AAT Level 4

Applied Management Accounting

Chapter 3

Limiting Factor Analysis

A Comprehensive Study Guide

Assessment Criteria: Key Factor Analysis (LO 3.3)

PART ONE: FOUNDATION KNOWLEDGE

Section 1: Introduction to Limiting Factors

1.1 The Real-World Problem

Imagine you run a bakery. You have recipes for three types of cakes: chocolate, vanilla, and red velvet. Each cake brings different profit, and each requires different amounts of flour, eggs, and baking time.

Now imagine there's a flour shortage - you can only get 100kg of flour this week instead of your usual 200kg. You can't make as many cakes as you want. Which cakes should you prioritise?

Your instinct might say: "Make the most profitable cake!" But that's not always the right answer.

This is the essence of limiting factor analysis - making the best use of scarce resources to maximise profit.

1.2 Why This Topic Matters

In business, constraints are everywhere:

- A factory might have limited machine hours
- A service company might have limited skilled staff
- A manufacturer might face material shortages
- A retailer might have limited shelf space

The key question is always: When we can't do everything we want, what should we prioritise?

1.3 Assessment Focus

AAT Level 4 will test your ability to:

- Calculate contribution per unit
- Identify which resource is the limiting factor
- Calculate contribution per unit of scarce resource
- Determine the optimal production plan
- Calculate opportunity costs of additional resources

Section 2: Understanding Contribution

2.1 What is Contribution?

Contribution is the difference between selling price and variable cost per unit.

Contribution per unit = Selling price per unit - Variable cost per unit

Why "contribution"? Because it shows how much each unit "contributes" towards covering fixed costs and then generating profit.

2.2 Contribution vs Profit - A Critical Distinction

Let's clarify the difference with numbers:

Item	Per Unit (£)
Selling price	50
Less: Variable costs	
- Direct materials	(15)
- Direct labour	(12)
- Variable overheads	(8)
Total variable cost	(35)
Contribution	£15

Now, if total fixed costs are £100,000 and we sell 10,000 units:

	Total (£)
Total contribution (10,000 × £15)	150,000
Less: Fixed costs	(100,000)
Profit	£50,000

 Important: Contribution is calculated BEFORE fixed costs. Profit is calculated AFTER fixed costs.

2.3 Why Use Contribution (Not Profit) for Decisions?

Fixed costs are irrelevant for production mix decisions because they don't change regardless of which products we make.

Think about it:

- Factory rent stays the same whether you make Product A or Product B
- The manager's salary stays the same regardless of production mix
- Insurance costs don't change based on what you produce

Since fixed costs must be paid regardless, the decision becomes: How do we maximise contribution? Because maximising contribution automatically maximises profit.

2.4 Calculating Contribution - Worked Example

Scenario: TechParts Ltd makes electronic components.

Item	£
Selling price	80
Direct materials	(25)
Direct labour (2 hrs @ £12)	(24)
Variable overhead	(6)

Fixed overhead (absorbed)	(10)
Total absorption cost	65
Absorption cost profit	15

Calculate contribution:

Item	£
Selling price	80
Less: Direct materials	(25)
Less: Direct labour	(24)
Less: Variable overhead	(6)
Contribution	£25

 Note: We exclude the £10 fixed overhead because it doesn't change with production decisions.

 Exam Tip: When calculating contribution, include ONLY variable costs. If a question gives you "total cost per unit" including fixed costs, you must strip out the fixed element.

Section 3: The Concept of Scarce Resources

3.1 What is a Scarce Resource?

A scarce resource (also called a limiting factor or key factor or principal budget factor) is any resource that is in short supply and therefore limits the organisation's ability to achieve its objectives.

3.2 Common Types of Limiting Factors

Limiting Factor	Example Scenario
Labour hours	Skilled technicians in short supply
Machine hours	Equipment at maximum capacity
Materials	Raw material shortage due to supply chain issues
Storage space	Warehouse full; finished goods limited
Cash/Finance	Limited budget for purchasing materials
Market demand	Customers won't buy more than certain quantity

3.3 When Does a Limiting Factor Exist?

A resource becomes a limiting factor when:

```
Demand for the resource > Supply of the resource
```

If you want to produce 1,000 units but only have materials for 800, materials are your limiting factor.

