# **EDUCATION**

# **Business**

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**Higher Level** 

2020-21

Marketing



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### **BREAKEVENALYSIS**

	1 9	1 8	1 7	1 6	1 5	1 4	1 3	1 2	1 1	1 0	0 9	0 8	0 7	0 6	0 5	0 4	0 3	0 2	0 1	0 0	9 9
Short	~	<	~			~	<	~		✓			✓			~					
ABQ	ΤH	HIS	<b>C</b> ]	HA	P T I	E R	IS	NC	<u>) T</u>	EX.	A M	IN	AB	LE	ON	N T	HE	20	20	A B	Q
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- The minimum price a business must charge for its product is one that is equal to the total costs of making that product. In business, we call this the **breakeven price**.
- For example, you organise the school debs at a cost of €1,000 and you sell only 10 tickets at €100 each = you make €1,000 on ticket sales. You've broken even. The total income (revenue) the business makes from selling its products is *exactly* equal to the total cost of making them. So, the business makes neither a profit nor a loss. It just breaks even. In business we say it is when **Total Revenue = Total Costs.**
- **BREAKEVEN POINT [BEP]** is the number of products a business must sell just to cover its costs. It makes neither a profit nor a loss. The income (revenue) the business makes from selling its products is *exactly* equal to the total cost of making them. In business we say it is when **Total Revenue = Total Costs.**
- A business' costs can be classified as either
  - fixed the cost never changes no matter how many products the business makes and sells. Factory rent is an example of a fixed cost. The cost of the rent is not dependent on how many products the business sells. Even if it sells nothing, the rent must still be paid in full.
  - variable the cost increases or decreases as the number of products made and sold increases or decreases. The cost of ingredients is an example of a variable cost. The more products the business sells, the more ingredients it needs, so the cost increases.
- These are the formulae for working out a business breakeven point in units and in euro:



**BEP** in units × Selling Price

*Note: Selling price – Variable cost is known as the contribution per unit.* 

Breakeven Point in €

#### EXAMPLE 1

Colin is considering setting up a business selling cakes in Temple Bar market.

He has to rent a stall each Saturday for €360 (FIXED COSTS = €360).He will sell each cake for €30(SELLING PRICE = €30).Each cake costs him €18 to make(VARIABLE COST = €18).

- (a) How many cakes will Colin have to sell to breakeven?
- (b) How much in € will he have to sell to break even?

BEP in	Fixed Costs ÷ (Selling Price – Variable Cost)
units	
umus	

We have seen that Colin must sell 30 cakes to break even. We can express this figure another way. We can work out the amount of money he must take in to break even. This is called the **breakeven point in euro** and is worked out as follows:

BEP	BEP in units × Selling Price
in €	

#### EXAMPLE 2

Angela is considering setting up a business selling flags from a stall in Croke Park. She has to pay the GAA €100 to rent the stall for each match.

She will sell the flags for €3 each Each flag costs her €1 to make (FIXED COSTS =  $\notin 100$ ) (SELLING PRICE =  $\notin 3$ )

(VARIABLE COST =  $\in 1$ )

- (a) How many flags will Angela have to sell at each match to breakeven?
- (b) How much in € will she have to sell to break even?

BEP	Fixed Costs ÷ (Selling Price – Variable Cost)
in	
units	

We have seen that Angela must sell 50 flags to break even. We can express this figure another way. We can work out the amount of money she must take in to break even. This is called the **breakeven point in euro** and is worked out as follows:

BEP	BEP in units × Selling Price
in €	

We can also work out the profit (or loss) that Angela will make for any level of sales as follows:

- ★ A business's profit is defined as Total revenue [TR] Total costs [TC]
- Total revenue is the money the business makes from selling its products. It is calculated by multiplying the number of products sold by the selling price (Units × Selling price).
- Total costs are all the money the business spends making the product. It is the total of the business' fixed costs + its variable costs (units × variable cost per unit).
- Profit at full capacity (also known as profit at forecast sales) is the profit that a business expects to make if it sells all the products that it is expecting (forecasting) to sell.

