**Break even graphs**

The break-even graph, for our grocery delivery business we are asked to calculate the break-even output per month. Therefore, as with the mathematical method, we must divide our costs into fixed and variable costs. Using the information above, our costs have already been broken down. We can now draw the fixed costs line on the break-even chart.



**Fruit and veg shop example**

**The costs he has researched are as follows:**

Cost of delivery van purchase £6000; insurance and road tax £100 per month; petrol £10.00 per day; average cost of fruit and veg box £5.00; salaries - £1150 per month; loan repayment £500 per month for twelve months. His market research indicates that the fruit and veg boxes will have an average sales price of £9.00.

**Break-even output = Fixed costs**

 **Contribution per unit**.

**Contribution per unit = Selling price – Variable costs (per unit)**

**Fixed costs**

Loan - £500 per month

Petrol costs - £250 per month

Insurance/road tax - £100 per month

Salaries - £1150 per month

**Total fixed costs - £2000 per month**

**Variable costs**

**£5.00 per box**

**Sales revenue**

**£9.00 per box**

**Break-even output = Fixed costs**

 **Contribution per unit.**

**Contribution per unit = Selling price – Variable costs (per unit)**

Break even in units = £2,000

 £9 - £5

Break even in units = £2,000 / 5

**Break even in units = 500 boxes**

**How to plot break even on the graph?**

**Draw Break even graph**

Fixed costs - £2,000 - Horizontal

Sales - £1,000 - £10,000

Output – 100 - 1000

**DRAW THIS ON YOUR GRAPH!**

**Variable costs line**

The next step is to add the variable costs line. When calculating variable costs, we must work out the variable cost per unit made or sold.

The units in this case are the boxes of fruit and veg. To draw the variable costs line we mark three points. We know that at output zero variable costs are zero, so we have our first point: the point where the axes meet.

The second and third point all you do this just multiply variable costs per unit by the chosen output level. So in this case we have 400 x £5 = £2000.

For the third point we select an output level of 1000. So, 1000 x £5 = £5000.

The variable cost line can now be drawn by joining the three points that can be marked on the graph.

For the second point we have selected an output level of 400 (we could just have easily chosen 500 or 600). We then calculate variable costs at this output level.

**DRAW THIS ON YOUR GRAPH!**

**Total cost line**

At output zero the business only has fixed costs, there are no variable costs. We must now draw the total cost line – this will always start where the fixed costs line meets the vertical (costs) axis.

To mark the second point, choose a level of output and add together fixed and variable costs at that level.

In this case, at an output of 400 boxes of fruit and veg, the fixed costs are £2000 and the variable costs are also £2000 (£5 x 400). So the total costs at an output of 400, £2000 + £2000 = £4000.

At the third point, select an output of 1000, the fixed costs are £2000 and the variable costs are (£5 x 1000). So the total costs at an output of 1000 = £2000 + £5000 = £7000.

The total cost line can now be drawn by joining the three points.

**DRAW THIS ON YOUR GRAPH !**

**Revenue**

The last line that we need to add is the revenue line. This line tells us the revenue at any level of sales. Revenue is the number of sales multiplied by the selling price per unit. In this case the average sales price is £9. To draw the revenue line we again use three points. The first is straightforward.

At sales zero, revenue is zero; so we can mark the start of our revenue line. To mark the second point we use a similar method to drawing the variable cost.

If we choose sales of 600 units we have: 600 (Sales) x £9.00 (revenue per unit) = £5400.

To mark the third point at 1000 sales we have 1000 x £9.00 = £9000. Connect your points and you have the revenue line.

**DRAW YOUR REVENUE LINE ON GRAPH!**

**Breakeven point**

The point where the revenue line cuts the total costs line is break-even point. Draw a vertical line straight down from the break-even point; this will give you breakeven output.

A horizontal line drawn from break-even point to the costs/revenue axis will give you break-even costs/ revenue.

**DRAW YOUR BREAK EVEN POINT ON GRAPH!**

**Break even graphs – Formulas**

**Fixed costs**

Plot horizontal on graph – WHY? – Fixed costs stay the same.

**Variable costs**

Plot vertical on graph – Why? – Variable cost changes with output.

**Number of units x variable costs = Variable cost per number of units**

Point 1 – Zero

Point 2 and three select number of units and use calculation

**Total costs**

Plot vertical on graph – Why? – total costs changes with output.

**Total costs = Fixed costs + variable costs at selected number of units**

Point 1 – Fixed costs

Point 2 and 3 – select number of units and use calculation

**Revenue**

Plot vertical on graph – Why? – Revenue changes with output.

Revenue = quantity sold x selling price

Point 1 – Zero

Point 2 and 3 – select number of units and use calculation

**Breakeven point**

Where profit line and total costs line intersect.