3.4 Identifying the Limiting Factor

To identify which resource is the limiting factor, compare:

1. What resources you NEED (to meet maximum demand)
2. What resources you HAVE (available supply)

The resource where NEED > HAVE is your limiting factor.

Example: Swift Manufacturing

Swift wants to produce 500 units of Alpha and 300 units of Beta.

Resource	Per Alpha	Per Beta	Total Need	Available	Status
Materials (kg)	3	5	3,000	3,500	No shortage
Labour (hrs)	2	4	2,200	2,000	**SHORTAGE**
Machine (hrs)	1	2	1,100	1,500	No shortage

Labour is the limiting factor because it's the only resource where demand exceeds supply.

Section 4: The Limiting Factor Decision - A Common Mistake

4.1 The Intuitive (But Wrong) Approach

When resources are limited, many people think: "Make the product with the highest contribution per unit."

This is often WRONG.

4.2 Why Contribution Per Unit Isn't Enough

Consider two products:

	Product A	Product B
Contribution per unit	£50	£30
Labour hours per unit	5 hours	1 hour

If labour is limited, which should we prioritise?

Intuitive answer: Product A (£50 contribution is better than £30)

Correct answer: Product B

Why?

In one hour:

- Product A generates: £50 ÷ 5 hours = £10 per labour hour
- Product B generates: £30 ÷ 1 hour = £30 per labour hour

Product B generates 3 times more contribution per scarce hour!

If we have 100 labour hours:

- Making only Product A: 100 ÷ 5 = 20 units × £50 = £1,000 contribution
- Making only Product B: 100 ÷ 1 = 100 units × £30 = £3,000 contribution

 Important: When resources are limited, maximise CONTRIBUTION PER UNIT OF THE LIMITING FACTOR, not contribution per unit of product.

Section 5: The Five-Step Approach - ICRRA Method

5.1 The ICRRA Memory Aid

Remember ICRRA (pronounced "I-CRA"):

Step	Letter	Action
1	**I**	Identify the scarce resource
2	**C**	Calculate contribution per unit for each product
3	**R**	Calculate contribution per unit of scarce Resource
4	**R**	Rank products (highest contribution per scarce unit first)
5	**A**	Allocate resources and determine production plan

5.2 Step-by-Step Explanation

Step 1: Identify the Scarce Resource

- Calculate resources needed for maximum demand
- Compare with available resources
- The resource with a shortfall is the limiting factor

Step 2: Calculate Contribution per Unit

- For each product: Selling price - Variable costs = Contribution

Step 3: Calculate Contribution per Unit of Scarce Resource

- For each product: Contribution per unit ÷ Scarce resource per unit

Step 4: Rank Products

- Highest contribution per unit of scarce resource = Rank 1
- Second highest = Rank 2, and so on...

Step 5: Allocate Resources

- First, satisfy all demand for Rank 1 product (if possible)
- Then, use remaining resources for Rank 2 product
- Continue until resources exhausted

Section 6: Complete Worked Example - Gadget Co

The Scenario

Gadget Co manufactures three electronic products: Alpha, Beta, and Gamma.

	Alpha	Beta	Gamma
Selling price per unit	£120	£90	£75
Direct materials	£40	£35	£25
Direct labour	£30	£20	£15
Variable overhead	£10	£10	£10
Maximum demand (units)	400	600	800
Labour hours per unit	3 hrs	2 hrs	1.5 hrs

Constraint: Only 2,000 labour hours are available in the period.

Fixed costs total £50,000 for the period.

Required: Determine the optimal production plan to maximise profit.