Let's assume that Angela *expects to sell 200 flags* (forecast sales/output = 200 units) at each match. How much profit will she make if she sells 200 flags?

NET PROFIT = $TR$ •	- ]	ΓC	€
<b>TOTAL REVENUE [TR]</b>			
Write down the number of products she is going to sell: Multiply this by the <b>selling price</b> of each product:	200	) flags <u>×€3</u>	600
- TOTAL COSTS [TC]			
<b>Total Costs is: Variable costs + Fixed Costs:</b>			
To get the variable costs: Write down the number of products she is going to sell:	200 flags		
Multiply this by the variable cost of each product	<u>×€1</u>	200	Γ
Fixed costs are given in the question as		100	
Add the variable costs of $\notin 200$ and the fixed costs of $\notin 100$ together to get total costs of $\notin 300$ . Now subtract the total costs from the total revenue to get net profit			<u>(300)</u>
Net Profit = TR – TC			

Angela now knows that she will make €300 profit if she sells 200 flags. But remember she only *expects* to sell 200 flags. This is just her estimate. What if she has a bad day? By how much can sales drop from what she expects before she is in trouble? We can work this out. It is called the margin of safety.

#### MARGIN OF SAFETY

The margin of safety is the difference between a business' forecast sales and its breakeven point. It shows the business by how much its sales can fall before it will start making a loss.

Margin of Safety Forecast Sales in units – BEP in units

What is Angela's margin of safety?

Margin of Safety	Forecast Sales in units – BEP in units
	Even if Angela sells 150 fewer flags than she expects, she will still break even on the day.

#### EXAMPLE 3

A Ltd. manufactures tables.

The business supplies you with the following figures about the company's activities:

Fixed costs Variable costs per unit Forecast sales (output) Selling Price €200,000 €55 10,000 units €80

You are required to calculate the:

(a) Breakeven point

BEP in	Fixed Costs ÷ (Selling Price – Variable Cost)
units	

<b>BEP</b> in €	<b>BEP in units × Selling Price</b>

NB!!! "Full capacity" is a phrase used in some exam papers. It means selling the full amount that she is expecting to sell, i.e., "Forecast Sales"

(b) Profit at full capacity

<b>NET PROFIT = TR</b>	– TC	€
<b>TOTAL REVENUE [TR]</b>		
Write down the number of products she is going to sell: Multiply this by the <b>selling price</b> of each product:		
- TOTAL COSTS [TC]		
<b>Total Costs is: Variable costs + Fixed Costs:</b>		
<u>To get the variable costs:</u> Write down the number of products she is going to sell: Multiply this by the <b>variable cost</b> of each product		_
Fixed costs are given in the question as		
Add the variable costs and the fixed costs together to get total costs. Now subtract the total costs from the total revenue to get net profit		
Net Profit = TR – TC		

(c) Margin of Safety

Margin of Safety	Forecast Sales in units – BEP in units
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#### 2018 HIGHER Level – Section 1 (10 marks)

6. Study the table below and fill in the figures represented by the letters A, B, C, D and E.

Sales (units)	Selling Price (per	Fixed Costs	Variable Costs	Total Costs	Total Revenue	Profit/loss
	unit) (€)	(€)	(€)	(€)	(€)	(€)
0	20	360,000	0	360,000	0	E=
30,000	20	A=	240,000	600,000	D=	0
50,000	20	360,000	B=	C=	1,000,000	240,000

Workings:

A	FIXED COSTS	2
B	VARIABLE COSTS = UNITS ×VARIABLE COST PER UNIT	
	If 30,000 products had a variable cost of €240,000, then EACH product cost €	2
C	TOTAL COSTS = FIXED COSTS + VARIABLE COSTS	2
D	TOTAL REVENUE = UNITS ×SELLING PRICE PER UNIT	2
E	<b>PROFIT = TOTAL REVENUE – TOTAL COSTS</b>	2

B R E A K E V E N C H A R T	
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How much profit will a business make is it sells 40 units? 63 units? 81 units? 218 units? Rather than working out the sums for every single sales number, many businesses will draw a **breakeven chart**. The business can then read the profit or loss figure straight from the chart for any given level of sales.

