

Break-Even

Analysis

Handbook



Name:

Tutor:

Break Even Analysis

The break-even point is the level of output where the firm will just cover its costs. If it sells any more it will make a profit. In other word it is the point where a business stops making a loss and starts making a profit.

$$\text{Break Even is when: Profit} = \text{Loss} = 0$$

To calculate Break Even you must know:

The Fixed Cost
The Variable Cost
The Selling Price.

There is a quick way of calculating Break Even:

$$\frac{\text{Fixed Cost}}{\text{Selling Price}-\text{Variable Cost}}$$

The bottom part of that calculation (Selling Price-Variable Cost) is often called Contribution ... or more properly "Contribution to Fixed Costs and Profit"

TASK: Use the Break Even Formula to give the break-even point for the following

Fixed Cost per week = £5,000 Variable Cost each = £ 5 Selling Price each = £ 25	
Fixed Cost per week = £250 Variable Cost each = £ 25 Selling Price each = £ 37.50	
Fixed Cost per week = £10,000 Variable Cost each = £ 50 Selling Price each = £ 75	
Fixed Cost per week = £20,000 Variable Cost each = £ 5 Selling Price each = £ 9	
Fixed Cost per week = £100 Variable Cost each = £ 5 Selling Price each = £ 10	
Fixed Cost per week = £200 Variable Cost each = £ 3 Selling Price each = £ 7	
Fixed Cost per week = £3000 Variable Cost each = £ 6 Selling Price each = £ 10	

TASK: Define each of these terms and give examples.

Term	Definition	Examples.
Fixed Cost
Variable Cost
Selling Price
Contribution

Examiners do like to get you to draw a break-even table and its accompanying graph.

Output	Fixed Cost	Variable Cost	Total Cost	Total Revenue	Profit
0	200	0	200	0	-200
10	200	30	230	70	-160
20	200	60	260	140	-120
30	200	90	290	210	-80
40	200	120	320	280	-40
50	200	150	350	350	0
60	200	180	380	420	40
70	200	210	410	490	80
80	200	240	440	560	120
90	200	270	470	630	160
100	200	300	500	700	200

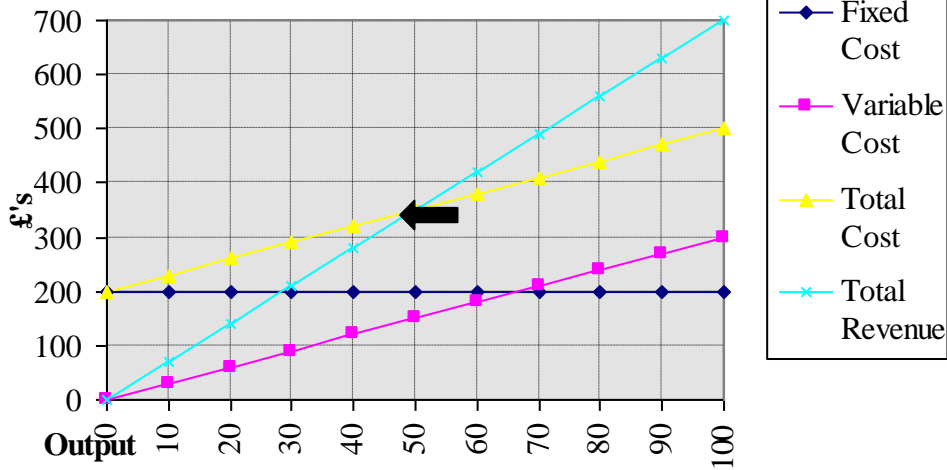
Variable Cost is calculated by multiplying output by Variable Cost for each item

Total Cost is calculated by adding together Fixed plus Variable Cost

Revenue is calculated by multiplying Output by Selling Price.

Profit is calculated by taking Total Revenue from Total Cost

Break Even Analysis



TASK: Complete the table and draw a break-even graph for Bateson. He sells DVD's and his Fixed Costs are £100 per week, Variable Costs are £3 and Selling Price is £5.

Output	Fixed Cost	Variable Cost	Total Cost	Total Revenue	Profit
0					
10					
20					
30					
40					
50					



Break-Even has its limitations.

It assumes that the firm can sell any quantity of the product at the current price. In practice the firm may need to reduce prices to sell at high levels of output.

It assumes fixed costs never change - but as output increases the firm may need to buy more machines, get bigger premises, take on extra sales and administration staff.

It assumes that all products are sold. This doesn't always happen; some products may only be sold at lower prices or need to be thrown away.

Margin of Safety.

This is the difference between the actual level of production and the break-even point.

For example:

If the break-even point of product Alpha is 400 Alphas and the output is 700 Alphas then the margin of safety is:

$$700 - 400 = 300 \text{ Alphas.}$$

Product	Actual Output	Break-Even Output	Margin of Safety
Beta	1000	500	
Gamma	5000	3000	
Delta	350	200	
Epsilon	150	80	

TASK: Samantha and Jacqui are planning to make necklaces to sell in school. They want to know how many they will have to sell to break even.

Information:

- Their fixed costs will be £200
- Their variable costs are £2 per necklace
- They are going to produce 40 necklaces
- The selling price of a necklace will be £8

Using the information above, complete table below.