Solution

STEP 1: Identify the Limiting Factor

Calculate labour hours needed for maximum demand:

Product	Demand	Hours/unit	Total Hours
Alpha	400	3	1,200
Beta	600	2	1,200
Gamma	800	1.5	1,200
Total			3,600

Available: 2,000 hours | Required: 3,600 hours | Shortfall: 1,600 hours

Labour is the limiting factor.

STEP 2: Calculate Contribution per Unit

	Alpha	Beta	Gamma
Selling price	£120	£90	£75
Less: Materials	(£40)	(£35)	(£25)
Less: Labour	(£30)	(£20)	(£15)
Less: Variable o/h	(£10)	(£10)	(£10)
Contribution per unit	£40	£25	£25

STEP 3: Calculate Contribution per Labour Hour

	Alpha	Beta	Gamma
Contribution per unit	£40	£25	£25
Labour hours per unit	3 hrs	2 hrs	1.5 hrs
Contribution per hour	£13.33	£12.50	£16.67

Calculation: Alpha £40÷3 = £13.33 | Beta £25÷2 = £12.50 | Gamma £25÷1.5 = £16.67

STEP 4: Rank the Products

Rank	Product	Contribution per Hour
1	Gamma	£16.67
2	Alpha	£13.33

3	Beta	£12.50

 Note: Although Alpha has the highest contribution per unit (£40), Gamma ranks first because it generates more contribution per scarce labour hour.

STEP 5: Allocate Resources

Start with 2,000 hours available.

First: Make all Gamma (Rank 1)

- Maximum demand: 800 units
- Hours needed: 800 × 1.5 = 1,200 hours
- Hours remaining: 2,000 - 1,200 = 800 hours

Second: Make Alpha (Rank 2) with remaining hours

- Hours available: 800 hours
- Units possible: 800 ÷ 3 = 266.67 → 266 units (round down)
- Hours used: 266 × 3 = 798 hours
- Hours remaining: 2 hours

Third: Make Beta (Rank 3) with remaining hours

- Hours available: 2 hours
- Units possible: 2 ÷ 2 = 1 unit

Optimal Production Plan

Product	Units	Contribution/unit	Total
Gamma	800	£25	£20,000
Alpha	266	£40	£10,640
Beta	1	£25	£25
Total Contribution			£30,665

Profit Calculation

	£
Total contribution	30,665
Less: Fixed costs	(50,000)
Loss	(£19,335)

 Note: Even though the company makes a loss, this IS the optimal plan. Any other production mix would result in an even larger loss.

Section 7: Special Situations

7.1 When No Maximum Demand is Given

If the question doesn't specify maximum demand for products, assume you can sell unlimited quantities.

In this case:

- Calculate contribution per unit of limiting factor for each product
- Make ONLY the product with the highest rate
- Use ALL resources for that one product

7.2 When Multiple Resources Might Be Limited

Sometimes you need to check each resource:

1. Calculate what you need of each resource
2. Compare with what's available
3. The ONE resource that's short is your limiting factor

 Important: In AAT Level 4, there will only be ONE limiting factor (not multiple constraints).

7.3 Rounding Production Numbers

Always round DOWN to whole units unless the question says otherwise.

You cannot make 266.67 units - you can only make 266 complete units.

Section 8: Opportunity Cost of Scarce Resources

8.1 What is Opportunity Cost?

Opportunity cost is the benefit foregone by not using a resource in its next best alternative use.

In limiting factor analysis: What is the maximum extra amount we would pay to obtain one more unit of the scarce resource?

8.2 The Formula

```
Max extra payment = Contribution per unit of limiting factor for
                    LOWEST ranked product being made
```

8.3 Why the Lowest Ranked Product?

Because if you get more resources, you'll use them to make more of the product that's currently being limited - which is the lowest-ranked product you're actually producing.

8.4 Worked Example - Opportunity Cost

Using our Gadget Co example:

Current production: Gamma (800), Alpha (266), Beta (1)

If we could get more labour hours, we would make more of:

- First: Alpha (rank 2) until demand of 400 is met
- Then: Beta (rank 3)

The lowest-ranked product being made that has unsatisfied demand is Beta.