#### STEPS IN DRAWING A BREAKEVEN CHART

Work out the breakeven point, profit and margin of safety first.

## ASK FOR GRAPH PAPER!

- ✦ A business's profit is defined as Total revenue Total costs.
- Breakeven is when the business's total revenue and total costs are exactly equal. The business is
  making zero profit and zero loss.
- ✤ So, to draw the breakeven point on a chart, you must draw the Total revenue and Total costs lines.

#### **STEP 1**

Draw a horizontal axis and label it "OUTPUT IN UNITS" Look at your answers – make sure that you can fit every UNITS number on this line EXACTLY

Draw a vertical axis and label it "REVENUE AND COSTS IN €" Look at your answers – make sure that you can fit every € number on this line EXACTLY

- **STEP 2** Draw the Fixed costs line. It is a straight line coming out of the number for fixed costs, parallel to the horizontal axis.
- **STEP 3** Draw the Total revenue line by plotting the three points you work out in the table below:

ΤΟΤΑ	L REVENU	E L I N E
NUMBER OF UNITS	× Selling Price	= TOTAL REVENUE
0		
Breakeven point in units		
Forecast sales		

**STEP 4** Draw the Total costs line by plotting the three points you work out in the table below:

ΤΟΤ	AL C	OSTS	LINI	£
NUMBER OF UNITS	× VARIABLE	= VARIABLE	+ FIXED COSTS	= TOTAL COSTS
	COST PER UNIT	COSTS		
0				
Breakeven point in units				
Forecast sales				

(1) The breakeven point is the point where the Total revenue and Total costs lines cross.

- (2) Profit at forecast sales/output is the difference between total revenue and total costs at forecast sales.
- (3) Margin of safety is the difference between forecast sales and breakeven point in units.

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### **2011 Higher Level – Section 3 – Question 7**

(ii)

(C) As part of its feasibility study for a new product, Moore Ltd. supplies the following financial information:

	Forecast output (sales)	40,000 units
	Selling Price per unit	€20
	Fixed Costs	€300,000
	Variable Costs per unit	€10
(i)	Illustrate by means of a break ever	n chart the following:
	(a) The Break Even Po	bint
	(b) The Profit at full ca	apacity
	(c) The margin of Safe	ety
	Outline one other function	tion of a feasibility study for Moore Ltd.
		(25 marks)

#### BEFORE YOU CAN DRAW THE CHART, YOU MUST FIRST WORK OUT THE ANSWERS:

BEP in	Fixed Costs ÷ (Selling Price – Variable Cost)
units	
BEP in €	BEP in units × Selling Price

<b>NET PROFIT = TR - TC</b> $\stackrel{\text{e}}{\bullet}$
TOTAL REVENUE [TR]
Write down the number of products she is going to sell:
Multiply this by the selling price of each product:
<b>TOTAL COSTS [TC] =</b> Variable costs + Fixed Costs:
To get the variable costs:
Write down the number of products she is going to sell:
Multiply this by the variable cost of each product
Fixed costs are given in the question as
Add the variable costs and the fixed costs together to get total costs.
Now subtract the total costs from the total revenue to get net profit
Net $Profit = TR - TC$

Margin	Forecast Sales in units – BEP in units
of Safety	

#### DO EACH STEP SEPARATELY; DO NOT DO THEM ALL AT ONCE!



#### 2001 Higher Level – Section 3 – Question 7

(B) Seatsoft" Ltd. manufactures office chairs. To survive it must meet its costs. "Seatsoft" supplies the following figures about its activities.

