

# COST OF PRODUCING THE PRODUCT

Businesses operate by selling goods and services. In carrying out all of the operations of the enterprise, costs will also be incurred.

A business should minimise costs. **Costs** can affect the amount of **profit** an enterprise makes as these must be subtracted from the **revenue**. Lowering costs will give an enterprise a better chance of making profit. To lower costs, a business could find cheaper suppliers, negotiate discounts with existing ones, consider its staffing arrangements or streamline its operations.

## Fixed and variable costs

### Fixed costs

**Fixed costs** are those that do not change in line with changes in output. Examples of fixed costs include: **advertising costs, insurance, loan interest, rent, salaries and utilities** (electric, water and gas).

### Calculations involving different time periods

Fixed costs often apply to a full year or a month. To calculate the proportional costs over **smaller time periods**, businesses divide these up. For example, an annual rent may be divided by 12 for the monthly rent, by 52 for weekly costs or by 253 for a cost per working day.

### Variable costs

**Variable costs** are those that will change directly with changes in output. Examples of variable costs include: **raw materials or components, wages and packaging**.

The formula for total variable costs is:

$$\text{Total variable costs} = \text{Variable cost per unit} \times \text{Number of units sold}$$

**Costs per unit** can be calculated by dividing the total variable costs, total fixed costs or total combined costs by the number of units output. This is helpful to determine if the total cost per unit is far enough below the selling price to create a comfortable margin of profit to ensure the future of the business.

### Note

- Loan repayments are not a fixed cost – only the interest charged is a true cost.
- Items such as 'salaries' and 'utilities' can sometimes be classified as fixed or variable costs, depending on the scenario. For the purposes of this course they are classified as fixed costs. Conversely, 'wages' are classified as variable costs.

The definitions of fixed and variable costs must relate to change in output. It is not enough to say that fixed costs simply 'stay the same'.

## Total costs

Total costs are all the costs added together that a business incurs in making a good or providing a service.

$$\text{Total costs} = \text{Fixed costs} + \text{Variable costs}$$

You may be required to rearrange a formula to find a component, for instance, to calculate variable costs when the total costs and fixed costs are known.

1. Finley is a licenced trader selling fresh fish from a refrigerated van at a market stall.
  - (a) Identify **one** fixed cost that Finley is likely to have incurred. [2]
  - (b) Give **two** variable costs that Finley is likely to incur. [2]
 Finley spends £1330 per month on variable costs and spends £6600 on fixed costs over the year.
- (c) Calculate Finley's total costs per month. [2]
2. Josh operates a competing fish stall. Josh has total monthly costs of £2400. He spends £600 per month on fixed costs. Calculate his variable costs per month. [1]
  1. (a) One from: Van insurance,<sup>[1]</sup> trader's licence,<sup>[1]</sup> market stall.<sup>[1]</sup> Accept other valid costs.
  - (b) Two from: Fuel,<sup>[1]</sup> ice,<sup>[1]</sup> fish (stock),<sup>[1]</sup> bags/packaging.<sup>[1]</sup> Accept other valid costs.
  - (c)  $£6600 \div 12 \text{ months} = £550 + £1330 = £1880$  total costs.<sup>[2]</sup> One mark for correct workings.
2.  $£2400 - £600 = £1800$ .

In the exam you will usually be given full marks for giving the correct answer, regardless as to whether you have shown any workings out or not. However, it is a good idea to show workings out. If you make a mistake with the final answer you may still pick up a mark for showing your calculations.



## REVENUE GENERATED BY SALES OF THE PRODUCT

Businesses receive income from the goods and services that they sell. This is known as **revenue**.

Revenue can come from many sources. It can come from cash and credit sales of goods, renting or selling assets, offering a repair service, or receiving a commission on sales if operating for a third party. A business should maximise its revenue opportunities. To do this, it could develop new product lines, offer sales promotions, find new customers or, if a product is in high demand, raise selling prices.

### Revenue

**Revenue** is the total amount of income generated by an enterprise from its activities.

Business revenue can be calculated using the formula:

$$\text{Total revenue} = \text{Selling price per unit} \times \text{Number of sales (sales volume)}$$

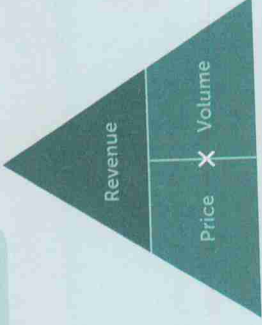
### Rearranging the formula to calculate selling price or sales volume

Imagine the formula above as a triangle. Cover the figure you are trying to find with your finger and read the calculation showing. E.g:

$$\text{Revenue} = \text{Price} \times \text{Volume} \text{ or}$$

$$\text{Price} = \text{Revenue} \div \text{Volume} \text{ or}$$

$$\text{Volume} = \text{Revenue} \div \text{Price}$$



Lyle runs a car garage offering a tyre balancing service for £30.