Maximum extra payment per labour hour = £12.50 (Beta's contribution per labour hour)

This means: We would pay up to £12.50 ABOVE the normal labour cost for each additional hour.

If normal labour costs £10/hour, we would pay up to £10 + £12.50 = £22.50 per hour for overtime.

8.5 Alternative Calculation Method

```
Opportunity cost = (Contribution per hour + Variable cost per hour)
                   × Hours required
```

Example: What is the opportunity cost of 100 additional labour hours?

If labour costs £10/hour and contribution is £12.50/hour:

Opportunity cost = (£12.50 + £10.00) × 100 = £2,250

This is the maximum we would pay for those 100 hours.

Section 9: Key Formulas Summary

Formula	Expression
Contribution per unit	Selling price - Variable costs per unit
Total contribution	Contribution per unit × Number of units
Profit	Total contribution - Fixed costs
Contribution per LF	Contribution per unit ÷ LF usage per unit
Max extra payment	Contribution per LF (lowest ranked product)

PART TWO: PRACTICE AND ASSESSMENT

Section 10: Comprehensive Worked Example - FreshBake Ltd

The Scenario

FreshBake Ltd produces three types of artisan bread: Sourdough, Wholemeal, and Rye.

Per loaf	Sourdough	Wholemeal	Rye
Selling price	£4.50	£3.80	£5.00
Direct materials	£1.20	£1.00	£1.50
Direct labour	£0.75	£0.50	£1.00
Variable overhead	£0.30	£0.20	£0.25
Max weekly demand	500	800	300
Flour per loaf (kg)	0.4	0.3	0.5

Available flour: 450 kg per week. Fixed costs: £800 per week.

Solution

(a) Contribution per loaf

	Sourdough	Wholemeal	Rye
Selling price	£4.50	£3.80	£5.00
Less: Materials	(£1.20)	(£1.00)	(£1.50)
Less: Labour	(£0.75)	(£0.50)	(£1.00)
Less: Variable o/h	(£0.30)	(£0.20)	(£0.25)
Contribution	£2.25	£2.10	£2.25

(b) Identify the limiting factor

Product	Demand	Flour/loaf	Total kg	Available	
Sourdough	500	0.4	200		
Wholemeal	800	0.3	240		
Rye	300	0.5	150		
Total			590	450	**Shortage**

Flour is the limiting factor (need 590 kg, have 450 kg).

(c) Contribution per kg of flour

	Sourdough	Wholemeal	Rye
Contribution per loaf	£2.25	£2.10	£2.25
Flour per loaf (kg)	0.4	0.3	0.5
Contribution per kg	£5.625	£7.00	£4.50
Ranking	2	1	3

(d) Optimal production plan

Start with 450 kg flour.

First: Wholemeal (Rank 1)

800 loaves × 0.3 kg = 240 kg used. Remaining: 210 kg

Second: Sourdough (Rank 2)

500 loaves × 0.4 kg = 200 kg used. Remaining: 10 kg

Third: Rye (Rank 3)

10 kg ÷ 0.5 kg = 20 loaves

Product	Loaves
Wholemeal	800
Sourdough	500
Rye	20

(e) Maximum profit

Product	Loaves	Contribution	Total
Wholemeal	800	£2.10	£1,680
Sourdough	500	£2.25	£1,125
Rye	20	£2.25	£45
Total contribution			£2,850
Less: Fixed costs			(£800)
Profit			£2,050

(f) Maximum premium for additional flour

Lowest ranked product with unsatisfied demand: Rye

Contribution per kg for Rye = £4.50

FreshBake should pay up to £4.50 per kg above normal flour cost.

