

### Problem

You consider investing in a project that requires an initial investment of £50,000. The project is expected to generate cash flows of £25,000 per year for the next 5 years. The discount rate is 10%. Calculate the net present value (i.e., NPV) in thousands.

### Solution

To calculate the NPV of this investment, you can use the formula:

$$NPV = \sum_{t=1}^n \frac{CF_t}{(1+r)^t} - \text{Initial Investment}$$

Where:

- $CF_t$  = Cash flow in year  $t$
- $r$  = Discount rate
- $n$  = Number of years

The important thing to remember is that a pound today is worth more than a pound tomorrow or next year. Therefore, £100 earned next year is worth less today. That is because if you gave me the money today, I would invest it in a riskless investment such as a government bond and end up having more money at the end of the year. This is the reason we discount all cash flows that are scheduled to happen in the future.

$$NPV = \sum_{t=1}^5 \frac{£25000}{(1+10\%)^t} - £50000 \cong £10000$$

This number expressed in the thousands is **10**.

**Answer: 10**