Fixed Costs €1 million Variable Costs per unit €20 Forecast output (sales) 70,000 units Selling Price €40 per unit

Illustrate by means of a break even chart:

- (a) The Break Even Point
- (b) The Profit at full capacity
- (c) The margin of Safety

(40 marks)

#### BEFORE YOU CAN DRAW THE CHART, YOU MUST FIRST WORK OUT THE ANSWERS:

BEP in units	Fixed Costs ÷ (Selling Price – Variable Cost)
BEP in €	BEP in units × Selling Price

# **NET PROFIT = TR - TC** $\stackrel{\text{e}}{\bullet}$

TOTAL REVENUE [TR]	
Write down the number of products she is going to sell:	
Multiply this by the selling price of each product:	
<b>TOTAL COSTS [TC] =</b> Variable costs + Fixed Costs:	
To get the variable costs:	
Write down the number of products she is going to sell:	
Multiply this by the variable cost of each product	
Fixed costs are given in the question as	
Add the variable costs and the fixed costs together to get total costs.	
Now subtract the total costs from the total revenue to get net profit	
Net Profit = TR – TC	

Margin	Forecast Sales in units – BEP in units
of Safety	

#### DO EACH STEP SEPARATELY; DO NOT DO THEM ALL AT ONCE!



#### **STRENGTHS OF BREAKEVEN ANALYSIS**

- 1. It lets the entrepreneur know how long it will take before her business start-up or new product reaches profitability i.e. what sales are needed to pass breakeven point.
- 2. It helps the entrepreneur to understand the feasibility of a business proposition. It lets her know if her idea is financially viable or not.
- 3. The margin of safety calculation shows how much a sales forecast can prove over-optimistic before losses are incurred.
- 4. Breakeven analysis illustrates the importance of a business start-up keeping its fixed costs down to a minimum (higher fixed costs = higher break-even point).

#### **LIMITATIONS OF BREAKEVEN ANALYSIS**

- 1. Breakeven analysis assumes that the selling price of the product never changes. This is not correct. If a customer placed a very large order, he would expect a quantity discount on the normal selling price.
- 2. Most businesses sell more than one product, so break-even for the business becomes a lot more complicated to work out.
- 3. Breakeven assumes that sales and output (the number of products the business makes) are the same i.e. the business sells everything that it makes. This is unrealistic. It does not take into account the build-up of stocks.
- 4. Variable costs do not always stay the same. For example, as output rises, the business may benefit from being able to buy ingredients at lower prices (quantity discount), which would reduce the variable cost per unit.

#### 2016 Higher Level – Section 3 – Question 6

(B) Medron plc has supplied the following financial information for the new medical device.

Forecast Output (Sales) Selling Price per unit Fixed Costs Variable Costs per unit 60,000 units €30 €400,000 €20

Illustrate the following by means of a break even chart:

- (i) Break Even Point
- (ii) Margin of Safety at the forecast output
- (iii) Profit at forecast output

(25 marks)

- (C) Following a review of costs, Medron plc decreased its variable costs per unit to  $\notin 10$ .
  - (i) Calculate the new breakeven point **and** illustrate on your breakeven chart the new total cost line (TC<sub>2</sub>) and the new breakeven point (BE<sub>2</sub>)
  - (ii) Outline **one** limitation of breakeven analysis when making business decisions.

(20 marks)

#### PART (B)

BEP in units	Fixed Costs ÷ (Selling Price – Variable Cost)
BEP in €	BEP in units × Selling Price

<b>NET PROFIT = TR - TC</b> $\stackrel{\text{e}}{\bullet}$
TOTAL REVENUE [TR]
Write down the number of products she is going to sell:
Multiply this by the selling price of each product:
TOTAL COSTS [TC] = Variable costs + Fixed Costs:
To get the variable costs:
Write down the number of products she is going to sell:
Multiply this by the variable cost of each product
Fixed costs are given in the question as
Add the variable costs and the fixed costs together to get total costs.
Now subtract the total costs from the total revenue to get net profit
Net Profit = TR – TC