Section 11: Practice Questions

Question 1: Basic Contribution Calculation (6 marks)

Apex Products makes a component with the following cost structure:

Item	Per unit (£)
Direct materials	18
Direct labour (2 hrs @ £14)	28
Variable production overhead	7
Fixed production overhead	12
Total production cost	65
Selling price	85

Required:

(a) Calculate the contribution per unit. (3 marks)

(b) If Apex sells 5,000 units and fixed costs total £60,000, calculate the profit. (3 marks)

Question 2: Identifying the Limiting Factor (8 marks)

Riverside Furniture makes three products: Tables, Chairs, and Bookcases.

	Tables	Chairs	Bookcases	Available
Max demand (units)	200	500	150	
Wood per unit (m)	4	1.5	6	2,000
Labour per unit (hrs)	5	2	8	3,000
Machine per unit (hrs)	2	1	3	1,200

Required: Calculate whether each resource is sufficient and identify the limiting factor.

Question 3: Full Limiting Factor Analysis (20 marks)

Delta Manufacturing produces three products: Standard, Premium, and Deluxe.

	Standard	Premium	Deluxe
Selling price per unit	£60	£95	£140
Direct materials (@ £5/kg)	£10	£20	£25
Direct labour (@ £12/hr)	£24	£36	£48
Variable overhead	£6	£9	£12
Max monthly demand	1,000	600	400

Labour hours limited to 5,000 hours per month. Fixed costs: £40,000 per month.

Required:

(a) Calculate the contribution per unit for each product. (3 marks)

(b) Confirm that labour is the limiting factor. (4 marks)

(c) Calculate the contribution per labour hour for each product. (3 marks)

(d) Rank the products and determine the optimal production plan. (6 marks)

(e) Calculate the maximum monthly profit. (4 marks)

Question 4: Opportunity Cost (10 marks)

Using your answer from Question 3:

(a) Calculate the maximum extra amount Delta should pay per labour hour. (4 marks)

(b) If overtime is available at time-and-a-half (£18/hour instead of £12/hour), should Delta accept it? Explain. (6 marks)

Question 5: Multiple Choice Questions

5.1 Contribution is best defined as:

A) Selling price minus total cost per unit

B) Selling price minus variable cost per unit

C) Selling price minus fixed cost per unit

D) Profit per unit

5.2 When there is a limiting factor, products should be prioritised based on:

A) Highest selling price

B) Highest contribution per unit

C) Highest contribution per unit of limiting factor

D) Lowest variable cost

5.3 If material is the limiting factor and Product X has contribution of £20 using 4kg, the contribution per kg is:

A) £80

B) £16

C) £5

D) £4

5.4 Fixed costs are ignored in limiting factor decisions because:

A) They are too difficult to calculate

B) They don't change regardless of which products are made

C) They are not relevant to profitability

D) They are included in variable costs

5.5 The opportunity cost of a scarce resource represents:

A) The historical cost of the resource

B) The replacement cost of the resource

C) The benefit foregone by not using the resource elsewhere

D) The variable cost of the resource

Section 12: Answers to Practice Questions

Answer 1: Basic Contribution

(a) Contribution per unit

	£
Selling price	85
Less: Direct materials	(18)
Less: Direct labour	(28)
Less: Variable overhead	(7)
Contribution per unit	£32

Note: Fixed overhead of £12 is excluded.

(b) Profit calculation

	£
Total contribution (5,000 × £32)	160,000
Less: Fixed costs	(60,000)
Profit	£100,000

Answer 2: Identifying the Limiting Factor

Wood required:

Tables: 200 × 4 = 800m | Chairs: 500 × 1.5 = 750m | Bookcases: 150 × 6 = 900m

Total: 2,450m | Available: 2,000m → Shortage of 450m

Labour required:

Tables: 200 × 5 = 1,000 hrs | Chairs: 500 × 2 = 1,000 hrs | Bookcases: 150 × 8 = 1,200 hrs

Total: 3,200 hrs | Available: 3,000 hrs → Shortage of 200 hrs

Machine required:

Tables: 200 × 2 = 400 hrs | Chairs: 500 × 1 = 500 hrs | Bookcases: 150 × 3 = 450 hrs

Total: 1,350 hrs | Available: 1,200 hrs → Shortage of 150 hrs

Wood has the largest percentage shortage (18.4%) and is therefore the limiting factor.