No. sold	Sales Revenue	Fixed Costs	Variable Costs	Total Costs	Profit/ Loss
0	£0				(200)
10		£200		£220	
20			£40		
30		£200			(20)
40	£320				

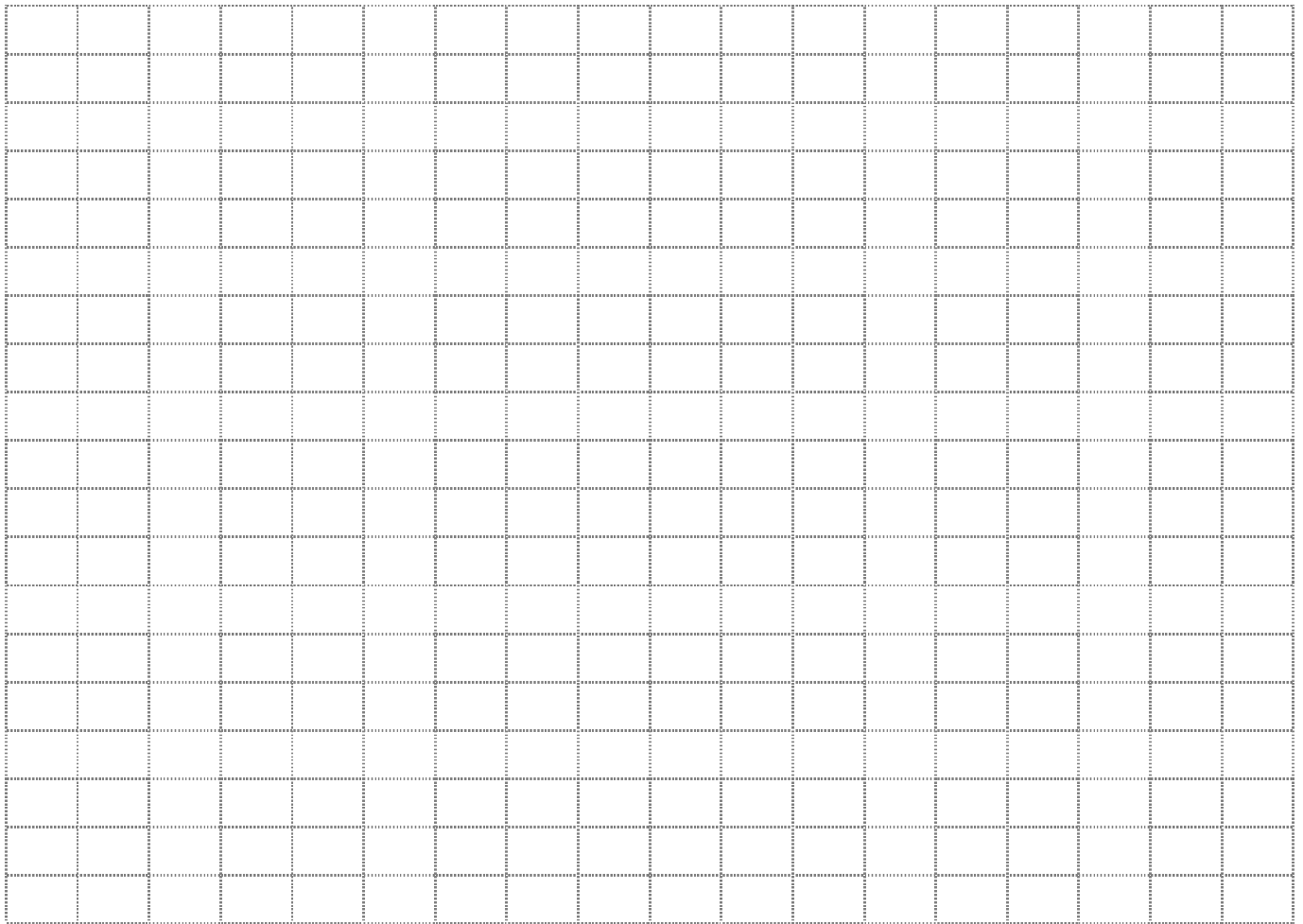
Draw break-even chart below on the next page and ensure that you label each line and the axis

How many boxes do Samantha and Jacqui have to sell to break even? Write a sentence to explain:

You are their business advisor. Would you recommend that they undertake this business or not?

50					
60					
70					
80					
90					
100					

Now draw up a break-even graph from the information in the table. Indicate in the graph the break-even point.



Calculate how much profit or loss she would make if she treated:-

- a. 50 clients
- b. 20 clients

Halima is considering raising the price of the treatments to £35 per client. How will this affect her break-even point? Draw another table and illustrate this on a graph.

Halima is worried about rising costs. Show her what would happen if at the original price of £30 per client, costs increased to £25 per client. What would the break even units be now?

TASK: Luke and Beth are planning to make wooden boxes to sell in school. They want to know how many they will have to sell to break-even.

Information:

- Their fixed costs will be £200
- Their variable costs are £2 per box
- They are going to produce 40 boxes
- The selling price a wooden box will be £8

Using the information above, complete table below.

No. sold	Sales Revenue	Fixed Costs	Variable Costs	Total Costs	Profit/ Loss
0	£0				(200)
10		£200		£220	
20			£40		
30		£200			(20)
40	£320				

Draw break-even chart ensuring that you label each line and the axis



How many boxes do Luke and Beth have to sell to break-even? Write a sentence to explain:

You are their business advisor. Would you recommend that they undertake this business or not?

WELL DONE!!!