Margin of Safety	Forecast Sales in units – BEP in units

#### PART (C)

NEW BEP (BE <sub>2</sub> ) in units	<b>Fixed Costs</b> €400,000	÷ ÷	(Selling Price (€30	 Variable Cost)
BEP (BE <sub>2</sub> ) in €	BEP in units	× ×	Selling Price €30	

To draw the chart:

Step 1Heading. Horizontal axis = Output in units; Vertical axis = Revenue and Costs in €

Step 2Draw fixed costs line = straight line from fixed costs number

Step 3Draw Total Revenue line by plotting these points

How much will we make from:	× Selling Price	= Total revenue
0 units		
Breakeven point in units		
Forecast Sales in units		

#### Step 4Draw Total costs line by plotting these points

How much will it cost to	×Var	=Var	+Fixed	=Total
make:	cost	costs	Costs	Costs
0 units				
Breakeven in units				
Forecast Sales in units				

#### New total costs line (TC<sub>2</sub>):

How much will it cost to	×Variable	=Var costs	+Fixed Costs	=Total Costs
make:	cost			
0 units	×€ <b>10</b>	=€0	+€400,000	=€400,000
<i>NEW</i> Breakeven in units = 20,000 units	×€ <b>10</b>	=€200,000	+€400,000	=€600,000
Forecast Sales in units = 60,000 units	×€ <b>10</b>	=€600,000	+€400,000	=€1,000,000



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### 2008 Higher Level – Section 3 – Question 7

Motor Manufacturing Ltd is considering the introduction of a new product.

The business has provided the following figures:

Fixed Costs	€200,000
Variable Cost per Unit	€5
Selling Price	€15
Forecast Output (Sales)	30,000 units

Illustrate by means of a breakeven chart:

- (a) The Break-Even Point
- (b) Profit at forecast output
- (c) The Margin of Safety at forecast output

Explain 'Margin of Safety'

(30 marks)

### 2005 Higher Level – Section 3 – Question 7

A business supplies the following figures about its activities.

Forecast Output (Sales)20,000 unitsSelling Price€50 per unitFixed Costs€300,000Variable Costs per unit€20

- (i) Illustrate by means of a break even chart:
  - A. The Break Even Point
  - B. The Profit at full capacity
  - C. The margin of Safety

(25 marks)

(ii) Outline the effect on the break-even point if variable costs increased to €25 per unit.

Illustrate your answer on the break-even chart.

(10 marks)

#### **STEP-BY-STEP SOLUTIONS TO BOTH OF THESE QUESTIONS FOLLOW**

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### **Solution to 2008 Higher Level - Question 7**

BEP in	Fixed Costs ÷ (Selling Price – Variable Cost)
units	=€200,000 ÷ (€15 - €5)
	=€200,000 ÷€10
	= <b>20,000 units</b>

BEP in €	BEP in units × Selling Price
	= 20,000 units × €15
	=€300,000

NET PROFIT FROM SELLING 30,000 UNITS	€
Total revenue	
= Number of units you sell × Selling price per unit	
$= 30,000 \text{ units} \times \in 15$	450,000
Subtract Total costs	
✦ Fixed costs	(200,000)
✦ Variable costs	
= Number of units you sell × Variable cost per unit	
= 30,000 units × €5	<u>(150,000)</u>
= Net Profit	€100,000

Margin of Safety	Forecast Sales in units–30,000 units– 20,000 units	BEP in units
	= <b>10,000 units</b>	

#### **STEP 1**

Draw a horizontal axis and label it "OUTPUT IN UNITS" Look at your answers – make sure that you can fit every UNITS number on this line EXACTLY

Draw a vertical axis and label it "REVENUE AND COST IN €" Look at your answers – make sure that you can fit every € number on this line EXACTLY



**STEP 2** Draw the Fixed costs line.

It is a straight line coming out of the number for fixed costs, parallel to the horizontal axis.