Answer 3: Full Limiting Factor Analysis

(a) Contribution per unit

	Standard	Premium	Deluxe
Selling price	£60	£95	£140
Less: Materials	(£10)	(£20)	(£25)
Less: Labour	(£24)	(£36)	(£48)
Less: Variable o/h	(£6)	(£9)	(£12)
Contribution	£20	£30	£55

(b) Confirm labour is limiting

Labour hours per unit: Standard £24÷£12 = 2 hrs | Premium £36÷£12 = 3 hrs | Deluxe £48÷£12 = 4 hrs

Total needed: (1,000×2) + (600×3) + (400×4) = 2,000 + 1,800 + 1,600 = 5,400 hours

Available: 5,000 hours → Shortage of 400 hours. Labour IS the limiting factor.

(c) Contribution per labour hour

	Standard	Premium	Deluxe
Contribution	£20	£30	£55
Labour hours	2	3	4
Contribution/hour	£10.00	£10.00	£13.75
Ranking	2	2	1

(d) Optimal production plan

Deluxe first: 400 units × 4 hrs = 1,600 hrs. Remaining: 3,400 hrs

Standard second: 1,000 units × 2 hrs = 2,000 hrs. Remaining: 1,400 hrs

Premium third: 1,400 ÷ 3 = 466 units

Product	Units
Deluxe	400
Standard	1,000
Premium	466

(e) Maximum profit

Product	Units	Contribution	Total
Deluxe	400	£55	£22,000
Standard	1,000	£20	£20,000
Premium	466	£30	£13,980
Total contribution			£55,980
Less: Fixed costs			(£40,000)
Profit			£15,980

Answer 4: Opportunity Cost

(a) Maximum extra payment

Lowest ranked product with unsatisfied demand: Premium

Contribution per labour hour for Premium = £10.00

Delta should pay up to £10.00 per hour above normal labour cost.

(b) Should Delta accept overtime at £18/hour?

Normal: £12/hour | Overtime: £18/hour | Extra cost: £6/hour

Extra contribution per hour: £10.00

Since extra contribution (£10) > extra cost (£6):

YES, Delta should accept overtime.

Net benefit per hour = £10 - £6 = £4

Remaining Premium: 134 units × 3 hrs = 402 hrs × £4 = £1,608 additional profit

Answer 5: Multiple Choice

Question	Answer	Explanation

5.1	B	Contribution = Selling price - Variable costs
5.2	C	Maximise contribution per unit of limiting factor
5.3	C	£20 ÷ 4 kg = £5 per kg
5.4	B	Fixed costs stay same regardless of production mix
5.5	C	Opportunity cost is the benefit foregone

PART THREE: SUMMARY AND EXAM PREPARATION

Section 13: Key Points Summary

The Core Concept

When resources are SCARCE, maximise: **CONTRIBUTION PER UNIT OF LIMITING FACTOR** (NOT contribution per unit of product!)

The Five Steps - ICRRA

Step	Letter	Action
1	**I**	Identify limiting factor (compare required vs available)
2	**C**	Calculate contribution/unit (exclude ALL fixed costs)
3	**R**	Calculate contribution per scarce Resource
4	**R**	Rank products (highest rate = Rank 1)
5	**A**	Allocate resources (satisfy Rank 1 first, then 2...)