Lyle makes an income of £1,200 per working week (Monday to Friday) on this service.

(a) Calculate the average revenue per day. [1]

(b) The garage closes for two weeks each Christmas. [1]

Calculate the projected revenue over a 50-week year. [1]

(a)  $1200 \div 5 = £240$  revenue per day.<sup>[1]</sup>

(b)  $1200 \times 50 = £60,000$  revenue per year.<sup>[1]</sup>

(c)  $240 \div 30 = 8$  services per day.<sup>[1]</sup>

## PROFIT AND LOSS

To be able to accurately calculate profit, a business will need to know its revenue and its total costs. If a business can calculate these then it can also carry out some analysis by looking at what profit it will make at different sales levels.

### Profit

**Profit** is made when the revenue received exceeds the total costs. If a business has total costs that are greater than revenue, it is called a **loss**. Revenue and profit are not the same.

$$\text{Profit/loss per unit} = \text{Revenue (selling price) per unit} - \text{Total costs per unit}$$

To calculate profits for a given level of output, you can use the formula:

$$\text{Profit} = \text{Total revenue} - \text{Total costs}$$

Tim sells filled rolls from a sandwich van to customers working on an industrial park.

Tim's fixed costs are £280 per five-day week.

(a) Calculate the fixed costs per day. [1]

The variable cost of producing each roll is £1.80.

(b) (i) Calculate the profit or loss made from producing and selling 200 filled rolls at £3.50 each. [3]

(ii) Calculate the profit or loss if he sells only 30 rolls in a day. [3]

(a)  $280 \div 5 = £56$  per day in fixed costs.<sup>[1]</sup>

(b) (i) Revenue =  $£3.50 \times 200 = £700$ . Total variable costs =  $1.80 \times 200 = £360$ .

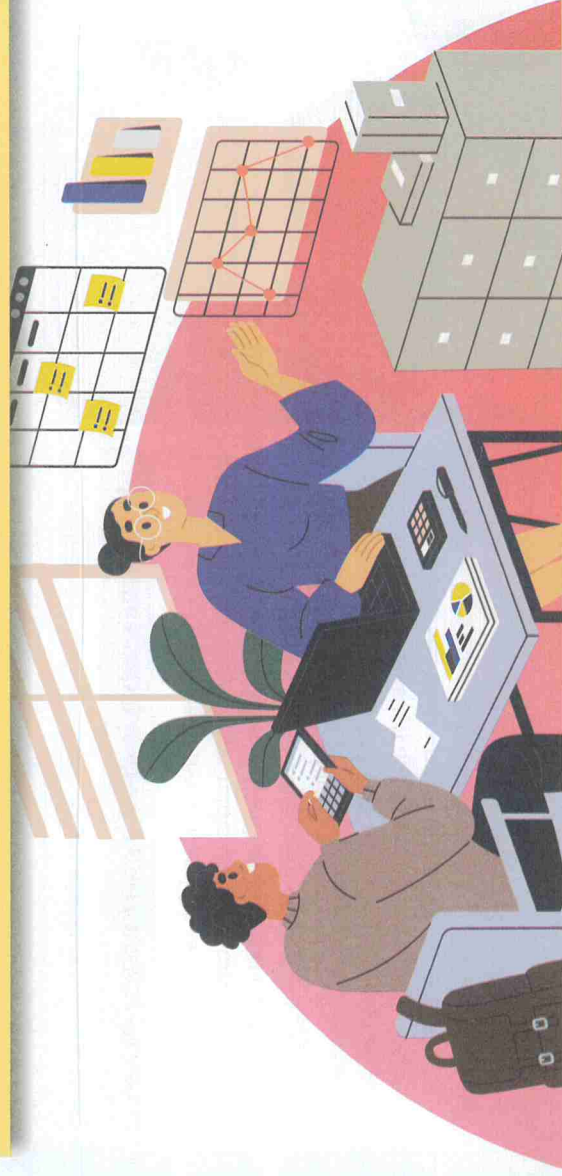
Total costs = Fixed costs + Total variable costs =  $£56 + £360 = £416$

Profit = Revenue - Total costs =  $£700 - £416 = £284$ .<sup>[2]</sup> [Allow error carried forward from part (a)]

(ii) Revenue =  $£3.50 \times 30 = £105$ . Total variable costs =  $1.80 \times 30 = £54$ .