**STEP 3** Draw the Total revenue line by plotting the three points you work out in the table below:

ΤΟΤΑ	L REVENU	E L I N E
NUMBER OF UNITS	× Selling Price	= TOTAL REVENUE
0	×€15	€0
Breakeven point in units	20,000 units ×€15	€300,000
Forecast sales	30,000 units ×€15	€450,000



**STEP 4** Draw the Total costs line by plotting the three points you work out in the table below:

ΤΟΤ	ALCO	OSTS	LINE	
NUMBER OF UNITS	× VARIABLE	= TOTAL	+ FIXED COSTS	= TOTAL
	COST PER UNIT	VARIABLE		COSTS
		COSTS		
0	×€5	€0	+€200,000	€200,000
Breakeven point in units	20,000 ×€5	€100,000	+€200,000	€300,000
Forecast sales	30,000 ×€5	€150,000	+€200,000	€350,000



(1) The breakeven point is the point where the Total revenue and Total costs lines cross.



(2) Profit at forecast sales/output is the difference between total revenue and total costs at forecast sales.



(3) Margin of safety is the difference between forecast sales and breakeven point.



This is the final solution that you show the examiner.

### **Solution to 2005 Higher Level – Question 6**

(i) BEP in	Fixed Costs ÷ (Selling Price – Variable Cost)
units	=€300,000 ÷ (€50 - €20)
	=€300,000 ÷€30
	= 10,000 units

#### (i) BEP in BEP in units × Selling Price € = 10,000 units × €50 = €500,000

NET PROFIT FROM SELLING 20,000 UNITS	€
Total revenue	
= Number of units you sell × Selling price per unit	
= 20,000 units × €50	1,000,000
Subtract Total costs	
+ Fixed costs	(300,000)
✦ Variable costs	
= Number of units you sell × Variable cost per unit	
= 20,000 units × €20	<u>(400,000)</u>
= Net Profit	€300,000

Margin of	Forecast Sales in units – <u>BEP in units</u>
Safety	20,000 units – 10,000 units = <b>10,000 units</b>

(ii) <u>NEW</u>	Fixed Costs ÷ (Selling Price – Variable Cost)
BEP in	= €300,000 ÷ (€50 - € <u>25</u> )
units	= €300,000 ÷ €25
	= 12,000 units
(ii) <u>NEW</u>	BEP in units × Selling Price

(ii) <u>NEW</u>	BEP in units × Selling Price
BEP in €	= 12,000 units × €50
	= €600,000

#### **STEP 1**

Draw a horizontal axis and label it "OUTPUT IN UNITS" Look at your answers – make sure that you can fit every UNITS number on this line EXACTLY

Draw a vertical axis and label it "REVENUE AND COST IN €" Look at your answers – make sure that you can fit every € number on this line EXACTLY



**STEP 2** Draw the Fixed costs line.

It is a straight line coming out of the number for fixed costs, parallel to the horizontal axis.



**STEP 3** Draw the Total revenue line by plotting the three points you work out in the table below:

ΤΟΤΑ	L REVENU	E LINE
NUMBER OF UNITS	× SELLING PRICE	= TOTAL REVENUE
0	×€50	€0
Breakeven point in units	10,000 units ×€50	€500,000
Forecast sales 20,000 units ×€50		€1,000,000



**STEP 4** Draw the Total costs line by plotting the three points you work out in the table below:

ΤΟΤ	ALCO	OSTS	LINE	
NUMBER OF UNITS	× VARIABLE	= TOTAL	+ FIXED COSTS	= TOTAL
	COST PER UNIT	VARIABLE		COSTS
		COSTS		
0	×€20	€0	+€300,000	€300,000
Breakeven point in units	10,000 × €20	€200,000	+€300,000	€500,000
Forecast sales	20,000 × €20	€400,000	+€300,000	€700,000



(1) The breakeven point is the point where the Total revenue and Total costs lines cross.



(2) Profit at forecast sales/output is the difference between total revenue and total costs at forecast sales.



(3) Margin of safety is the difference between forecast sales and breakeven point.



(4) Plot the new Breakeven Point from Question (ii) on your diagram.