Section 14: Memory Aids and Quick Reference

Key Formulas Quick Reference

Formula	Purpose
Contribution = SP - VC	Calculate contribution per unit
Contribution per LF = C ÷ LF usage	Rank products when resources scarce
Profit = Total C - FC	Calculate overall profit
Max extra = C per LF (lowest ranked)	Determine opportunity cost

Memory Aid: "SCARCE" - What to Check

Letter	Meaning
S	Skilled labour availability
C	Capacity of machines
A	Availability of materials
R	Restriction on demand
C	Cash/finance limits
E	Equipment/space constraints

Common Limiting Factors and Units

Limiting Factor	Contribution Calculated Per
Labour hours	Per labour hour
Machine hours	Per machine hour
Materials (kg)	Per kg
Materials (litres)	Per litre
Floor space (m²)	Per square metre

Section 15: Common Exam Mistakes to Avoid

Mistake 1: Using Contribution Per Unit Instead of Per Limiting Factor

□ **Wrong:** "Product A has £50 contribution, so make A first"

✓ **Correct:** Calculate contribution PER UNIT OF SCARCE RESOURCE, then rank

Mistake 2: Including Fixed Costs in Contribution

□ **Wrong:** Deducting fixed overhead when calculating contribution

✓ **Correct:** Contribution = Selling price - VARIABLE costs only

Mistake 3: Forgetting to Check if a Limiting Factor Exists

□ **Wrong:** Assuming there's always a limiting factor

✓ **Correct:** Compare required vs available - if required < available, no limiting factor

Mistake 4: Making Fractional Units

□ **Wrong:** "We can make 266.67 units"

✓ **Correct:** Round DOWN to whole units (266 units)

Mistake 5: Exceeding Demand Limits

□ **Wrong:** Making 1,500 units when max demand is 1,000

✓ **Correct:** Never make more than customers will buy

Mistake 6: Wrong Opportunity Cost

□ **Wrong:** Using highest-ranked product for opportunity cost

✓ **Correct:** Use LOWEST-ranked product with unsatisfied demand

Section 16: Exam Tips

Before the Exam

- Memorise ICRRA - the five-step approach
- Practice calculations - speed matters
- Understand WHY contribution per limiting factor matters
- Know the opportunity cost formula - commonly tested

During the Exam

- Read carefully - Is there definitely a limiting factor?
- Show all workings - Method marks are available
- Check your units - Hours, kg, litres - be consistent
- Verify your answer - Does total resource usage equal available?
- Round appropriately - Usually round production down to whole units

Reading the Question - Key Clues

Clue in Question	What It Tells You
"Resources are limited"	There IS a limiting factor
"Maximum demand is..."	Don't exceed these quantities
"Calculate optimal production plan"	Use the 5-step approach
"Maximum premium you would pay"	Calculate opportunity cost
"No limit on demand"	Make only highest-ranked product

Section 17: Quick Revision Checklist

Definitions

- ☐ Define contribution
- ☐ Define limiting factor
- ☐ Define opportunity cost
- ☐ Explain why fixed costs are irrelevant for these decisions

Calculations

- ☐ Calculate contribution per unit
- ☐ Identify the limiting factor from given data
- ☐ Calculate contribution per unit of limiting factor
- ☐ Determine optimal production plan
- ☐ Calculate total contribution and profit
- ☐ Calculate opportunity cost of additional resources

Understanding

- ☐ Explain why contribution per limiting factor matters
- ☐ Know when to use limiting factor analysis
- ☐ Understand the ranking process
- ☐ Know how to handle maximum demand constraints

Application

- ☐ Complete a full 5-step limiting factor problem
- ☐ Advise on whether to pay premium prices for resources
- ☐ Handle situations with no limiting factor

Section 18: Final Summary

The One Thing to Remember

When resources are limited, maximise **CONTRIBUTION PER UNIT OF THE SCARCE RESOURCE**

A product with lower contribution per unit might be MORE profitable when resources are scarce, because it uses less of the scarce resource.

The Decision Process

Step 1: Is there a limiting factor? (Compare need vs have)
→ NO: Make all products to maximum demand
→ YES: Continue to Step 2
Step 2: Calculate contribution per unit of limiting factor
Step 3: Rank products (highest = 1st priority)
Step 4: Allocate resources in rank order
Step 5: Calculate profit

Good luck with your AAT Level 4 exam!

Remember: Contribution per limiting factor is the key to optimal decisions when resources are scarce.

— End of Chapter 3 Study Guide —