

Problem 8-3

Goal: Determine rate of return on proposed investment

Given:

Payback Period	5	years
Fixed capital	85.0%	of total capital
annual depreciation	10.0%	per year of fixed capital

Approach: let total capital investment be T
then fixed capital = 0.85 T
annual depreciation is % of fixed capital = $0.10 * 0.85 T$
annual net profit = cash flow + depreciation (*note - book describes cash flow including deduction for depreciation*)

Payback Period = Fixed Capital Investment / Annual cash flow

Use equation (8-2a) for Payback period to solve for Annual Net Profit in terms of T

$PBP = \text{Fixed Capital Investment} / (\text{Annual net Profit} + \text{depreciation})$

profit = Fixed Capital / PBP - depreciation = $0.85T/5 - 0.1*0.85T$

Use equation (8-1a) to calculate ROI $ROI = \text{Annual net Profit} / \text{Total Capital Investment}$

Calculations:

Use equation (8-2a) for Payback period to solve for Annual Cash Flow in terms of T

Annual cash flow = $0.170 T = 0.85 T / 5 \text{ years}$

annual depreciation = $0.085 T = 0.85 T * 0.10$

Annual Net Profit = $0.255 T = 0.17 T + 0.085 T$

Use equation (8-1a) to calculate ROI, T's cancel

Answer b.) $ROI = 25.50\% = 0.255 T / T * 100$

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