- 1. The new BEP is on the existing Total Revenue line. Because Selling Price did not change in part (ii), the Total Revenue Line will not change.
- 2. Because fixed costs did not change in part (ii), the Fixed Costs Line will not change.
- 3. HOWEVER, because Variable Costs have changed in part (ii), the **Total Costs Line** WILL change. That also gives a **new Profit of €200,000**. Because the Breakeven Point in units has changed, this will give a **new margin of safety**. The new **Total Costs Line** can be drawn as follows:

NEW	T O T A L	C O S [	<b>ΓSLI</b>	NE
NUMBER OF UNITS	× <u>NEW</u> VARIABLE	= VARIABLE	+ FIXED COSTS	= TOTAL
	COST PER UNIT	COSTS		COSTS
0	×€ <b>2</b> 5	€0	+€300,000	€300,000
Breakeven point in	<b>1 2</b> ,000 UNITS ×	€300,000	+€300,000	€600,000
units	€ <b>2</b> 5			
Forecast sales	20,000 × € <b>2</b> 5	€500,000	+€300,000	€800,000

### BREAKEVEN SHORT QUESTIONS

#### 2019 HIGHER Level – Section 1 (10 marks)

- 10.
- (i) Read the Break-Even chart below and identify the full labels (not abbreviations) for A, B, C and D.



Break-Even	Chart f	or I	Euroco	n D	AC
					-



(ii) Calculate Profit at Forecast Output of 120 units.

Workings

Show your workings.

Profit at Forecast Output
Answer:\_\_\_\_\_

(iii) Outline **one** limitation of break-even analysis.

#### 2018 HIGHER Level – Section 1 (10 marks)

6. Study the table below and fill in the figures represented by the letters A, B, C, D and E.

Sales (units)	Selling Price (per	Fixed Costs	Variable Costs	Total Costs	Total Revenue	Profit/loss
()	unit)					(€)
	(€)	(€)	(€)	(€)	(€)	
0	20	360,000	0	360,000	0	E=
30,000	20	A=	240,000	600,000	D=	0
50,000	20	360,000	B=	C=	1,000,000	240,000

#### 2017 HIGHER Level – Section 1 (10 marks)

8. (a) Read the break-even chart below and identify the full labels (not abbreviations) for A, B,C and D.



Answer Box		
	Full Label	
А		
В		
С		
D		

(b) Calculate the Margin of Safety at 75,000 units. Explain what it means.

Explanation

#### 2014 HIGHER Level – Section 1 (10 marks)

#### 10. The following information is supplied by Canon Ltd.

- Forecasted Output (Sales) 60,000 units
  - Fixed Costs €48,000
  - Selling price per unit €5
  - Variable Costs per unit €2

#### (Show your workings)

Using the information provided **calculate** the following:

- (a) Total Revenue at forecasted output
- (b) Total Costs of production at forecasted output
- (c) Profit at forecasted output
- (d) Breakeven point (BEP) in units

(Answer in the Answer Box below)

#### **Answer Box**

	Workings	Answer
(a) Total Revenue at forecasted		€
output		
(b) Total Costs of Production at		€
forecasted output		
(c) Profit at forecasted output		€
(d) Breakeven point (BEP) in		Units
units		
(It is not necessary to draw a		
break-even chart)		

#### 2013 HIGHER Level – Section 1 (10 marks)

6. In break-even analysis a distinction is made between '*Fixed Costs*' and '*Variable Costs*'.

Explain these terms, and give one example in each case.

