



# Break Even Basics

“A firm Breaks Even if it doesn’t make a profit or a loss”

- In other words **profit = 0**
- Businesses must make a profit to survive
- To make a profit, income must be higher than expenditure (or costs)

Income	£50,000
Costs	£40,000
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Profit	£10,000

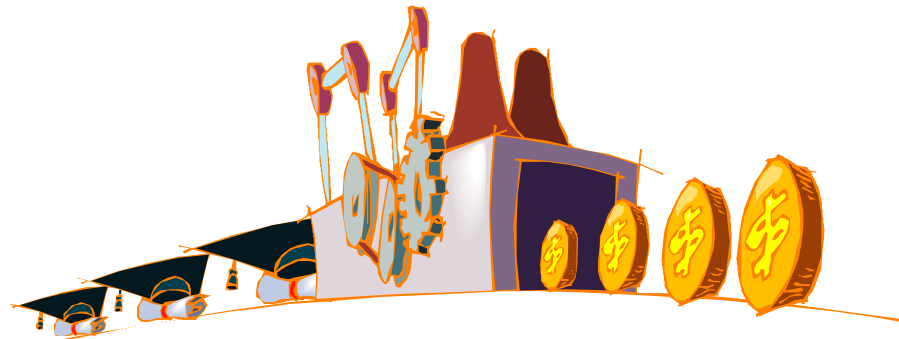
Income	£50,000
Costs	£60,000
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Loss	£10,000



# Calculating Break Even

- Break even occurs where profit is zero
- For this to happen the money coming into a business (**Total Revenue**) must be the same as the money leaving the business (**Total Cost**)
- As such, the break even point occurs when:

$$\text{Total Revenue} = \text{Total Costs}$$





# Total Revenue (TR)

- This is the total amount of money a firm receives from selling goods or services
- It is calculated using the following formula:

$$\text{Total Revenue (TR)} = \text{Price per unit} \times \text{Number of units sold}$$

- For example, if a firm sells 1 sweet for 10p, it's total revenue will be  $(1 \times 10p)$  10p
- If the same firm sold 10 sweets for 10p each it would receive in total  $(10 \times 10p)$  £1.00





# Total Costs (TC)

- This is the total amount of money a firm spends on making goods or services
- It is calculated using the following formula:

$$\begin{array}{l} \text{Total Cost} \\ \text{(TC)} \end{array} = \begin{array}{l} \text{Total Fixed} \\ \text{Costs (FC)} \end{array} + \begin{array}{l} \text{Total Variable} \\ \text{Costs (VC)} \end{array}$$

- Where:
  - Total Fixed Costs = All fixed costs added together
  - Total Variable Costs = Variable cost per unit multiplied by the number of units



# An Example of Total Costs

- A firm makes 10,000 cans of drink
- It has the following fixed costs:
  - £1,000 rent
  - £5,000 Electricity.
- They also know that it costs 5p to make every can of drink that it produces.
- Total cost will be:
  - FC ( $£1000 + £5,000$ ) = £6,000
  - VC ( $10,000 \times 5p$ ) = £500
  - TC =  $£6,000 + £500 = \mathbf{£6,500}$





# Calculating The Break Even Point

- Once a firm knows it's total revenue and total costs it can calculate it's break even point
- This occurs where  $TR = TC$ , i.e. when the 2 figures are the same

Use the following information to complete the table:

FC = £2000

VC = £2 per unit

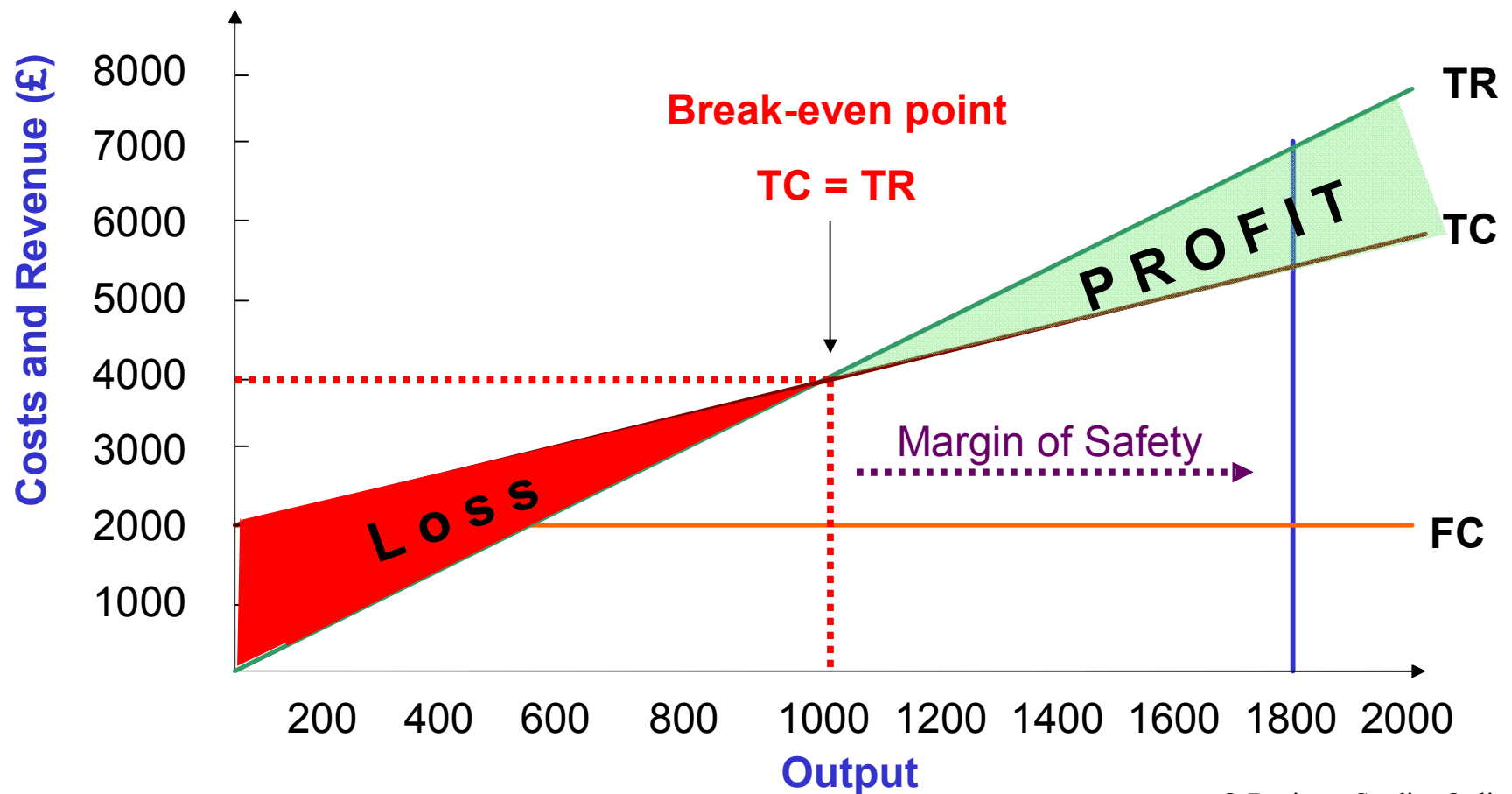
Selling price = £4

Output	FC	VC	TC	TR	Profit
0					
200					
400					
600					
800					
1000					
1200					
1400					
1600					
1800					
2000					



# The Break Even Chart

- It is easier to see this information graphically
- This can be done using a break even chart
  - e.g., using the previous figures:





# The Margin of Safety

- If a firm is producing AND selling more than the break even level of output then a profit is being made
- In this situation they are said to have a “Margin of Safety”
- This is effectively a “safety net”, and can be calculated as:

$$\text{Actual Sales} - \text{Break Even Output}$$

- So in our previous example, the margin of safety would be:
  - Actual Sales = 1800 units
  - Break Even Level = 1000 units
  - Margin of Safety =  $1800 - 1000 = 800$

# Using A Formula to calculate The Break-Even Point



- Creating a graph to calculate break even is time consuming
- It is quicker to use the following formula:

$$\text{Break-Even Point} = \frac{\text{Fixed Costs}}{(\text{Selling Price} - \text{Variable Cost Per Unit})}$$

- For Example:

Fixed Costs	£1,200
Variable Costs	£15
Selling Price	£20

$$\text{Break Even Point} = \frac{1,200}{20 - 15}$$

$$\text{Break Even Point} = 240$$



# Advantages & Disadvantages of Break Even

Advantages	Disadvantages
● Quick and simple	● It is only a forecast!
● Easy to understand	● Assumes all products are made AND sold
● Helps spot potential problems	● Costs may change
● Can assist when applying for a loan	● Not very good for services because prices vary enormously