

Exercise walk-through

Investment appraisal ■ 10.3

eXercise

You must be able to

- calculate the payback period and the ARR
- explain what NPV and discounting recognise
- analyse and evaluate which appraisal method a business should use

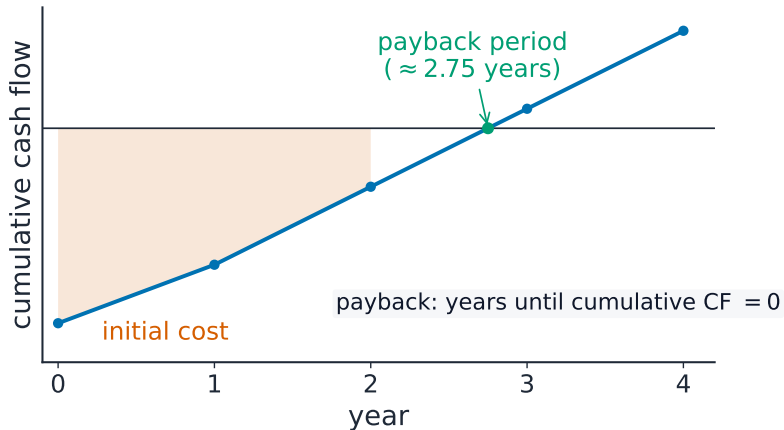
Method — Appraising an investment

$$\text{ARR} = \frac{\text{average annual profit}}{\text{initial investment}} \times 100\%$$

- **Worked ARR:** machine costs \$100,000, average annual profit \$25,000 → $\frac{25000}{100000} \times 100 = 25\%$.
- **Payback:** count years until cumulative inflows repay the cost; a shorter payback is safer.
- **NPV:** future money is worth less than money today, so **discounting** shrinks future cash flows; a positive NPV adds value.

Answer shapes: AO1 + AO2 + AO3 (reasoning chain) + AO4 (a supported judgement *in context*).

Method — Appraising an investment



The payback period is when cumulative cash flow climbs back to zero

Method — Appraising an investment



£100 today is worth more than £100 next year — future cash flows shrink when discounted

Practice 2.1 ■ 2 marks

Define the term *payback period*.

Solution 2.1

Method: Appraising an investment

Worked steps

the time it takes for a project's cash inflows to repay its initial cost (2 for a clear definition; 1 for a partial idea).

Practice 2.2 ■ 2 marks

A machine costs \$80,000 and earns an average annual profit of \$16,000. Calculate the ARR.

Solution 2.2

Method: Appraising an investment

Worked steps

$\frac{16,000}{80,000} \times 100\% = 20\%$ (2; award 1 for a correct method with the wrong figure).

Practice 2.3 ■ 2 marks

State what **net present value (NPV)** recognises about future money.

Solution 2.3

Method: Appraising an investment

Worked steps

that money received in the future is worth less than the same money today (2 for a clear idea; 1 for a partial idea).

Exam-style 3.1 ■ 3 marks

Explain one benefit to a business of using the **payback** method.

Solution 3.1

Method: Appraising an investment

Worked steps

[3] **AO1** 1 — name a benefit (simple to calculate; focuses on risk; shows how soon cash returns). **AO2** up to 2 — develop it, e.g. a short payback returns the cash quickly → less risk that conditions change → useful for a firm short of cash (2 developed / 1 limited).

Exam-style 3.2 ■ 3 marks

A project costs \$120,000 and is expected to earn cash inflows of \$50,000 each year.

- (a) Calculate the payback period.
- (b) Analyse one limitation of using payback alone to judge this project.

Solution 3.2

Method: Appraising an investment

Worked steps

(a) after 2 years \$100,000 is repaid; \$20,000 of the third year's \$50,000 remains $\rightarrow 2 + \frac{20,000}{50,000} = 2.4$ years (3; award marks for correct cumulative working). (b) [3] AO1/AO2 1 + AO3 up to 2 — payback ignores all cash flows **after** the payback point $\rightarrow$ a project with a slightly longer payback but much higher later returns could be wrongly rejected $\rightarrow$ it ignores total profitability.

Exam-style 3.3 ■ 12 marks

A firm is appraising a major investment. Evaluate which investment appraisal method it should rely on.

Solution 3.3

Method: Appraising an investment

Worked steps

[12] **AO1** 2 / **AO2** 2 / **AO3** 2 / **AO4** up to 6. **Payback:** simple, risk-focused — but ignores later cash and total profit. **ARR:** shows profitability and is easy to compare — but ignores the timing of cash. **NPV:** most complete (accounts for the time value of money) — but complex and needs a chosen discount rate. **Judgement:** no single method is best; a firm short of cash may weight payback, while a long-term project suits NPV — the best approach uses more than one method and depends on the firm's priorities.