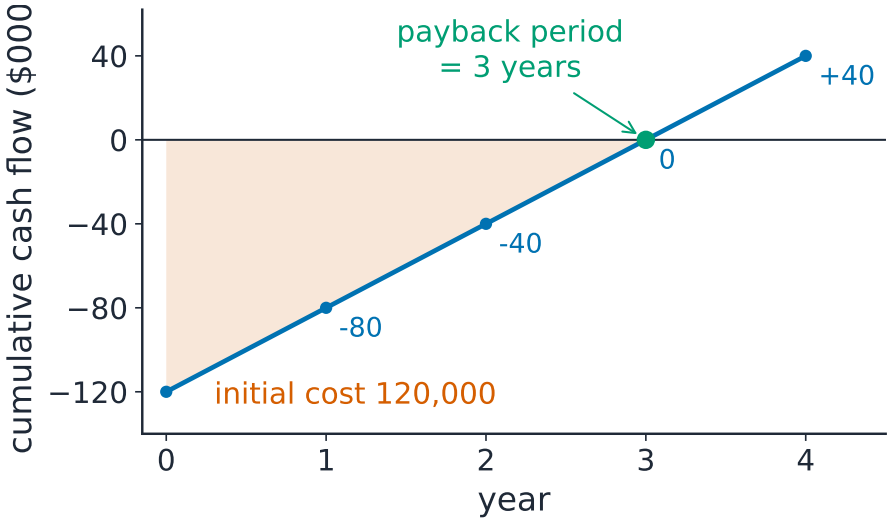
- A six-month cash-flow forecast: bars of net **cash flow** and a line of closing balance that falls below zero in April and May before recovering in June
- Match each part of the diagram to the text.

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*

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

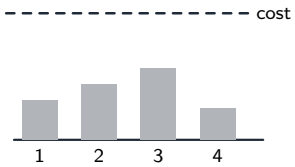
Figure: Investment appraisal



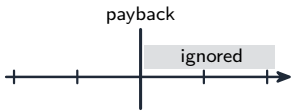
- Cumulative **cash flow** starting at minus 120,000 and rising by 40,000 a year, reaching zero at the end of year 3
- Match each part of the diagram to the text.

Exercises 2.1·2.2

2.1 Define **payback period**. [2]

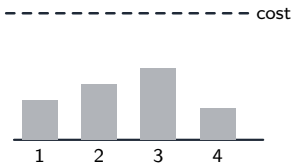


2.2 State **two** limitations of the payback method. [2]



Exercises 2.1·2.2

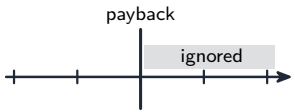
2.1 Define **payback period**. [2]



2.1

the length of time; for the net cash flows from an investment to repay its initial cost

2.2 State **two** limitations of the payback method. [2]



2.2

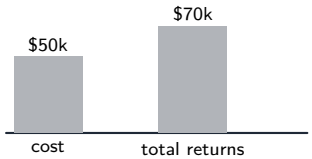
any two: ignores cash flows after the payback point; ignores the time value of money; does not measure profitability; relies on forecasts

Exercises 2.3·2.4

2.3 Project A costs \$50,000. Its net cash flows are \$15,000, \$20,000, \$25,000 and \$10,000 in years 1–4. Calculate its payback period in years and months. [4]

year	0	1	2	3	4
net cash flow (\$000)	−50	15	20	25	10

2.4 Calculate the average rate of return (ARR) for project A. [2]



Exercises 2.3·2.4

2.3 Project A costs \$50,000. Its net cash flows are \$15,000, \$20,000, \$25,000 and \$10,000 in years 1–4. Calculate its payback period in years and months. [4]

year	0	1	2	3	4
net cash flow (\$000)	−50	15	20	25	10

2.3

cumulative: 15 000, 35 000 after 2 years; still needed 15 000 of year 3's 25 000; $15\,000 \div 25\,000 \times 12 = 7.2$ months; payback = **2 years 7 months**

2.4 Calculate the average rate of return (ARR) for project A. [2]



2.4

total net cash flows = 70 000; $(70\,000 - 50\,000) \div 4 = 5\,000$ per year; ARR = $5\,000 \div 50\,000 \times 100 =$ **10**%

Exercise 3.1

3.1 Peak Print can buy one of two machines, each costing $50,000. Machine A (project A above) is cheaper to run but produces lower quality. Machine B's net cash flows are $10,000, $15,000, $25,000 and $30,000 in years 1–4; it is more automated, so two jobs would be cut. Peak Print has a weak cash position.

Using payback, ARR and other information, recommend which machine Peak Print should buy. [10]

$000	0	1	2	3	4
machine A	−50	15	20	25	10
machine B	−50	10	15	25	30

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machine B	−50	10	15	25	30

3.1

award up to [10]: machine A: payback 2 years 7 months, ARR 10%; machine B: cumulative 10 000, 25 000, 50 000: payback exactly 3 years; ARR = (80 000 − 50 000) ÷ 4 ÷ 50 000 × 100 = 15%; A pays back sooner: important given the weak cash position; B is more profitable overall; non-financial: B cuts two jobs: lower morale, redundancy costs, image; B's higher quality may win customers; forecasts for later years are less certain; judgement, e.g. A if cash is the priority, B if long-term profit is; recommendation justified by the case