#### 2012 HIGHER Level – Section 1 (10 marks)



#### 2010 HIGHER Level – Section 1 (10 marks)

- 6. Study the break-even chart below and answer the following questions in the Answer Box provided:
- (i) **Break-even point** (BEP) in units and in euros (sic)
- (ii) The **Profit** at Forecast Sales (10,000 units) in euros (sic)
- (iii) Margin of Safety (MOS) in units

€'000s

Answer Box



#### 2007 HIGHER Level – Section 1 (10 marks)

9. Below is a diagram used in business. In the answer box beside this diagram, name the diagram and insert the appropriate labels for the numbered lines in the diagram:



### 2004 HIGHER Level – Section 1 (10 marks)

 10. On the Break Even Chart below indicate clearly the following: Total Cost Line, Revenue Line, Margin of Safety, Fixed Costs Line, Break Even Point



### BREAKEVEN SHORT SOLUTIONS

#### Solution to 2019 HIGHER Level – Section 1 (10 marks)

	Full Label	MARKS
А	Fixed Costs	1
В	Total Costs	1
С	Total Revenue	1
D	Breakeven Point	

Total Revenue – Total Costs	Workings
	Total Revenue – Total Costs
€270,000 -€240,000	€270,000 -€240,000

Profit at Forecast Output

Answer €30,000



#### **Solution to 2018 HIGHER Level – Section 1 (10 marks)**

Sales	Selling	Fixed	Variable	Total	Total	Profit/loss
(units)	Price (per	Costs	Costs	Costs	Revenue	
	unit)					(€)
	(€)	(€)	(€)	(€)	(€)	
0	20	360,000	0	360,000	0	E=(360,000)
30,000	20	A=360,000	240,000	600,000	D=600,000	0
50,000	20	360,000	B=400,000	C=760,000	1,000,000	240,000

3

#### Solution to 2017 HIGHER Level – Section 1 (10 marks)

	Full Label	MARKS
A	Fixed Costs	2
В	Total Revenue	2
С	Total Costs	1
D	Breakeven Point	

Workings		Explanation	
Forecast Sales – BEP Sales		The margin of safety is the difference between	2
75,000 units - 50,000 units		a business' forecast sales and its breakeven	
		point. It shows the business by how much its	
		sales can fall before it will start making a loss.	
Answer: <b>25,000 units</b>	2		

#### Solution to 2014 HIGHER Level – Section 1 (10 marks)

	Workings	Answer	MARKS
(a) Total Revenue at forecasted	60,000 units × €5	€300,000	11
output			
(b) Total Costs of Production at	FC = €48,000 + VC (60,000 units × €2)	€168,000	1+2
forecasted output			
(c) Profit at forecasted output	TR €300,000 – TC €168,000	€132,000	1+1
(d) Breakeven point (BEP) in	$FC \div (SP - VC)$	16,000	
units	€48,000 ÷ (€5 - €2)	Units	1+2

#### Solution to 2013 HIGHER Level – Section 1 (10 marks)

- 1. fixed the cost never changes no matter how many products the business makes and sells. Factory rent is an example of a fixed cost.
- 2. variable the cost increases or decreases as the number of products made and sold increases or decreases. The cost of ingredients is an example of a variable cost.

#### Solution to 2012 HIGHER Level – Section 1 (10 marks)

BEP in units and in euros	Units: 10,000	€450,000
Profit at Forecast Sales in euros	€125,000	

The margin of safety is the difference between a business' forecast sales and its breakeven point. It shows the business by how much its sales can fall before it will start making a loss.

#### Solution to 2010 HIGHER Level – Section 1 (10 marks)

Chief Examiner's Report 2010:

"The first two parts of the question were generally well answered with only the better candidates determining the profit and the margin of safety. Some candidates failed to read the axes correctly and gave the answer of 4 units and  $\notin$ 40 euro as the break-even point, and therefore lost marks."

BEP in units <b>and</b> in euros	Units: 4,000 €40,000	2 +2
		marks
Profit at Forecast Sales in euros	€30,000	3 marks
Margin of safety in units	Units: 6,000	3 marks

#### **Solution to 2007 HIGHER Level – Section 1 (10 marks)**

Name	Breakeven Chart
Label 1	Fixed Costs Line
Label 2	Total Costs Line
Label 3	Total Revenue Line

#### Solution to 2004 HIGHER Level – Section 1 (10 marks)

Note: there was an error in the question. It was not possible to show the margin of safety as forecast sales was not given. Therefore, you had to make up forecast sales in order to be able to show the margin of safety.

