

## Example 4 Work through answer

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This example includes for the first time inflation and it includes it on materials cost cash flow (8%), labour costs (5%) cash flows and the price of the product (7%)

### Working For Capital Allowances

Year 1 Cost 2,800,000

Tax savings

$$\text{CA}(25\%) \frac{700,000}{2,100,000} \times 0.25(25\%) \quad 175,000$$

Year 2 CA(25%)  $\frac{525,000}{1,575,000} \times 0.25(25\%) \quad 131,250$

Year 3 Sale Scrap  $\frac{1,000,000}{575,000 \times 0.25(25\%) \quad 143,750}$

### The NPV bit

To work out the cash sales revenue in year one we expect to sell 100,000 units at \$20 per unit giving us 2,000 as we are working to the nearest 1,000.

In year two cash sales revenue, the company expects the selling price of the product to go up 7% each year. So  $\$20 \times 1.07 = 21.4$   
 $\$21.4 \times 100,000 \text{ units sold} = \$2,140,000$  or to the nearest 1,000  $\rightarrow 2,140$ .

In year three cash sales revenue, the company expects the selling price of the product to go up 7% each year. So  $\$21.4 \times 1.07 = \$22.90$ . So  $\$22.90 \times 100,000 \text{ units sold} = \$2,290,000$

### Materials

Current materials cost \$8 per unit, but will inflate in price by 8% per year.

So year 1  $\rightarrow \$8 \times 1.08 = \$8.64$

$$\$8.64 \times 100,000 = \$864,000$$

Year 2  $-\$8.64 \times 1.08 = \$9.33$

$$\$9.33 \times 100,000 = \$933,120$$

Year 3  $-\$9.33 \times 1.08 = \$10.08$

$$\cancel{\$10.08} \times 100,000 = \cancel{1,008,000}, \$1,008,000$$

Labour

We first increase the price of labour from \$7 in year 0 to an extra 5% inflation in year 1.

$$\text{Year 1} \quad \text{---} \quad \$7 \times 1.05 = \$7.35$$

$$\$7.35 \times 100,000 = \$735,000$$

$$\text{Year 2} \quad \text{---} \quad \$7.35 \times 1.05 = \$7.7175$$

$$\$7.7175 \times 100,000 = \$771,750$$

$$\text{Year 3} \quad \text{---} \quad \$7.7175 \times 1.05 = 8.10 \text{ ~~555~~}$$

$$\$8.10 \times 100,000 = \$810,000$$

Add up operating Flows

$$\text{Year 1} = 401 \quad , \quad \text{Year 2} = 435 \quad , \quad \text{Year 3} = 472$$

Overheads in Question ignoreTax on operating Flows

To get these we just multiple the operating cash flows by 25% (0.25) and pay it in arrears a year later than when it was worked out.

Capital Flows Cost

Machine Cost 2,800,000 in Year 0 and Scrap at end of project year 3 for 1,000,000

Tax savings on capital allowances

See first page of these calculations

Working Capital

An additional working capital is needed of 200,000 in year 0, and unless specified we get it back at end of project in year 3.

Then on last few lines of answer

We work out the Net Cash Flows for each year and discount these by 10% to get the present value of each years cash flow. Then we add each years Present Value of Cash Flow to get the Net Present Value of the project (924,000) So we reject the project as it has a negative Cash Flow

|                    | 0              | 1          | 2          | 3            | 4         |
|--------------------|----------------|------------|------------|--------------|-----------|
| Operating flows    |                |            |            |              |           |
| Revenue            |                | 2,000      | 2,140      | 2,290        |           |
| Materials          |                | (864)      | (933)      | (1,008)      |           |
| Labour             |                | (735)      | (772)      | (810)        |           |
|                    |                | <u>401</u> | <u>435</u> | <u>472</u>   |           |
| Tax on op. flows   |                |            | (100)      | (109)        | (118)     |
| Cost               | (2,800)        |            |            |              |           |
| Sale               |                |            |            | 1,000        |           |
| Tax saving on CA's |                |            | 175        | 131          | 144       |
| Working Capital    | (200)          |            |            | 200          |           |
| Net cash flow      | <u>(3,000)</u> | <u>401</u> | <u>510</u> | <u>1,694</u> | <u>26</u> |
| d.f @ 10%          | 1              | 0.909      | 0.826      | 0.751        | 0.683     |
| P.V.               | (3,000)        | 365        | 421        | 1,272        | 18        |
|                    |                |            | NPV =      | (924)        | REJECT    |