Total costs = Fixed costs + Total variable costs =  $£56 + £54 = £110$

Profit = Revenue - Total costs =  $£105 - £110 = -£5$  (loss).<sup>[2]</sup> [Allow error carried forward from part (a)]



# HOW TO USE THE FORMULA FOR BREAK-EVEN AS AN AID TO DECISION MAKING

A firm will **break even** when it sells enough products to generate sufficient revenue to cover its total costs.

## Calculating break-even

A business must know how much it needs to sell so that it can ensure that the operation is viable. A break-even analysis is used to aid a business in making decisions about what price to charge, how much to produce and to help in managing costs.

The break-even level of output is the number of products that a business needs to sell in order for revenue to equal total costs. It can be calculated using this formula:

$$\text{Break-even} = \text{Fixed costs} \div (\text{Selling price} - \text{Variable cost per unit})$$

You will not be expected to recall the break-even quantity formula in an exam. It will be provided where required, but you may need to rearrange it to find a missing number.

Reanna runs a mobile dog grooming business. She has provided the following information:

- Average amount paid per customer – £25
- Fixed costs of running the business per year – £7,500
- Variable cost of materials used for each dog grooming session – £10

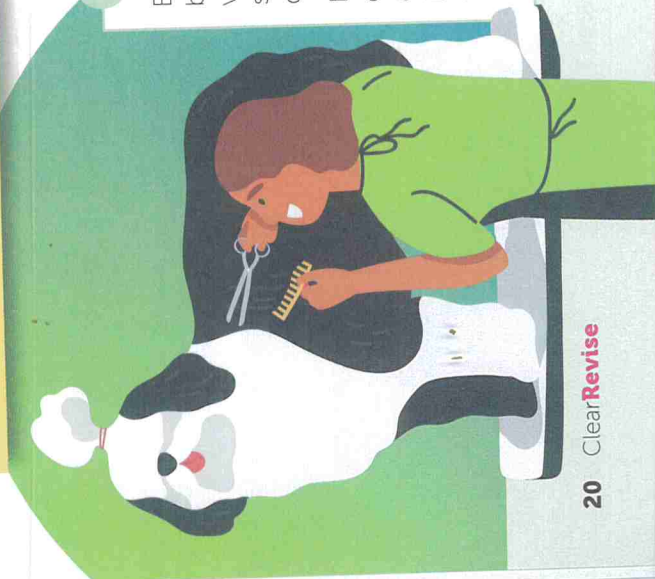
Calculate the number of dog grooming sessions per year that Reanna will have to do in order to break even. [2]

$$\begin{aligned} \text{Break even} &= \text{fixed costs} \div (\text{selling price} - \text{variable cost per unit}) \\ £7,500 &\div (£25 - £10) \\ &= 500 \text{ dog grooming sessions per year}^{[2]} \end{aligned}$$

## How break-even is used by an entrepreneur

Break-even analysis is particularly useful for new start-up businesses as it will allow them to see if their business is viable. This is because they will know how many goods or services they need to sell to cover their costs. They can then decide whether that is an achievable amount.

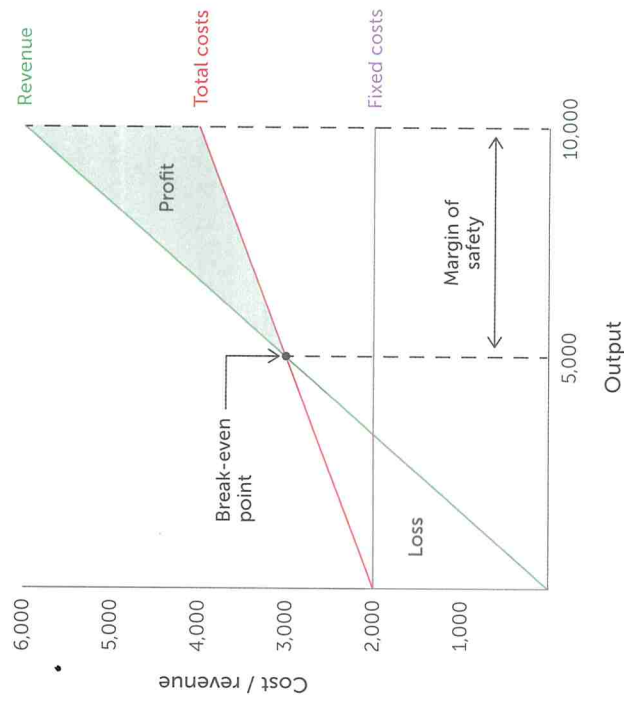
Break-even is used for 'what-if' analysis. A business can change the variables, such as the selling price and variable cost per unit, to see what impact that has on the level of break even. This will also tell the business what might happen to profit levels, so it can make important decisions related to price, production levels and costs.



