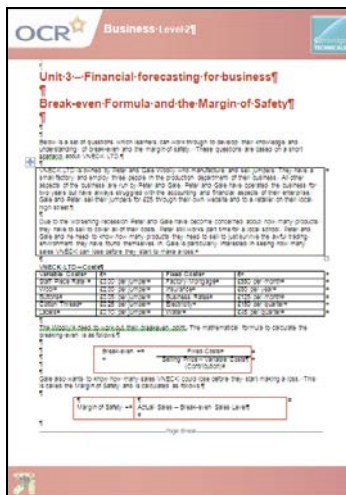


## Unit 3 – Financial forecasting for business

### Break-even Formula and the Margin of Safety

#### Instructions and answers for Teachers

These instructions should accompany the OCR resource 'Break-Formula and the Margin of Safety', which supports the OCR Level 2 Cambridge Technical Certificate in Business Unit 3 – Financial forecasting for business



**Associated Files:**  
Break-even Formula and the Margin of Safety

**Expected Duration:**  
Task 1 – 30 minutes

Below is a set of questions which learners can work through to develop their knowledge and understanding of break-even and the margin of safety. These questions are based on a short scenario about VNECK LTD.

VNECK LTD is owned by Peter and Gale Woolly who have been manufacturing and selling jumpers for the last two years. They have a small factory and employ three people in the production department of their business. All other aspects of the business are run by Peter and Gale but they have always struggled with the accounting and financial aspects of their enterprise. The jumpers are sold for £25 on the VNECK LTD website and to a retailer on their local high street.

Peter and Gale have become concerned about how many products they have to sell to cover all of their costs. Peter and Gale would be less concerned if they knew how many jumpers they need to sell to cover their costs. Gale is particularly interested in seeing how many sales VNECK can lose before they start to make a loss.



## VNECK LTD – Costs

Variable Costs	£	Fixed Costs	£
Staff Piece Rate	£3.00 per jumper	Factory Mortgage	£550 per month
Wool	£2.00 per jumper	Insurance	£60 per year
Buttons	£0.05 per jumper	Business Rates	£125 per month
Cotton Thread	£0.25 per jumper	Electricity	£150 per quarter
Labels	£0.10 per jumper	Water	£45 per quarter

The Woolly's need to work out their breakeven point. The mathematical formula to calculate the breaking-even is as follows:

$$\text{Break-even} = \frac{\text{Fixed Costs}}{\text{Selling Price} - \text{Variable Costs (Contribution)}}$$

Gale also wants to know how many sales VNECK could lose before they start making a loss. This is called the Margin of Safety and is calculated as follows:

$$\text{Margin of Safety} = \text{Actual Sales} - \text{Break-even Sales Level}$$

## Task 1

1	What is VNECK's Total Variable Costs per jumper?	£5.40 per jumper												
2	What is VNECK's Total Fixed Costs for a single year?	<table border="0"> <tr> <td>Mortgage</td> <td>£6600</td> </tr> <tr> <td>Insurance</td> <td>£60</td> </tr> <tr> <td>Rates</td> <td>£1500</td> </tr> <tr> <td>Electricity</td> <td>£600</td> </tr> <tr> <td>Water</td> <td>£180</td> </tr> <tr> <td><b>Total</b></td> <td><b>£8940</b></td> </tr> </table>	Mortgage	£6600	Insurance	£60	Rates	£1500	Electricity	£600	Water	£180	<b>Total</b>	<b>£8940</b>
Mortgage	£6600													
Insurance	£60													
Rates	£1500													
Electricity	£600													
Water	£180													
<b>Total</b>	<b>£8940</b>													
3	What would VNECK's Total Costs be if they made 3750 jumpers in a single year?	£5.40 x 3750 = £20,250 + £8940 = £29,190												
4	How much sales revenue would VNECK get if they sold 3750 jumpers?	£25 x 3750 = £93,750												
5	Using the break-even formula above, how many jumpers will Peter and Gale have to sell in a single year to break-even?	$457 \text{ jumpers} = \frac{£8940}{25 \text{ minus } £5.40}$												



6	At the moment VNECK is selling 470 jumpers every year. What is their margin of safety (use the formula above)?	470 minus 457 = 23 jumpers
7	Due to a change in the interest rate set by the Bank of England, the Woollys now have to pay £600 every month for their mortgage. What will the break-even point be now?	<p>Mortgage increase from £6600 to £7200 pa, so Fixed Costs increase from £8940 to £9540 pa</p> $487 \text{ jumpers} = \frac{£9540}{25 \text{ minus } £5.40}$
8	What impact has the change in interest rates had upon their margin of safety?	470 minus 487 = -17 jumpers. The change in interest rates means that the business will not break-even unless they take action



*These activities offer an opportunity for maths skills development.*

## LESSONElements

**The building blocks you need to construct informative and engaging lessons**

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