## Break-even charts

**Break-even** can also be shown diagrammatically with the use of a break-even chart. In this chart, a business will plot its costs and revenues at different output levels in order to find out the break-even level of output.

When constructing a break-even chart, revenue, total costs and fixed costs must each be plotted.



## Revenue

**Revenue** is the green line. This shows how much income is coming into the business. It starts at 0 as no sales means no income. To calculate revenue, the enterprise must multiply the number sold by the sales price.

## Total costs

The red line shows the total costs of the enterprise. This is calculated by adding together the **fixed costs** and the **variable costs**. A variable cost is one that changes with output. The total costs line starts at the fixed cost line. This is because an enterprise must still pay fixed costs even if it only sells one unit.

## Fixed costs

The purple line shows the **fixed costs** for the business. As these do not change with output, they are a fixed horizontal line. Fixed costs must be paid regardless of number of products sold.

## Break-even point

The **break-even point** on the graph is where the red and green lines intersect. This shows where the total costs and total revenue meet. This is the point at which the business neither makes a profit or a loss. In this example, 5 000 units need to be sold to break even.

You will not be expected to draw a break-even graph from scratch, but you may be asked to interpret one or complete one that is already partially drawn.

## THE IMPORTANCE OF CASH

Having enough cash is critical to a business. Many businesses fail because they do not have sufficient cash to pay all their bills.

### The importance of cash to a business

A business uses **cash** to pay for all its day to day expenses. This includes paying its employees and paying for its supplies. Without workers, most businesses could not continue. Without supplies, the business could not produce goods or provide a service.

### Difference between cash and profit

**Cash** is the amount of money that a business has available to pay for its day-to-day expenses. **Profit** is the difference between revenue and total costs. A profitable business can run out of cash. This is because a business records revenue as soon as a sale is made, but they may not receive actual payment immediately. In the interim period, large bills may become due.

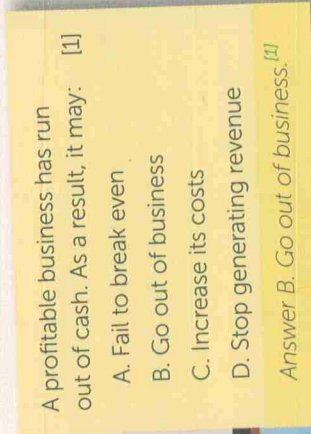
### Consequences of a lack of cash

If a business does not have enough cash to pay for its bills when they are due, it is said to be **insolvent**. This will lead to the failure of the business.

A profitable business has run out of cash. As a result, it may: [1]

- A. Fail to break even
- B. Go out of business
- C. Increase its costs
- D. Stop generating revenue

Answer B. Go out of business. [1]



## EXAMINATION PRACTICE

1. Which **one** of the following would be classed as a fixed cost for a business? [1]
- A.  Advertising
  - B.  Packaging
  - C.  Raw materials
  - D.  Wages

2. A variable cost can be defined as: [1]
- A.  A cost that changes seasonally
  - B.  A cost that goes up and down
  - C.  A cost that never stays the same
  - D.  A cost that varies with the level of output

3. Roman runs a skate shop. In the period January to March, he generated £38,500 in revenue. His total costs for the period were £41,000.

Which **one** of the following best describes Roman's financial situation for the period? [1]

- A.  Break-even
- B.  Cash poor
- C.  Loss
- D.  Profit

4. Jasmeen runs a small handmade chocolate business. She has provided the following information:

Average selling price of a box of chocolates – £5.50

Fixed costs of running the business – £12,500.00

Variable cost for each box of chocolates – £2.00

Calculate the total cost of producing 5,000 boxes of chocolates. [2]

5. Explain **one** reason why cash is important to a business. [2]